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Integrated and Participatory Innovation

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Integrated and Participatory Innovation

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I Introduction *by Tor Claussen, Trond Haga and Richard Ennals*

This publication is based on experience gathered by collaborating actors representing a multitude of contexts. Two research programmes, a number of Norwegian research communities, UK research experience and one strategic project financed by the Norwegian Research Council represent the core of experience and resources through which key issues and knowledge creation are compared and analysed. Additionally, vast amounts of experiences and knowledge presented by national, Nordic and other international partners have been utilised for analytical and comparative purposes. The whole collaborative structure has created a unique opportunity to develop and facilitate shared knowledge and learning generating processes. We will here make some introductory remarks regarding the institutions, actors and arenas that have been involved at different levels, and in various contexts¹. An overview of the current contributions to the current text will also be presented.

1.1 Institutions, actors and contexts

The current publication is based on a project financed by the Norwegian Research Council. This project was launched in 2005, to end in early 2008. The project carries the titled “Integrated Innovation”. This title indicates the major focus of the project. It is a strategic project. This implies that *already existing* empirical material, knowledge, and experiences are used in order to make new analytical, comparative and theoretical contributions to a wider national, Nordic and international research community. No new empirical material, experiences and knowledge have been gathered through this project in addition to the two PhDs associated with it.

This publication, and the project it is built upon has been financed by strategic programmes launched by the Norwegian Research Council. Certain intentions regarding these types of projects are crucial. One of the important strategic ambitions of this type of strategic projects is to enhance different collaborative relations.

¹ The original proposal for this research project and the report of targeted key figures from the project exist in other publications, see Claussen 2004a.

In the project of ‘Integrated Innovation’ key collaborative actors making major contributions can be classified as:

- *Actors based in enterprises and networks* in a multitude of business environments. A majority of the enterprises and networks come from manufacturing and process industries.
- *Public* regional actors representing municipalities, counties and national governmental agencies.
- *Employee* and *employer* representatives at enterprise, regional (county) and national level. These would typically be union representatives, managers, owners and health-safety-environment (HSE) personnel.
- *Researchers* with a multitude of different professional experiences and academic backgrounds.

These actors have been involved in arenas linked to:

- enterprises
- networks
- local/regional arenas
- coalitions at a regional level, cutting across administrative/political barriers
- national arenas
- Nordic and international arenas

When launching the project, key actors linked to these arenas were all invited to common workshops in order to put forward their important inputs. These inputs and their follow up have been essential in order to keep the project updated on international research.

Additionally, these inputs have contributed extensively to the preparation of knowledge, theoretical perspectives and efforts of making cross-comparisons.

The current publication has been shaped through close collaboration with Kingston University, and specific key researchers at this institution. This becomes evident when looking at the names of the contributors. These researchers have contributed with comparative material, theoretical reflections and crosscutting linkages. Agder Research/The University of Agder (AF and UiA) in Norway are, in addition to Kingston and IRIS, key institutions for the current publication. AF/UiA and IRIS have collaborated in this research field for many years. We have also a contribution from a university to the far north of Norway, the University of

Tromsø, which has also participated in key national research programmes together with AF/UiA, IRIS and Kingston.



Figure 1: map showing the location of participating areas

In Figure 1 above, the two counties, East and West Agder are indicated in lilac; Hordaland is orange, while Rogaland is light blue-green. The Work Research Institute is located in Oslo, while the University College of Østfold is located south east of Oslo. Tromsø is far to the north of Norway, while London – Kingston is farthest to the south on the map.

The contexts of comparison, sources of material, and contributions are:

- the *local* business environment (departments, enterprises, networks, municipalities). When using the term ‘local’ throughout the publication, this is the context that is generally referred to.
- the *regional* context consists of one or more counties, a national administrative political unit in Norway. In countries outside Norway there can be slight differences regarding references to this context, as the political administrative term county can differ across national contexts.
- the *national* level is considered and identified as the highest level of context systematically compared.

- referring to a *global* context relates generally to international arenas that are not always clearly demarcated.

Contexts of discovery and comparison are closely correlated with the different arenas listed above. In order to give a closer account of the contexts of discoveries, we will give a brief overview of two of these contexts. First, the context of the “Integrated Innovation” project itself, governed by researchers at IRIS, will be presented thoroughly. Additionally, the context of the research accomplished by our UK and Agder partners will be given corresponding presentation.

1.2 Two research programmes and their context of discovery, IRIS Norwegian partner

In 1995 the Norwegian Research council launched a national programme called Enterprise Development 2000 (ED 2000). One of the ambitions of this programme was to create a number of regionally linked projects directed at doing action research in enterprises. In order to achieve this ambition, network collaboration between different enterprise participants, as well as research, was encouraged. New collaborations between enterprises, research and employee/employer/HSE representatives were among some of the main targets in order to mobilise stakeholders in development and research activities.

When the programme ended in 2000, a number of research and development activities ‘creating connectedness’ (Gustavsen *et al* 2001) had been launched throughout different regional contexts in Norway. Several lessons learned from ED 2000 inspired the launching of its successor, Value Creation 2010. Among the lessons learned and experiences to attend to, were the following:

- the *regional* context of enterprise and network development could be involved and emphasised to a greater extent than was the case in ED 2000. It was therefore of interest to prolong the core activity of ED 2000 in a new long term programme.
- regional *coalitions* could be utilised to encourage and facilitate enterprise and network research and development activities. Such a coalition could have regional key actors and stakeholders on the county/regional level.
- greater emphasis on *innovation*, not just continuous improvement of daily operations. Innovation was to be focused on creating a greater range of variation of alternative change projects to choose from, based on strategic consideration both at

enterprise and regional level. In the enterprises, innovation projects were intended to become a core in the context of the new programme.

- extended *participation* by employee/employer/HSE representatives at different levels, both local, regional, national and international.
- greater national, Nordic and international *collaborative efforts* should be encouraged between all stakeholders and actors at different levels and arenas.
- a PhD programme was launched in order to enhance competence and research activities, aimed at the wider research community nationally as well as internationally.

In 2001 a 10-year programme, Value Creation 2000 (VC 2010), was launched. This programme was to be based on the lessons and experiences from ED 2000 listed above. Additionally VC 2010 was to be expanded both according to duration (10 year ambition) and national geographical distribution.

ED 2000 covered seven modules. A module was defined as a number of action researchers who dedicated at least 50 per cent of their disposable research resources to be linked to the research programme. These core researchers, as well as the collaborating enterprises/networks, actors and stakeholders, constituted the module. An intention in VC 2010 was to keep the module structure, increase the number of such modules to cover most counties in Norway, and link the modules more noticeably to the regional level. A distinct focus on innovation at enterprise, network and regional level was also to become one of the main objectives of this new programme.

Building on ED 2000, VC 2010 initiated collaborative arrangements through several closely linked programme/project activities:

- a *PhD programme* was launched. This programme was provided with strong international participation, both by students and advisors/lecturers of high international academic reputation in the field.
- *Nordic* cross-country and cross-regional comparative projects were launched. Key regions were picked in order to make national/regional/local comparison regarding the core research activities in VC 2010. Additionally, a Nordic project comparing developmental project activities where employee/employer representatives play a significant stakeholder role was launched. IRIS was the Norwegian partner, based on its experiences and knowledge from VC 2010 and ED 2000 activities.

- a number of *international* collaborative publishing and research initiatives were promoted. Among these the ‘Integrated Innovation’ project and the current publication count as an important example to consider.

ED 2000 at IRIS emphasised network collaboration in three different networks. Experiences from these network activities contributed to the evolution of the term ‘solid network’. The term denotes a collaborative arrangement, significantly different from what is usually referred to as a network (Haga 2007). It is organised like an enterprise, but embedded in the local social community through weak and strong, more or less informal, ties. The term ‘solid network’ will be presented more thoroughly later in this publication (see Case 12 in Part II).

ED 2000 emphasised both direct and indirect participation. Union representatives, both locally and nationally, played key roles in every aspect of the collaborative activities taking place within project activities. Major development activities took place in enterprises and networks located in the two counties, Rogaland and Hordaland, in the South-West part of Norway, and in the two counties of Agder located in the southern part of Norway.

Additionally one network activity engaged huge enterprises, mainly producers and super suppliers to the oil industry in Norway.

One of the research objectives of ED 2000 at IRIS illuminated and analysed the challenges facing international management concepts, introduced in a national/local context of work life, participatory traditions, and HSE culture. Experiences and analysis of these challenges has provided considerable knowledge of how to handle development and innovation activities, utilising the so-called Nordic model of work life and welfare state arrangements, together with the application of international management concepts. This will be illuminated in Part II, particularly Case 13.

The VC 2010 programme built on the experiences from ED 2000. It differed significantly on some important issues, as indicated above. At IRIS the differences between ED 2000 and VC 2010 which were given specific attention, were the following:

- the *regional* level was given specific attention. Employee/employer representatives at the regional level came to play a crucial role in all aspects of research and development activities. This became an additional involvement of the social partners to the local/national involvement already present in ED 2000.
- a *coalition* (see Ennals and Gustavsen 1999) at the regional level was formed by stakeholders to become the Development Coalition of Hordaland and Rogaland

(DCHR). Hordaland and Rogaland were the two counties hosting the enterprises, networks and major regional stakeholders that were addressed in VC 2010 at IRIS. Among the major stakeholders addressed, the following became crucial partners at the regional level:

- Regional representatives of The Norwegian Confederation of Business and Industry and The Confederation of Trade Unions.
- The public State Fund for Economic and Regional Development, now labelled Innovation Norway.
- The administrative head of the counties' business departments.
- The administrative head of the counties' labour market offices.
- Representatives of the main institutions of research and higher education.

Thus, the Coalition was shaped through public discussions, the so called 'Agora', structuring the co-operation between the University, the University Colleges and the regional business community (see the section by James Karlsen on the role of the university in regional development, Part IV.5 for further discussions).

- *Innovation*, in addition to continuous improvement, was emphasised as a crucial element in the action research activities initiated in the enterprises and networks. The term innovation was specifically utilised in order to promote radical change projects in *already existing* enterprises, networks and business environments, such as intrapreneurship, in addition to entrepreneurship, and the creation of new external units to the existing business environment. According to this philosophy, additional business opportunities for existing businesses were to be explored and encouraged in order to create more opportunities to exploit, more of a 'multiple core' business philosophy. This will be discussed as a separate issue later in the publication.

The economical, geographical, political/administrative and cultural context of ED 2000 and VC 2010 was the South-West part of Norway, as well as the southern part of Norway. The region where IRIS was mainly operating, the South-West part of Norway, consists of a rough coastline facing the North Sea (see Figure 2). It is a region characterised by a number of islands and fjords, a glacier, by rivers falling from steep mountains and by an unfriendly climate, due to its location by the North Sea. 25–30 per cent of the workforce is employed in the manufacturing industry, the highest percentage of employment in manufacturing in Norway. A population of just below 1 million is scattered in small towns and villages. Farming in poor conditions and fishing in rich banks along the coast have been the major

subsistence for the local population. At present oil and hydro-electrical power form the bases of a heavily industrialised area, at least according to a Norwegian scale.

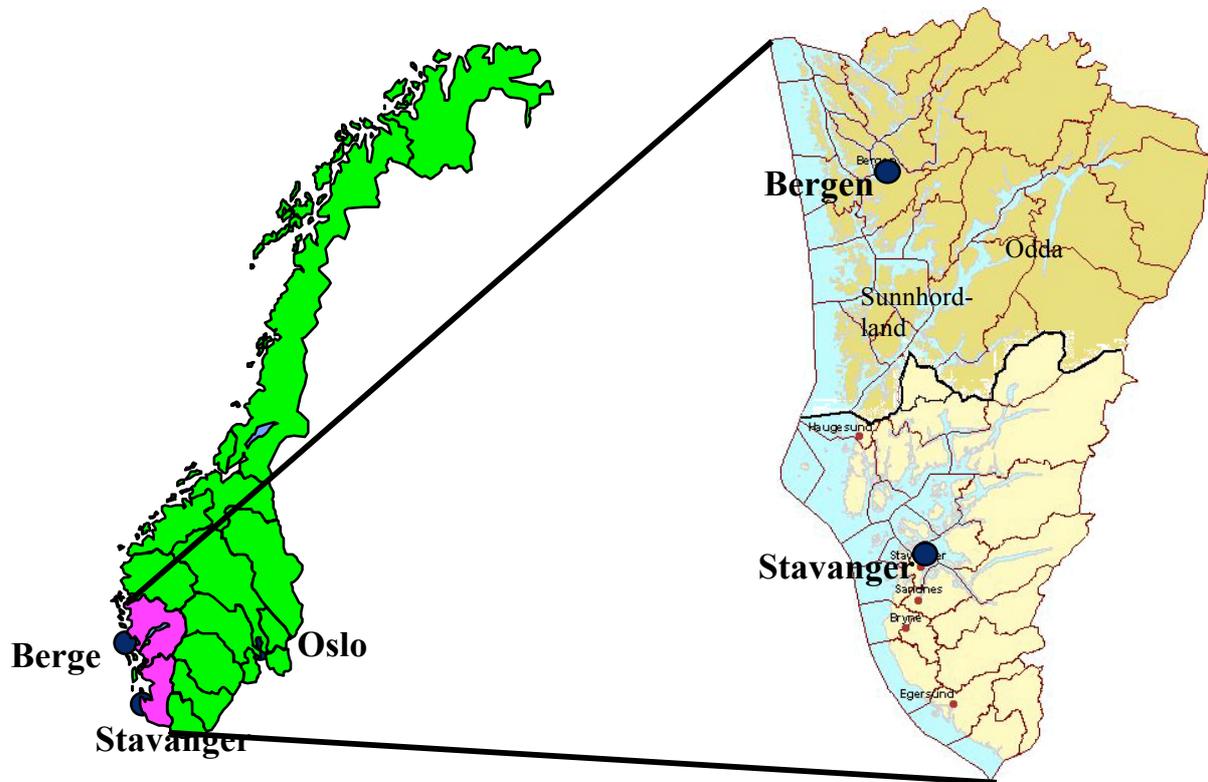


Figure 2: map showing location where IRIS operated

Major administrative centres for the oil industry and other larger scale industrial activities have been located in the region since World War II. Prior to this period the economy was dominated by fishermen and small farmers. An anthropologist from Great Britain studied the region in the 1950s (Barnes 1953) and applied the concept of *network* in order to describe particular aspects of the social organisation present among the fishermen along this coastline. The network term was used to cover how information related to catching, weather, sea conditions, location of fish, etc was distributed through informal relations where the fishermen's wives were key informants. Later studies have confirmed and extended his findings (Müller 1990). This historical heritage is part of the cultural and traditional conditions regarding networking in this particular region today.

Current experiences in networking in the two counties are linked to the two research programmes, VC 2010 and ED 2000. Researchers have played an active part, mainly as action researchers (AR, see Whyte 1991, Levin and Greenwood 1998), on different levels:

- initiating and supporting developmental and innovation projects *inside* enterprises participating in VC 2010 and ED 2000, addressing work organisation issues as well as a number of other business development issues.
- the shaping and development of *networks* among participating enterprises as supportive structures to the improvement activities taking place in each enterprise.
- shaping of supportive *coalitions/partnerships* between the counties (Hordaland/Rogaland, the Agder counties), among Triple Helix actors ('Triple Helix', see Leydesdorff and Etzkowitz 1998, Brulin 1998).

In ED 2000 at IRIS the researchers were able to enter into collaboration with three existing enterprise networks. Of the three networks collaborating in ED 2000, one of them, *The Sunnhordland Industry Network (SIN)*, will be given special attention in this publication (see Cases 1 and 12). SIN consisted of 14 enterprises at the time of ED 2000, ranging from 12 to 1900 employees. Most of the enterprises were within the manufacturing industry or foundries using hydro-electric power. In the network as a whole about 5000-6000 were employed. The network had one dominant actor, a former shipyard. Due to the offshore development, the production of platforms and other constructions for offshore activities had become the main market for this dominant actor. Some of the collaborating enterprises in the network were suppliers to this dominant member, while others did not have any particular commercial relationship with any of the members. For many of the participants, the network was characterised by mixed relationships between the participants, implying both commercial and non-commercial activities. SIN will be utilised in order to illustrate the working of formalised network collaborations, the *solid network structure* (see Case 12). This network has established itself as a mature networking practice. It is presently inspiring collaborative efforts by many enterprises in the region (see Cases 1 and 12 in particular).

The Industrial Network of Hardanger (INH) is attempting to achieve a similar kind of co-operative structure as SIN, inspired by the success of this network. eight enterprises utilising hydro-electric power are key actors from the local/regional business environment in this effort. Union members, as well as managers, are key persons collaborating with researchers in order to shape the INH network. Paradoxes and dilemmas facing the shaping of INH will be highlighted to illustrate aspects of role management in these networking processes (see Cases 1 and 12).

What then were some of the outcomes of the initiatives and R&D activities taking place in these contexts?

- What role was played by the union? The union representatives legitimised and thereby made possible broad participatory contributions from employees. Additionally, the union were themselves important contributors with formal roles and professional substance in the R&D projects. This is elaborated in Case 8
- How did network collaboration contribute to improvement and innovation in enterprises? Network collaboration supported and stimulated developmental and innovative trends related to the R&D activities taking place in the enterprises (see Cases 2, 5 and 10). Enhanced openness, learning and exchange of experience/knowledge was encouraged by network collaboration (see Case 2).
- HSE perspectives were emphasized in all R&D projects and programme activities (see Cases 1 and 12).
- Enterprises enhanced their business performance and thereby increased their competitiveness (see Case 7).
- The concept of innovation was targeted more systematically as VC 2010 evolved, based on key experiences from development activities in ED 2000. Specific innovation project activities emerged through strategic decision-making processes (see Case 5).
- Experiences and conceptualization of ways that regional and national supportive structures and backing of development and innovation local/regionally can be organised and utilised, is an essential outcome of the two programmes (see Case 6).

The networks, together with coalitions (DCHR) formed by actors and stakeholders in the counties in the South-West part and southern part of Norway, comprise the major context for the contributed experiences and knowledge presented in this publication. Experiences from both programmes, ED 2000 and VC 2010, are important also. The contexts locating the different contributions in this publication, which have not been based in the same geographical region, will be outlined in the following presentations.

1.3 Theoretical reflections advocated by IRIS

Action research conducted through participation and collaborative structures have been the foundation of research conducted by IRIS, as well as many of the other contributors to this publication. Change and development have been based on dialogue between the different actors involved. Dialogue arrangements have been a cornerstone in the practical research activities. Emphasis on dialogue and communication has also been important in the

theoretical considerations and reflections made *upon* the practical research activities. This is especially so regarding research activities linked to the two research programmes presented above.

When radical change and innovation is stressed, some challenges regarding perspectives on dialogue and communication become apparent. Creativity and innovation require the ability to produce new and unexpected varieties of practices and solutions. Dialogue and communication of differences can become a driving force in order to create variations to choose from. Interplay of perspectives and interests can be brought into play in order to make diversity the dynamic of change. Learning from differences through dialogue can be a way of making innovations happen. Dialogue and communication thus become important, both in practice, and in theoretical reflections upon these practices. These have been major issues in the research conducted at IRIS, as well as other participants in ED 2000 and VC 2010. In the research tradition these two programmes are embedded in, theories of communicative action and dialogue have been a cornerstone (see Part II.2 *Tutorial Paper on Working Life Research and Action Research* by Richard Ennals for further elaboration of this research tradition and some of the linkages). Theoretical considerations on this research are an essential aspect of ‘integrated innovation’, or rather ‘disintegrated innovation’, the phrase used in a contribution presenting a critical revision of the term ‘integrated innovation’ (see Part IV.1 in this publication).

Focus on innovation raises an important issue related to change. This concerns making change something other than merely spontaneous incidental happenings. Structures and systems that change and innovation are embedded in become important. The importance of systems and structures related to change were apparent when improvements in enterprise development, supported by research and network structures, were conducted in ED 2000. Emphasising radical change and innovation makes this issue even more important, as became apparent in VC 2010.

Creating variations, and making strategic decisions on which solutions and projects to go for, becomes important. Enterprises, regions and nations have to take careful consideration regarding resources and time to spend on change and innovation activities, in order to choose competitive solutions. On the one hand, change and innovation is required in order to position oneself in a competitive environment. This is so when advantages in a market environment are hard to hold on to due to the global availability of conditions that are necessary in order to gain competitiveness.

On the other hand, change and innovation are risky and can be resource consuming. Creating variations and making careful strategic considerations on how to utilise scarce resources and reduce risk, can also be an important competitive advantage. Risk and risk reduction through creativity/spontaneity, as well as systemic/strategic choices, is thus a dilemma in innovation. To cope with this dilemma, additional aspects to communication and dialogue between differences are needed in order to structure the interplay between differences and diversity of interests and opinions. Structuring risk taking and risk reduction can be a way of making change and innovation systemic, continuous and strategic processes, in order to avoid wasteful incidental, temporary and spontaneous happenings.

Learning from differences is important in order to make a creative environment create variations that strategic selections of competitive solutions can be based upon. The interplay of diversity and differences can be a dynamic driving force in innovation. On the other hand, structuring differences and diversity of interests and opinions into an integrated process whereby new perspectives and solutions are produced is another basic aspect of innovation. Interplay of differences, integrated and structured into a systematic communicative setting is required in order to *produce* workable processes and solutions. This is why the current publication also emphasises participatory arenas and collaborative arrangements that can facilitate the interplay of diversity of interest in order to learn and utilise differences. System and structuring of differences and diversity is an important aspect of innovation, additional to the creativity aspect of innovation. The system perspective here adds important elements to the dialogue and communicative aspects of innovation.

In the current publication we have utilised the system theory of Niklas Luhmann (see particularly Luhmann 1997). The following bullet points indicate some of the reasons behind this choice.

In this context Luhmann has been emphasised for the following reasons:

- Luhmann does not rely on a clear distinction between social and natural science, or between hard technological and soft organisational approaches, as is the case with his opponent, Jürgen Habermas (see for example Habermas 1970, 2004). Cutting across these distinctions can be important in order to shape long-term large projects where a multitude of partners and stakeholders, professions, perspectives, etc are involved.
- Luhmann's perspectives make it apparent that it is important to take into account the structuring conditions (systemic) of individual interactions in different conditions.

This makes it essential to consider innovation as something more than just incidental happenings.

- Luhmann highlights the dynamics and expansion of variation to choose from, when making strategic selections of approaches and solutions. Additionally, he points to the necessity to incorporate new achievements into the existing structure. In this way the realization of new market and business opportunities can be highlighted.
- Luhmann's concepts make it possible to enrich the understanding of network structures, collaborative arrangements and participatory configurations that make up the system of work life at different levels (enterprise, network, region, nation and global). This creates an opportunity to shape new practical arrangements and solutions in R&D collaboration with the business environment.

The systemic approach sketched here presented is an additional perspective to consider in relation to dialogue and communicative contributions. It emphasises aspects of change and innovation necessary in order to make these processes something other than temporary and incidental happenings. Later in this publication, these reflections are further elaborated (see sections *Positioning integrated innovation* and *Reviewing the concept of integrated innovation*, pages 90 and 96), and briefly linked to classical discussion between Habermas and Luhmann (Habermas and Luhmann 1970, Maciejewski 1973).

1.4 UK partners

Researchers at the Centre for Working Life Research at Kingston Business School, Kingston University, have engaged in collaborative research with Swedish and Norwegian partners since 1987. This followed the end of the Alvey Programme in the United Kingdom, concerned with the development of enabling technologies for a new generation of computing systems. Richard Ennals was a research manager. Experience of the programme suggested that the key issues concerned new ways of collaborative working, between enterprises, and with universities and government departments. With the closing of the programme in 1987, attention increasingly switched to work at the European level, and with international partners. In 1995, the European Work and Technology Consortium was formed, chaired by Peter Totterdill, and linked with national representatives in the European ACTEUR group, to form the European Work Organisation Network (EWON).

In 1997 a change of government brought hopes of new programmes based on a partnership approach. The UK held the EU Presidency in 1998, and were advised by a new network, the UK Work Organisation Network (UKWON), together with international advisors, including representatives from Norway. This did not lead to consistent core funding, so UKWON has had to survive on project funding. UKWON members are drawn from trade unions, employers' organisations, universities and research organisations, with government civil servants as observers.

At Kingston Business School the Centre for Working Life Research (CWLR) has been a mainstay of UKWON, hosting three of the Board members (Peter Totterdill, Richard Ennals and Campbell Ford). In addition CWLR has developed a portfolio of projects addressing working life issues, regional development, lifelong learning, workplace health and world citizenship. CWLR has contributed to teaching at Kingston Business School, and in partner universities in Norway, Sweden and Lithuania. This includes the Action Research based PhD programme *Enterprise Development and Working Life*, based at the Norwegian University of Science and Technology in Trondheim. This provided the basis for the tutorial paper on *Working Life Research and Action Research*, in this collection.

This collection includes papers by researchers (Anne-Marie McEwan on Healthy Working Centres and Anne-Inga Hilsen on Active Age) and research students (Nazir Walji on Leadership and Carol Baily on Reverse Intergenerational Learning) at CWLR. Richard Ennals also contributed reflections on 'Disintegrated Innovation'.

1.5 Agder Research partners

For the last ten years, Agder has tried to develop an innovation and work life research milieu. In 2003 we formed the Centre for Innovation and Work Life as a co-operation between Agder Research and Agder University College. In 2007, the College became Agder University, and we established a Department for Work Life and Innovation. The present group of researchers comes from three main traditions: the work life tradition based on the Nordic model and focusing on the organisational aspects of work processes and networks; secondly the tradition from economic geography with a more systems perspective on innovation (innovation system, Triple Helix, Learning regions, etc); and finally a political science perspective focusing on regional governance, participation and democracy.

The four papers from Agder, including the one from Tromsø, all discuss the roles of institutions and actors in the innovation process. All of them have regional innovation concepts as a reference point. The papers could be seen as an attempt to give content, meaning and critical inputs to these concepts. The VRI-Agder paper discusses the regional actors' role in developing consensus around that VRI programme, based on experience from earlier programmes, including conflicts. The paper indicates that there has been a learning process. James Karlsen's paper outlines the difficulties related to the regional role of the university. He develops a conceptual framework for discussing the problems, challenges and dilemmas of organising a 'mode 2' university. Lene Foss and Mette Solnordal's paper from Tromsø could be seen as an example of 'academic capitalism'. It is an extremely insightful account of actors, institutions and players in setting up a company based on research knowledge from the university. Hans Christian Garmann Johnsen's paper tries to give an overview of regional innovation concepts, and relate them to the emerging knowledge economy. It indicates some topics for further research, related to the meeting between a disintegrated, competitive environment that is significant for the knowledge economy, and the Nordic Model of co-operation and participation.

1.6 A brief overview of contributors

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1.7 Issues raised in the different sections – a brief overview

This publication is divided into five sections. Sections 1 and 5 are the introduction and some concluding reflections. The three main sections include the different contributions. An attempt is made to group these contributions into some section headlines. There is a risk that this way of grouping is neither informative nor gives justice to the different contributions. Still the effort is made, and the reader left to judge whether this was informative and justifiable according to the different contributions grouped.

In Section 2, *Integrated innovation – an elaboration*, there are four contributions. These are placed in Section 2 since the main issues raised concern an elaboration of what the term integrated innovation covers. In the section, reflections and discussion are made based on

both theoretical perspectives as well as case material to give illustrations. Policy and contexts are presented and analysed. A tutorial contribution frames the discussion.

Case material, analyses and theoretical perspectives linked to research at IRIS, are introduced first in this publication, in Section 2. This can be viewed as rather impolite, regarding the fact that we have prominent colleges and contributions which might suggest a different order of presentation. On the other hand, the fact remains that the project of integrated innovation is the foundation for this publication, and frames the initiative in many ways. The project's main objectives were to synthesise experiences on innovation at IRIS, and then make comparisons and analyses within a wider context. We have taken this last point further, and tried to put all contributions on an equal footing. On the other hand, research at IRIS is presented first in order to make a thorough introduction of the project, and place the research on integrated innovation as a core issue to consider.

The theoretical perspectives and analyses presented in the first contribution in Section 2 have been critically and thoroughly reviewed by Peter Totterdill. Through his critical comments and suggested revisions he has encourage a most welcome and fruitful debate on the core issues on which this publication is based. Other contributions add to his efforts, such as the discussion of disintegrated innovation by Richard Ennals.

A critical discussion on integrated innovation (IV.1 *Disintegrated Innovation* by Richard Ennals page 325) is placed in Section 4, but could as well have been placed in Section 2. The major reason behind the choice of grouping is in this case based on the fact that it does place significant emphasis on specific features regarding innovation, which is characteristic of the knowledge economy. It fits with critical reflections on the concept of the knowledge economy and innovation, located in the same section (see IV.3 *Innovation in regions of disintegrated knowledge intensive firms – some reflections and assumptions* by Hans Chr. Garmann Johnsen page 355).

In Section 3, *Innovation, work place, networks and coalitions* there are seven contributions. Experiences from collaborative arrangements such as partnership and coalitions are offered. Several contributions focusing on workplace innovations both in the private and public sectors are presented. Contexts of integrated innovation are given through investigation. Reflections on organisational theory, leadership and action research end this section.

Section 4 *Integration in the knowledge economy* has five contributions. A critical reflection on integrated innovation (disintegrated innovation) is made, where emphasis is placed on

features regarding the knowledge economy (see above). Bridging the knowledge gap between generations is discussed and illustrated in another contribution. Critical reflections on innovation and the knowledge economy link another contribution to the first one in this section. Finally two contributions focus on the role of the university in a knowledge economy, and present some critical reflections regarding the role of policy makers and university practices.

Section 5 gives some concluding critical remarks on some issues raised and reflections made throughout the whole publication.

II Integrated innovation – an elaboration

In this section there are three contributions. Each focuses on different issues in order to illuminate the key issues of integrated innovation.

Part II.1 *Concepts and Contexts of Integrated Innovation* by Tor Claussen and Trond Haga, is a core chapter in the current publication. It is a core chapter in the sense that the main objective is to illuminate what has been conceptualised as integrated innovation in the strategic project at IRIS, which has framed the basic conditions from which this publication emerges. Theoretical discussions are supported intensively by empirical based case studies, in order to conceptualise integrated innovation, closely linked to practice. Action research has been the basic approach in the empirical cases. Challenges and outcomes of this approach are discussed thoroughly. The concept of innovation is given a thorough and critical consideration, reflected according to theoretical debates and experiences from practice. Challenges facing the integration of interests, skills and knowledge are illuminated by practical examples from cases. Collaborative structures (employee/employer relations, networks, coalitions), integrating and supporting change and innovation processes are presented and reflected upon. Reflections are linked to theoretical and practical experiences presented from regions that have been important in debates on industrial districts, flexible specialisation, network and coalitions.

The chapter focuses on how system theory can add important features and insights into ways of handling the so-called innovation dilemma. Dialogue based approaches have been emphasised in most of the action research conducted in the cases presented. A reflection on how system theory can contribute, in order to make change and innovation continuous and lasting processes in enterprise and regional development, is given special attention. System theory has additionally been utilised in order to reflect critically upon ways that collaborative arrangements (social partners, networks, coalitions) can operate and be arranged. Perspectives based on contributions from Luhmann and Habermas are given specific emphasis.

Throughout the current publication, several contributions add to the reflection on the core issues in this chapter.

Part II.2 *Tutorial Paper on Working Life Research and Action Research* by Richard Ennals presents an overview of contributions and the overall framework, linked to the work life context in which this publication is embedded. Several additional actors, not represented as

direct contributions in this publication, are introduced. Key topics in work life research are presented, as well as some major actors in this field of research. Bibliographic accounts are given of important contributions to the field of research, which is closely linked to integrated innovation as discussed in this publication.

Part II.3 *Workplace Innovation, Regions and Public Policy Innovations* by Peter Totterdill argues for new policy inventions to close the current policy gap, which arises in complying with current challenges facing regional and work place innovation in a global context. Utilising the potential for active regions, as something other than passive respondents to global forces, requires new approaches. New ways of modelling regional activity, new strategies and approaches to public policy interventions, integrated strategy on the urban and regional level, change in the workplace, and learning of the individual, are examples of the requirements to unlock potential for active regions. Special attention is drawn to the importance of workplace innovation. Workplace innovation is presented as the product of complex processes of learning, grounded interactions with firms, networks, public policy, vocational training, industrial relations and the financial system.

Work organisation design is argued to have a considerable impact on:

- Job-related illness.
- Consequences of an ageing workforce.
- Non-vocational competences.

Limits of a ‘high road’ to organisational innovation in Europe are listed as follows:

- low level of awareness of innovative practices
- poor access to evidence-based methods and resources
- lack of knowledge-based business services
- failure of vocational education and training

Policy gaps are then summarised:

- few spaces to compare and consolidate knowledge
- few spaces to share experiences and identify common needs
- lack of knowledge about work organisation
- weak integration of research and practice

By raising these issues, this contribution underpins issues and reflections made in the previous chapters, regarding the context of integrated innovation. This contribution specifically

pinpoints policy requirements, and makes a critical reflection on much of the prevailing state of affairs.

Part II.4 *Globalization and integrated innovation* by Tor Claussen is a chapter sketching the global context in which activities, empirical material and theoretical discussions are embedded. The term globalisation is given a critical reflection. Globalisation is discussed in order to highlight possible significant features regarding the ways that the overall development of societies, noteworthy aspects of work life, innovation and other processes are taking place within the Nordic countries. The question is investigated whether there is something signifying the Nordic countries that could count as a Nordic model.

II.1. Concepts and Contexts of Integrated Innovation *by Tor Claussen and Trond Haga*

2.8 Entering integrated innovation

Point of departure

In the introduction to the proposal for a project on integrated innovation, several questions were raised. These questions pointed to issues more or less tacitly touched upon during many years of research into the field of business development and innovation, financed by the Norwegian Research Council, in collaboration with the major social partners. Most of this research was conducted in the two national research programmes (ED 2000 and VC 2010)².

As a starting point, some of the introductory questions in the proposal will be restated:

“Why is it so hard for enterprises to create new opportunities? Why is there a lack of variations of possibilities to select from in their business environment (FOREN 2001, Nyholm and Langkilde 2003, Andersson, Kind and Longan-Andersen 2004)? Why is it so cumbersome for many to exploit the potential for creating new possibilities through (a) collaboration with R&D, (b) other enterprises in networks, (c) joint ventures and (d) clusters? How can these obstacles be overcome to increase innovation in industry?”

As our project ‘Integrated Innovation’ has evolved, several experiences have emerged as we have progressed. Specifically, our Nordic and other international partners and colleagues have contributed. One of the outcomes of the collaboration and contacts on the Nordic and international arenas is incorporated into the current anthology. The present text constitutes a collaborative piece of work, with some of our most important international and national partners identified in the introduction.

It is recognised by our partners that a great deal may be learned from differences. Cross-regional and cross-country experiences have been gathered through our intensive collaboration with selected partners. They have supplied experiences from national, Nordic, UK and other international contexts, both on a national and regional level. Experiences from

2 Both of these programmes have been presented in the introduction to this anthology.

enterprises, both single and members of collaborative structures, have been supplied. Some experiences have also reached us from collaborative partners in the US.

Reflections upon issues in a Nordic and international context have created a greater acknowledgement of specific features regarding the innovation activities in which research on different levels of regional innovation systems have been embedded. A critical reflection on the so-called Nordic model is an important example in this respect. The significance of this model for innovation and development has gained renewed interest, as the international and European community recently have paid increasing attention to the, so-called, successes of the Nordic countries (Gustavsen 2007). These successes involve both the development of the welfare state, and the economic achievements regarding innovation, employment, competence building, as well many other important indicators (see European Commission (2007a and b).

There should be a word of caution applying the very notion of a Nordic 'model'. First of all, there are obvious criticisms about applying a single formulation supposedly embracing all the Nordic countries. A danger emerges that it will mask a highly diverse range of practices on the ground (Schiller *et al* 1993, Kettunen and Rissanen 1995). Rather than talking about one single model for such diverse practices, claims have been made that the practices among the Nordic countries are far too great for the proposal to apply a single formulation on this diversity. On the other hand, in a global context, certain similarities (social democracy, tripartite collaboration, strong unions, highly unionised, etc) make it fruitful to apply the notion of a Nordic model, despite this diversity between the practices of these countries (see Flemming 1998).

Second, European policy makers have, in recent years, been highly resistant to the idea of a blueprint capable of being exported to all of the EU27 Member States. Arguably the relative failure of the European Commission's 1997 Green Paper *Partnership for a New Organisation of Work* brought this into relief. The danger exists of applying this model in Europe, as it does not take into account sufficiently the culture and traditions of southern and central Europe. Lessons from the Green Paper's demise have not been lost on those in Brussels. This is not to undermine the significance of Nordic experience and success: rather it is important to present this body of experience as a resource open to critical interrogation and comparison by actors elsewhere in the neighbourhood of Europe. The aim of this paper is to contribute to the continuing creation of such a resource, with a strong emphasis on the processes used to establish open-ended dialogue between diverse actors, rather than on the promotion of specific outcomes.

The Nordic model has been a major frame of reference in ED 2000 and VC 2010. One way this made itself evident was through the strong linkages with the social partners at enterprise level, in networking activities, regionally/locally, as well as nationally and internationally. Specifically at the Nordic level, linkages to social partners were developed, based on the activities conducted primarily in ED 2000. In the project on integrated innovation the Nordic model frames many of the contributions made in different contexts of the project. Here the frame of reference will basically be to consider and critically review aspects of the Nordic model that have significance for a conceptualisation of integrated innovation (see more in depth discussion of this topic in subsequent chapters).

Action research (AR) and Integrated Innovation

A critical conceptualisation of the term ‘integrated innovation’ is a major ambition in this contribution. The objectives of critical conceptualisations are to carve out some new possible ways of dealing with innovation and development in future research activities. This is specifically the case regarding innovation and development activities, where an action research approach (AR) is in some way involved (Levin and Greenwood 1998 and 2007).

AR, as a research approach, is itself based on a number of presuppositions that it is important to reflect critically upon, specifically when this approach is conducted in innovation activities. The project ‘Integrated Innovation’ has emphasised the utilisation and engagement of research(ers) through an AR based approach.

For a number of reasons it is important to carry out critical reflections on AR practices. An AR approach based on dialogue aims at creating change processes through close collaboration with the field. Co-generative models are regarded as a way of creating actionable knowledge in order to make change and innovation happen (Levin and Greenwood 2007). Conducting AR emphasises specific techniques, work forms and research strategies in order to create actionable knowledge. Encouraging change/innovation based on this specific knowledge is regarded as an important outcome.

Conceptualising and conducting AR is not necessarily a straightforward methodological approach. In innovative change processes, there are some additional important issues involved. One example of an issue to consider is the paradoxical requirements involved in conducting AR in innovation activities. Close collaboration with the field is an important element in AR. On the other hand too close collaboration with the field could face the danger

of producing applicable solutions regarded as fulfilling interests of participants in short term perspectives with few significant innovative features. The customer gets from the research what they ordered. There could be little difference between involving a consultant or a researcher.

This touches upon the issue of what the presence of an AR-researcher brings to the field:

- Knowledge about change processes
- Knowledge about industrial concepts
- Knowledge about work organisations
- Knowledge about dialogue based development concepts (bottom-up and top-down)
- Competences on how to create knowledge through industry-research collaboration (see Case 10 below for an example).

However, through a too close collaboration with the field, research runs the risk of producing commissioned work. Few, if any, creative and innovative solutions would be produced.

In order to be creative, a critical distance from the field is an important requirement. The risk is then to produce something disconnected from the needs of the business environment and the interests of the participants in the field.

A possible contradiction seems to be involved here. On the one hand, actionable knowledge for the business environment should be the outcome. At the same time, keeping a critical distance in order to be creative and innovative is required. Close participation and involvement in the field are required, in order to produce tangible solutions for the customer. To be innovative and creative requires, on the other hand, a more distant outsider perspective. Both closeness and distance is required at the same time. Innovative research based on an AR approach could here face an important paradox. In 'Integrated Innovation' this has been one of the topics to consider, and is dealt with mainly on the basis of the experiences from ED 2000 and VC 2010.

The paradox of closeness and distance conducting AR is important in several occasions. It makes itself apparent in the *orchestration* of enterprise and network activities. The orchestration of enterprise and network activities has taken place by utilizing an AR approach in Hardanger. This is illustrated in Case 1 below. In Case 1 the local context of many of the cases presented in the current publication is described at some length, to give an account of the empirical background for the cases that follow.

Case 1. **Orchestration of network activities utilising action research (AR) in a local context**

Orchestrating Integrated Innovation

The local context

Hardanger is a small region located in Hordaland County on the west coast of Norway. The region encircles the Hardanger fjord. The business structure is dominated by agriculture, especially fruit farming. Additionally there are communities where manufacturing industry are core enterprises providing jobs for local habitants. One of the locations for core enterprises is a small town called Odda. In this case, as well as in other cases in the present publication, focus will be on the core enterprises, their local suppliers and efforts to construct network collaboration in Odda, as well as with other enterprises located in the region along the Hardanger fjord.

In Hardanger, there were hardly any traditions for close formal collaboration between enterprises. Additionally, the geography made communication between the communities difficult. Road systems are not advanced. Many communities are in some ways dependent on ferries.

Odda is a small town with around 7,000 inhabitants. In the town, there are two major process industry enterprises: Boliden Odda, a zinc and aluminium fluoride producer and Tinfos Titan & Iron, a titanium oxide and iron producer. These two enterprises have about 600 employees. Until recently, three process industry enterprises existed, but one of them, Odda Smelteverk, a carbide producer, was recently closed down. In addition to these large enterprises, there are several suppliers in the town that basically serve the two main contractors.

The major process industry was located in Odda as a result of easy and nearby access to hydro-electrical power. Around the turn of the last century, Odda was, within a couple of decades, transformed from a small place where people lived of farming and tourism, to a significant location for industrial activity, both locally/regionally as well as nationally. Transport of energy out of the region was previously not possible. Instead of transferring electric energy to more heavy populated areas in order to construct new enterprises, entrepreneurs moved people to where the energy was. New enterprises were built along with entirely new communities based on the hydro power from the waterfalls. This development took place all along the major coastline of Norway.

At that time when the new communities were constructed, the road system in Norway was not developed to transport goods and people. Due to the location, most of the transport of people and goods had to go by ship. Communication was slow and enterprises could not rely on supplies from outside. The organisations that were built up provided all kinds of needs for the enterprise locally. Enterprises located in Odda were, more or less, self-supporting. It became a noteworthy aspect of the local business culture to be self-supporting.

The new communities were built by construction workers who travelled from site to site along the fjords on the west coast. In this culture, class consciousness was strong. This culture was transferred to the workers in the enterprises. The workers in the enterprises unionized and became important actors in the trade union movement.

The communities where the enterprises were located became strongholds for left-wing political parties. In this setting, the positions of union leaders in the different enterprises in these communities became important power positions, both within the enterprise and in the local community. The unions have maintained these strong positions.

The community of Odda was located a long distance from national and international markets. Citizens in the community have a lot in common. They face challenges together. Odda was a centre of industrial activity surrounded by agricultural activity. Industry was operated on a 24-hour basis. Operations were organised in three eight-hour shifts. The non-industrial activities in the Hardanger region were on the other hand based on the needs of the agricultural production. This divided the region into two opposing cultures: industrial and agricultural. The citizens of Odda were proud to be a part of the industrial culture, and the 'struggle' to be accepted by their surroundings glued them into a strong unit. This has created an attitude for survival of the industrial community. There are several examples of how this attitude has made itself present³.

In such a community, informal networks are obviously operating. They are operative as soon as there are certain tasks to be solved. These informal networks could potentially be the source of several formal networks, such as between the industrial enterprises in the community. When the researchers entered the scene through the VC 2010 initiative, there were no such formal networks established, but the potential was identified by researchers. This local potential for more explicit and strategic network collaborative activities had in some way to be 'unlocked' (Totterdill 1999). Collaborating with research showed itself essential in order to 'unlock' this potential and stimulate improvement and innovation activities to make the locality (and region) become more competitive towards new challenges in the global context.

The Hardanger region has experienced a decline in both the general population and the number employed by manufacturing enterprises over the last couple of decades. The region has struggled to replace the lost jobs in industry. The main contractors have rationalized their operations over a long period of time, and the number of employees has decreased.

Parallel to this development, there has been another noticeable trend. The process industry enterprises that were previously self-supporting have outsourced several services to local suppliers. The dependency on the outsourced enterprises has not provided a closer relationship between the "mother enterprise" and the suppliers. The tradition of being mainly occupied with the internal situation and being self-supporting is still kept alive despite new developments. When new owners from Sweden and Finland became key actors in the local business environment, they made explicit remarks on the evident lack of network collaboration in the local business environment.

³ In 1983 the conservative government decided to close down the aluminium production. The whole community stood behind the demand for continued operation, led by the local union. Although the community lost this first battle, their continuous fight ended in a decision made by the national government that new enterprise, an ilmenite smelter, was to be located on the same spot as the aluminium producer. A similar mobilization of the community happened when the construction of a hydro power plant was finished. The enterprise then had a considerable power reserve that the owners wanted to transfer out of the local community. The unions and the municipality opposed the transfer of power externally and the owners decided to abandon the plan.

In this context research was engaged in order to elaborate and ‘orchestrate’ more developed network activities. The ideas were brought to this local community by action researchers together with previously collaborating networks in ED 2000. The Hardanger/Odda initiative became a key activity in VC 2010.

Orchestration in practice

One of the first activities initiated by research in order to promote network collaboration was to train internal personnel from participating enterprises. The purpose of this training was to build competence in order to prepare for and initiate development processes and projects. Additionally, belonging to different enterprises, the trained personnel represented resources that could be utilised to initiate and accomplish projects involving more than one enterprise. Such projects had the potential of being more innovative than the more restrictive development projects initiated internally, simply by involving more diversity.

Even more important, the personnel were trained to involve the employees in development and innovative processes. Thus, an important intention was to encourage employees to improve and innovate, and in this way make the enterprises more innovative.

Two aspects of this training were important. On the one hand training was directed to equip personnel with competence, tools and structures to encourage *internal* change processes in each enterprise. They were to become ‘Internal facilitators’ (LDO’s see Case 3) in their internal organisations. On the other hand, they were to contribute and utilise external collaborative possibilities, made possible through the evolvement of a network structure between participating enterprises.

The network was initiated and developed through dialogue (Gustavsen 1999, Ennals and Gustavsen 1999). Collaboration between labour market parties was fundamental. A steering committee, consisting of representatives from unions and management in the networking enterprises, together with representatives from the public support system and researchers, were the main initiators. Additionally the training programme was also implemented on the initiative of this steering committee, based on suggestions from researchers. Research performed in the former ED 2000 programme called attention to the importance of specific training as a prerequisite for development and innovation activities both internally and between enterprises.

Training and networking were two major aspects to be utilised in conducting or orchestrating the process of change and innovation in the local business environment in Odda. As the case is intended to reveal, orchestration is about utilizing certain elements to achieve the major aim of making networking enterprises more innovative. The activities were based on dialogues between the labour market parties, management, employees and external resources. In addition to training, networking, collaboration/ leadership and dialogue between the stakeholders mentioned, there are several additional elements to be conducted and orchestrated.

A list of the most important identified in VC 2010 (Haga 2007) is listed below:

- *Training programmes.* Common practices and common language regarding improvement and innovation was encouraged through training programmes. They were aimed at fulfilling these objectives of communality.
- *Processing tools.* Develop common tools to be utilised in improvement and innovation activities. The ‘Arrow’ is one example in this respect (see Case 2).

Processing tools can encourage integration of practices and communication in order to evolve common platforms for the discussion and decision upon improvement and innovation activities. Differences of interests, status and power hampering collaboration could be overcome or moderated through the development of common ground for participation and decision making.

- *Leadership.* Essential roles are played by representatives from management and union, both locally, regionally and nationally.
- *Network management.* Important in network management is the mobilising of internal resources in each enterprise as well as external funding resources and regional actions.
- *Network infrastructure.* Important in the network infrastructure are the implantation of appropriate network arenas. In each enterprise an internal development organisation can be a key linkage between each single enterprise and the network. Joint improvement and innovation projects are important collaborative activities between the enterprises in the network. A number of sub-networks can fulfil specific needs of collaboration. These sub-networks could be between personnel trained to implement improvement and innovation processes in each network. Sub-networks could be build around certain issues such as health, safety and environment (HSE).

These five elements; training programmes, processing tools, leadership, network management and network infrastructure are the basic elements in a dynamic networking model as an orchestration activity developed by Trond Haga (see Haga 2007). This model will be more thoroughly discussed below.

The model of orchestration in VC2010 was developed through AR research focused on network building activity, in a regional context where the participating enterprises did not necessarily have any pre-existing business relationship with each other. Some specific features, enablers, were essential for the creation of networking processes. The utilization of specific features/enablers and the interplay between them were identified as crucial.

A dynamic networking model as an orchestration activity is illustrated below in Figure 3.



Figure 3: A dynamic networking model for orchestration (Haga 2007)

A wheel has been adopted to illustrate the model and the interconnectedness of the different elements listed in Case 1. It symbolizes the five identified elements or enablers that have been present in the *dynamic networking processes* in the example illustrated in Case 1. Modelling this dynamic network orchestration as a gear wheel indicates that the different main enablers (blue wheels) are interlinked. There are certain wheels (green) that are arrangements and feature specific to the different enablers, like the internal development organisation, sub-networks, tools, building common practice, etc. These more specific arrangements and features have been presented in Case 1. Orchestrating all these features and enablers indicates that it is possible to shape dynamic networking processes based on strategic decisions. Haga (2007) has argued that this indicates that networks can be shaped for true systematic actions. They are thus not only ‘happenings’ or part of the functioning of the market.

Presenting the orchestration of dynamic networking processes as a gear wheel risks the impression that this is a mechanical process. In classical social science, Durkheim’s concept of mechanic and organic solidarity has been accused of been mechanical, and natural science inspired unfit as concepts of social processes (Durkheim 1964/1893, Durkheim 1972/1912, Durkheim and Mauss 1970/1903, Barth 1959). Barth utilised game theory (Neumann and Morgenstern 1953) in order to emphasis the dynamics of social relations in pre-industrial societies. This was done in order to direct attention to the mechanical static perspectives in Durkheim’s sociological theory. Barth’s application of game theory could on the other hand be criticised for projecting individual strategic behaviour patterns into a pre-industrial society

where it did not historically belong. Additionally, his whole individual choice perspective could be said to presuppose Durkheim's conceptualisation of specific historical social structures necessary in order to guide the main conditions for human action. This discussion will not be taken any further in this context. We just intended to indicate that we are touching upon basic social science issues that are important to keep in mind.

In this context we direct attention to, and acknowledge, the possible problematic aspect of the model. Using the model in this context though, tries to direct attention to the interconnectedness of different enablers and features present in dynamic network processes. As an illustration characterising the dynamic and interconnectedness of shaping networking processes, we still think the model has its advantages.

By reflecting on networking processes, the researchers have been able to develop knowledge on how to facilitate processes of dialogue and strategic decision, in order to initiate and collaborate through industrial networks, as Case 1 and the model above indicates. This knowledge is based on practical as well as theoretical and comparative experiences.

Researchers have transferred knowledge behind the model above as important issues to consider, when initiating, shaping and collaborating in industrial network activities.

Considerable knowledge has been created through joint reflections between the practitioners and the researchers. These practices have enhanced the competence of researchers' ability to handle the paradoxes of AR addressed above. No final conclusions have been reached, but certain ways of dealing with the paradoxes have been accomplished. The ambition in the presentation of Case 1 has been to illustrate ways of dealing with these paradoxes. We will consider more closely the dilemma of closeness and distance, doing action research utilising the presentation of Case 1 and the dynamic networking model above.

In Case 1, the local community was presented with the opportunity of collaborating with a research institute, in order to enhance the competitive advantages of the business environment in the local community facing global competitiveness. Experience with research was previously hardly present among the different actors in the community. Faced with external global competitiveness, new ownership structures, and changing customer/supplier relations creates insecurity and suspicion towards the implications of change. Presented with new and unknown actors was not necessarily encouraging. In addition, these new actors executed roles, performances and ways of communicating that were experienced as somewhat strange and new to the local community. This could be a source of distance, scepticism and conflict between action researchers and the field. Specifically in Case 4 we will illustrate this point.

Researchers have several options to overcome such initial obstacles facing the field. For action researchers, practice and acting together with the field is regarded as one important way of handling and overcoming these obstacles. The dynamic network model and its enablers (see Case 1 and Figure 3 above) are constructed precisely with the intention to support ways of handling these obstacles. First and foremost, guides to specific bridging practices and tools are essential in the dynamic network model and its enablers, supervising ways of facilitating improvement and innovation processes. Closeness to the field is one intended outcome regarding the collaborative aspects.

For research, ways of creating closeness to the field was important initially. Confidence was built by presenting former collaborative activities with a network assumed to be operating successfully, in promoting competitive advantages for its members (see Cases 1 and 12). Researchers also approached the local business community with the dynamic networking model and its different elements/enablers. Training presented research with a first hand contact, and linkage to the enterprises and some key personnel. Collaborating directly in managing specific improvement and innovation projects, regarded as essential to the participant, is another example of ways of reaching closeness to the field. These are examples of how research was able to bridge the gap between research and the local actors in the community. Among the local actors in the community, the union was specifically important in this respect. By establishing closeness to union representatives, legitimacy towards employees was created. This was an essential aspect of the process of building trust. Building trust among employees was also strengthened through specific contract agreements regarding basic principles for change activities. Both the importance of the role of union and contract agreements regarding change are illustrated in Case 8. In these instances the action researcher played a significant role in order to fulfil these requirements. This enhanced the closeness between research and the field characterising the utilisation of action research.

The researcher developed, made choices and decisions on every step in the dynamic network model, which itself was developed in close collaboration with the field. This is different from consultancy assistance in change processes, where more ready made solutions are presented. Close collaboration with all interests, involving and encouraging the balance of interests through agreements and contracts between the main partners involved, was also a way of promoting the researchers' more neutral role in approaching the field, compared to consultancy work. In consultancy work, the dependency on the contractor is often more apparent.

In Case 1 both union representative and management were joint partners facing the research initiative. Major financing was supplied by external resources. In this way the independence of the research was underlined. Closeness to the field was balanced toward distance by securing independence through financing. In addition, the role of research in action research contains an obligation to act neutrally toward specific interests, in order not to produce commissioned work. This is an important aspect of conducting action *research*. Financing and linkages to external resources was part of the enabling role of research in the dynamic network model (see Case 1 and Figure 3 above).

We used traditional industry as points of departure, because these were the dominant actors of the local community where strategic change processes were chosen as points of reference in VC 2010. However, these issues can have wider general interest for many business areas, public as well as private. Even if we use cases from traditional industry, integrated innovation, as outlined in this publication, may be valuable as a source of learning and inspiration for actors working in other business areas. To what extent this is the case, has to be investigated by further research, but the problems of adaptation should not be understated. Context can in many respects be regarded as the starting point for sustainable innovation.

Several dilemmas facing innovation and creativity have been considered in integrated innovation. These dilemmas of innovation and creativity are closely linked to paradoxes conducting action research. The so-called *innovation dilemma* exemplifies a paradox facing most research emphasising change and innovation.

Creating variation; a dilemma between guidance and spontaneity

Activities characterised as innovative and creative are supposed to have something new, unforeseen and spontaneous about them. They are not supposed to be easily predictable. Planning for innovation and creativity seems to be a contradiction in terms, since newness and surprise is not something which happens according to a foreseen plan. Bureaucracy, control and prediction are viewed as contrary to innovative and creative ways of acting in social life and business environments (Holbek 1988).

Innovation and creativity could be counterproductive, wasting resources on accidental and incidental happenings. Creating highly irrelevant, random and accidental outcomes becomes a risk. A certain plan, linkage and some careful strategic considerations are preconditions when creative efforts and innovations are to fulfil specific and productive goals. In business life,

creating enhanced competitive advantages is a specific goal. We will argue that fulfilment of such goals requires organisation, leadership and participation. In order to manage change and innovation as goal directed activity, different from merely arbitrary and random happenings, some sort of structured process is required. In other words, activities of innovation and creativity require goal directing structures, in order to accomplish something more solid than merely irrelevant, random and incidental happenings.

Here the classical *innovation dilemma* emerges. Creating something new, innovative and creative seems to require structure, organisation and leadership in order to produce possibilities to make *strategic selections* between alternatives. On the other hand, this is exactly what, from another point of view, could be considered as bureaucratic structures of control and prediction, hampering the capabilities for innovation and creativity.

One approach to the innovation dilemma could be to separate different phases of innovation processes. The starting points for innovation processes have often been characterised by uncertainty and instability. On the other hand implementation of outcomes has been considered to require more stability, predictability and control structures (Juran 1995/1964), in order to incorporate changes and innovations into the daily operations of the organisation. While unpredictability and uncertainty could be typical of the initial phase of an innovation process, predictability and planning could be characteristic of later phases when changes/innovations are incorporated. Later phases would thus require more specific organisational structures. Structured processes may generate few ideas and proposals, while more unstructured processes could generate more diversity, though with the risk of conflicts that hamper the incorporation of results (Haga and Claussen 2004). The requirement of variation and differentiation meets the necessity to integrate, co-ordinate, collaborate and incorporate.

Dilemmas and paradoxes, regarding AR, change and innovation, have to be managed in some way. This calls for extraordinary efforts and preconditions in addition to what is required in order to manage daily routines and operational challenges. Extraordinary efforts and preconditions needed to face the challenges outlined above have to be created through the development of skills and knowledge. In Case 2 we sketch how this was done in one of our project examples in VC 2010. Case 2 presents a training programme where a key element is ‘the Arrow’, a tool utilised in many occasions and projects, as will be seen in the case examples to follow.

Case 2. Training skills and knowledge facilitate change and innovation, 'the Arrow'

A training programme based on representative and broad participation became the starting point for change and networking processes through the VC 2010 programme in the Hardanger region. This was ensured by heavily involving the trade unions in the network collaboration. Based on the national general agreement between the labour market parties, which states that both parties not only have the opportunity to participate, but are obligated to participate in enterprise development activities, the unions were encouraged to become vital development actors within the network processes. The aim of the programme was to train internal facilitators. Internal facilitators were to be key personnel in their own organisations regarding development activities. The training programme was a vital feature of building a culture for change in the participating enterprises, as well as between the enterprises in their collaborative efforts.

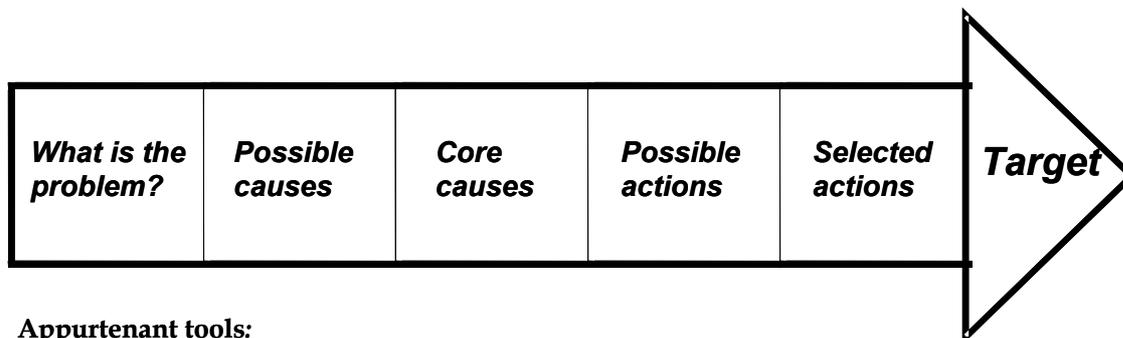
Development and change activities required a framework within the enterprises that would encourage learning among the staff members in the organisation. Learning was linked to the local setting; the plant, the machinery, the equipment, the work process, the organisation, the work methods etc. Learning was not first and foremost formalised training. Rather it was informal and not necessarily intended.

The Hardanger network was organised with a Project Administrator (who functioned as a network co-ordinator) and a steering committee (see Cases 1 and 12). The steering committee emphasised first of all training of personnel in participating enterprises. Personnel that were given training were called internal facilitators (see also LDO in Case 3). The main objectives of the training were to; (a) establish arenas where the staff could talk and discuss issues relevant to their challenges (b) train their fellow co-workers in development project methods and (c) facilitate the initiation of development projects. Staff from all the participating enterprises attended the courses in the training programme. This implied that key staff members in the different enterprises in the network attended the same training programme. The selection of staff to attend to these courses was crucial. The procedure used in most enterprises let the management and the union together choose participants. The main target of the selection was to pick motivated informal leaders. These informal leaders were to promote a positive attitude towards participation in development work to the rest of the workforce.

The training given to the internal facilitators chosen for the programme consisted of the following subjects:

- the concept of broad participation
- the concepts of incremental change and innovations
- approaches for identifying potential projects
- the concept of process innovations
- the customer concept
- the concept of quality costs
- different measurements approaches
- the toolbox – 'The Arrow'
- team and team processes
- teaching.
- The accomplishment of a real development project within their own enterprise

The toolbox, 'The Arrow' was the core of the training programme. Both the development methodology and the development language were connected to 'The Arrow'. The



Appurtenant tools:

1. <i>Matrix for selection of project</i>	6. <i>"Brain-storming"</i>	7. <i>Fishbone diagram "Be caused by"</i>	6. <i>Brain-storming"</i>	9. <i>Cost/benefit-analysis</i>	2. <i>Quality indicator</i>
2. <i>Quality indicators</i>	7. <i>Fishbone diagram</i>		8. <i>Matrix for selection of solution</i>	10. <i>Action-plan</i>	
3. <i>Data-collection</i>					
4. <i>Pareto-diagram</i>					
5. <i>Project- and Target description</i>					

important element in 'The Arrow' was the step by step organizing of development projects (see Figure 4 above).

Six steps are displayed in the illustration of the 'Arrow', Figure 4 above:

- identifying the problem
- identifying possible causes
- identifying the core causes
- identifying possible actions to solve the core causes
- identifying the most efficient actions to solve the core causes
- decide upon the targets.

Connected to each step in the process a set of tools were offered. 'The Arrow' itself contained six steps. It was emphasized in the training programme that the development actors themselves were to decide which steps of the 'Arrow' to be utilised in a specific development project. The Arrow was to be regarded as a flexible tool that could be utilised in different ways according to the specificity of the actual project.

As a major result of the training programme, facilitators shared the same language, the same methods and tools regarding development work. This common training prepared the ground; (a) for exchange of experiences from enterprise to enterprise and (b) for shaping of common development or innovation projects. The discussions which were launched through the work of the internal facilitators and the training of fellow co-workers were thought to be the key to open up dialogues within the organisations supporting informal learning. Results were also distributed through a couple of folders explaining the project (see illustration below, in Norwegian);

Gruppen, som andre forbedringsgrupper på Boliden Odda, må dokumentere hvilket potensialet som ligger i de investeringene som gruppa foreslår. Under er det vist de kost-nytte kalkulasjonene som gruppa sjøl utførte. Det er også gruppa sjøl som har laget dokumentasjonen for å kunne overbevise ledelsen om nytten av å gjennomføre prosjektet.

A. "Røde kroner"

Renneelementer ("coating")-kostnad á kr 1000 pr stk x 145 stk	154 435,-
Tidsløstnad - timepris murar á kr 372 x 169 timar pr år	62 991,-
Proktopped "up-time" - kost. overtid pr.år (8t x 3mån x kr.340)	8 160,-

225 586,-

B. Besparelser 50 % av kostnader renne K1 øst.
50 % av 225 586,-

112 793,-

C. "Blå kroner"

Syrefors bands 10 stk á kr. 1000,-	10 000,-
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Total besparelse det første året (B-C) kr 102 793,-

Gruppen, som andre forbedringsgrupper på Boliden Odda, må dokumentere hvilket potensialet som ligger i de investeringene som gruppa foreslår. Under er det vist de kost-nytte kalkulasjonene som gruppa sjøl utførte. Det er også gruppa sjøl som har laget dokumentasjonen for å kunne overbevise ledelsen om nytten av å gjennomføre prosjektet. are consil ciená, uterit.



På bildet: mmmmm



Prosjekt

"Reduksjon av kostnader til renneelementer"



This folder presenting the downspout element project accomplished at one of the smelters in the network, see Case 7 below for more details on the project.

In another folder (see below), collected from a small Mechanical workshop, other parts of the 'Arrow' are displayed. Here, at the left-hand side of the folder, the matrix for evaluating the efficiency of suggested solutions for the specific problem at hand is emphasised.

Odda Mekaniske Verksted AS

Odda Mekaniske Verksted A/S driver tradisjonelt innenfor mekanisk vedlikehold, maskinering og sveiste konstruksjoner.

Odda Mekaniske Verksted A/S (OMV) er en aktiv og innovativ bedrift. Bedriften har tatt initiativ til å utvikle en ny helautomatisk stoppestasjon i lag med VS 2010 bedriftene, Boliden Odda AS, Cronus Automasjon Vest samt Inter Hydraulik. I 2002 overtok bedriften 11 ansatte fra Odda Smelteverk

Prosjekt verktøyledning

Odda Mekaniske Verksted A/S ønsker å tilby sine kunder så gode og effektive tjenester som mulig.

Bedriften har over tid slitt med frustrasjon og dødt pga leiting etter verktøy og utstyr. Av den grunn ble det satt ned ei prosjektgruppe bestående av de forskjellige fagkategorier fra verkstedet for å vurdere hva som kunne gjøres med dette.



Hva ble gjort?

For å løse problemet ble det etablert ei bredt sammensatt prosjektgruppe. Bedriften har gjennom VS2010 Hardanger utdanna en internveileder som sammen med mekanikere fikk i oppgave å etablere ordninger som gjør at det ikke medgår unødvendig tid til leiting etter verktøy og utstyr.

For å løse oppgavene brukte gruppa verktøykassa som bedriftene har fått til disposisjon gjennom opplæringen av internveiledere (se egen folder).

Systematisk problemløsning



Tilhørende verktøy

1. Hva er problemet?	4. Brainstorming	7. Prioritering	8. "Stansnings" diagram	9. Kvalifiserte medarbeidere	10. Handlingsplan	11. Evaluering
2. Kvalifiserte medarbeidere	5. Problemløsningsdiagram	6. "Sonn stjerner" diagram	8. Møte for valg av løsning	9. Kvalifiserte medarbeidere	10. Handlingsplan	11. Evaluering

Først samla de inn dokumentasjon på hvor store kostnadene med verktøyledning var. Gruppa ble overrasket over hvor mye tid som gikk tapt og hvor dyrt dette var for bedriften.

Videre gjennomførte prosjektgruppa egne brainstorming'er for å finne årsakene til problemet. Kjerneårsakene ble identifisert og gruppa gikk videre i arbeidet med å finne mulige løsninger på problemet. For å velge rett løsning brukte gruppa verktøyet "matrise for valg av rett løsning" (se figur på neste side).

Beskrivelse av prosjektet

Verktøy-leiing	Ansvar	Personlig verktøy/budsjett	4 x 3 = 12
	Manglende rommer	Verktøybur/burmann	5 x 3 = 15
	Lite verktøy	Prosjektkasse	4 x 3 = 12
	Rot	Høyere moral	4 x 2 = 8
		Innkjøp av verktøy	5 x 1 = 5
	Kommunikasjon	Bonus: Orden og Renhøid	4 x 4 = 16
		1-11 ryddedag	2 x 2 = 4
		Åpenhet	x =
		Utvise "morrmatet"	x =

Som illustrasjonen over viser ble tre tiltak prioritert; (a) eget verktøybur m/burmann, (b) personlig verktøykasse (c) en bonus ordning for redusere innkjøp av nytt verktøy ved å ta bedre vare på eksisterende.

Løsningsforslagene ble presentert for bedriftsledelsen, som uttrykte at de var svært fornøyd med arbeidet som var gjort og var positive til forslagene. Videre ble løsningene presentert på et allmøte hvor alle kunne uttrykke sin mening.



Montering av slagvognen til Tinfos Titan & Iron

Folder presenting a project aimed to "Establish and keep track of vital mechanics equipment" accomplished at one of the mechanic workshops in the network.

One of the participating enterprises organised their internal work around groups of co-workers who were given the responsibility of the development activities within a certain area. This was organised in such a way that at least one third of the staff was engaged in the groups at any given time. With exchange of personnel in the groups, most of the staff had some kind of interaction with these groups within a relatively short period of time. Resources were tied to the responsible actors in order for the groups to decide on actions without consulting management. In each of these groups at least one of the participants was an internal supervisor. The design of the selection and the training of the facilitators encourage them to become the driving force in the groups. They gave legitimacy to an active attitude towards this new way of engage the employees in development work. It created a different, more concerned, attitude towards the future of the enterprise.

The organisational priority was to focus the staff's attention towards the situation on their own work place. It was also about giving the staff tools and opportunities to analyse problems and challenges at their work place, and to participate in finding solutions to the problems they were facing. In the end it was also about designing learning space for staff within the enterprise. It was not about a single development project. The focus was on transformation towards more continuous development and improvement.

These arrangements influenced the organisation. Staff started to talk and discuss issues that they felt were important to them. Either they themselves raised a question or issue, or they were challenged by some external actors. In this way the informal learning processes were initiated in order for the staff to seek new ways to organise operations, new ways to operate the machinery and to improve the production processes. The management tried in this way to change the culture in the enterprise. By allowing informal learning processes to happen, the attitude among the staff changed towards learning and development. Staff got increasingly involved in improving the operation of the enterprise and in the

development activities. On the other hand, it became a challenge for the management to manage a staff with a strong wish for participation and influence.

It is important to notice that the management at this enterprise were not the only driving force. The union who organised the workers encouraged development of more responsibility for staff in both (a) the operation of the enterprise and (b) in encouraging learning to happen at the work place. Without strong support from the union, this transformation would have been difficult, if possible at all. A joint understanding between management and union was challenging. With a strong will on both sides to find agreeable solutions, they were able to sort things out. This process of creating mutual trust was facilitated through the close working relationship with the research. The role of the action researcher in this respect was to play an active part, without supporting any specific interests of the involved actors; neither management/union nor the researcher's specific interests. Here researchers had the opportunity to play a different role from consultants, who normally have a specific 'solution', approach and product to promote. Action researchers can exercise a possible advantage by being self-critical and self-reflective in relation to their role and actions in the specific context that they participate in. By self-criticism and reflectiveness they can put effort into exercising participation without bias towards specific interests and power plays in the field of politics.

Within the main network, a sub-network for internal facilitators was created. The main goal for the sub-network was: (a) to open an arena for the facilitators where they could exchange experiences from their own practice within the different enterprises, (b) to open an arena for further training of the facilitators and (c) to open the option of arranging joint projects where two or more enterprises participated. In these joint projects the internal facilitators was the key person. Joint projects can function as a learning space for the participants in the projects. A development and learning process, that includes not only personnel from one enterprise, but includes participants from different enterprises, can imply use of multi-faceted approaches.

What kind of role does the action researcher play in this case, and in the creation of learning space within the network and enterprise context? When we call the approach 'indirect' it implicates that the action researcher does not head his attention first and foremost towards development projects within the enterprises. Much of the researcher's attention is directed against the preparation for the design of learning space: (a) first of all the training of internal facilitators, (b) the design of practical cases within the enterprise as a part of the training of facilitators, (c) the design of the development organisation within each enterprise and (d) the design of different networks consisting of internal facilitators, union representatives and management respectively. All these activities are focused towards the creation of learning space through; the production field, the field of politics and the social field (see Haga 2007).

First of all the action researcher designs the training and functions as a teaching supervisor through the accomplishment of the training of internal facilitators. As part of the training, the facilitators will have to prepare and accomplish a development project within their own organisation. This is not meant to be a dummy project, but a real one. In this way the facilitators will have to consider in what way the participants will be involved, and how this could be a part of a broader learning process for the participants. In these considerations the action researcher functions as an advisor for the facilitators. The training of facilitators is important, not only for the supply of a development specialist to the enterprises, but also to support the renewal of the culture within the enterprise.

There has to be social acceptance for the participants to become engaged in order to change the enterprise culture. The sub-network for internal facilitators was important in this respect, because it created space for the participants to discuss beyond enterprise boundaries.

Second, the action researcher was involved in considering how the internal supervisor could be utilised within each development organisation. This deals with how to create learning space within the organisation.

Third, the action researcher was involved in the operations of a sub-network for union representatives and management. Through these networks a lot of development issues were raised. These processes prepared the ground for compromises in the negotiations between management and the unions. Through compromises, the social partners became the driving force in a cultural renewal and opening of learning spaces for the staff in the enterprises. Here the basic facilitation for innovation was created. The role of action research in this respect was as a facilitator of negotiation processes, as a 'friendly outsider' (Greenwood and Levin 1998) and respectable participant in dialogues that downgraded specific self interests and manipulative attitudes which in many respects underlie social activities.

To be able to manage AR, change and innovation require accessible resources, as well as specific skills and knowledge. Additionally, available slack in daily operative activities is required in order to clear the ground for such activities. Limited slack could block possibilities to engage in tasks outside regular business operations. We have, through our projects, been able to identify some of the challenges facing busy enterprises with limited slack in their daily work. In Case 3 below we give an account of how these challenges affect change facilitators in their practice of making change projects work. These challenges would apply, to a greater or lesser degree, to all involved in change projects in the organisation.

Case 3. "The Lead Development Officer" (LDO) as change facilitator

This example focuses on a specific role as Lead Development Officer (LDO). The basic aim of this role is to achieve work place learning and innovation through development projects in single enterprises. Challenges and dilemmas facing this role will be given special attention.

The present case is a project which is part of the collection of projects managed by the Development Coalition of Hordaland and Rogaland (DCHR), already presented in the introduction. The project was started with enterprises from The Industrial Network of Sunnhordland (INS) as participants. This network consists of twenty industrial enterprises located in the Sunnhordland Region, the southernmost part of the Hordaland County. The network has also participated in the previous Enterprise Development 2000 programme (ED2000, see introduction). Six out of the twenty member enterprises in the network participated in this programme. The main objectives for the participating enterprises in ED2000 were to; (a) develop an improvement culture, (b) develop an improvement practise and (c) integrate organisational work environment issues in general enterprise development (Claussen 2001). In order to achieve these objectives, a strategy

was outlined comprising the following elements; (a) Total Quality Management integrated with Scandinavian work life and work environmental traditions (see Case 13), (b) Business Process Re-engineering, also adjusted to these Scandinavian traditions, (c) internal control (HSE) systems, (d) co-operation between the social partners and (d) broad participation.

In the ED2000 programme, one of the main activities was to train internal facilitators from all the participating enterprises in SIN. The content of the training carried through was very much similar to the training in INH within VC2010 (see Case 2), but with one main difference. The training in ED2000 had as its baseline a TQM concept. That was not the case with INH, which did not have any particular management concept as its baseline. Another difference was that within the ED2000 programme just one facilitator (LDO) from each of the participating enterprises received training. In INH several facilitators from each enterprise received training.

One major experience from the ED2000 programme was that when the researchers withdrew from the network, the LDO were not able to keep up the motivation to carry through necessary development projects. There was a vacuum for development activities within the enterprises. This became one of the points of departures for the VC2010 programme in SIN (Gandrud, Tønnessen and Haga 2004). Additionally, VC 2010 had a stronger emphasis on innovation. A third departure point was the local context for the enterprises in SIN. Many of these enterprises were dependent on new types of business operations. The activity in the offshore sector was rapidly declining, and it became urgent for the enterprises to develop new products and new markets.

The present case focused on efforts to equip SMEs with time and space to launch development and innovation projects. Giving time and space for improvement projects was regarded as one of the obstacles and reasons behind the lack of intended continuous improvement project activities within ED 2000. Participating enterprises had great difficulties in giving necessary development and innovation projects enough attention when ordinary operations went on in parallel. A dilemma between change/ improvement/ innovation activities and maintenance of daily operative activities presented itself as a major obstacle to the continuous improvement and change that was to be the outcome of the ED 2000 programme. This objective of the ED 2000 programme seemed to be blocked.

On the other hand, the pressure on the SMEs in the region to improve and innovate had increased in the late nineties, due to the fact that; (a) the peak of the activity of the offshore industry in Norway looked like it had been passed, (b) the competition from low cost countries had increased tremendously, and (c) the oil economy in the country accelerated the competitive situation for the enterprises. To stay competitive, the enterprises had to turn towards offering more complex products or services. The enterprises thus had a need for focusing on developing; (a) new products and services, (b) new organisational concepts and (c) new markets. The main target in the present case was to establish a new role in the participating enterprises in order to identify a specific person who could handle these challenges through internal change processes; the *Lead Development Officer* (LDO).

The employees filling this new role were meant to be responsible for; (i) on a regular basis accomplish analysis and evaluation of the situation the enterprises found themselves in and (ii) the start of, the completion of and the measuring of preferred development projects.

To fill this new role, the employees participating would need to have; (a) necessary experience from the business sector the enterprises are acting in, (b) competence and knowledge to manage and co-ordinate all the development activities within the enterprise and (c) manage the co-operation between the enterprise and external R&D resources (Gandrud, Haga and Tønnessen 2004). LDO's had to work in close co-operation with the manager of the enterprise, to be able to influence the strategic decisions taken by the management. This implied that the LDO's were meant to be responsible for the total development organisation in the enterprise. This great responsibility differed considerably from previous roles, as facilitators in the ED 2000 programme had more limited tasks, and obligations were aimed at supporting personnel in their involvement in more sporadic change activities.

To fill the role the LDO were to be *trained* to;

- master key methods and tools accommodated in different types of projects (for example, 'The Arrow' – a method for incremental change (see Case 2), 'Practical Process Innovation' – method for process improvement and innovation, 'From identity to communication' – method for accomplishing basic identity building and in and outward bound communication),
- manage development projects,
- manage the enterprise's development organisation
- manage the enterprise's communication and co-operation with external governmental agencies and R&D institutions

In order to acquire these skills, a sub-network of LDOs within the SIN network was created. One of the main obstacles for the enterprises was to give development activities necessary priority with sufficient time and resources. In this case as much as 50 per cent of the LDOs' time was intended to be spent at development activities. Although the project of creating the LDO role received considerable funding, the intended level of 50 per cent was not reached.

The action researchers engaged in the project were involved in different ways; (a) leading the training of LDOs in different methodologies, (b) preparing and accomplishing the exchange of experiences between the LDOs, (c) assisting the LDOs in their projects when needed and (d) writing minutes of meetings and reports.

After two years the operation and the results of the project were evaluated by IRIS. The main questions addressed were; (i) To what degree do the LDOs' support diffusion of competence, methods and working methods that can promote the enterprise's ability to innovate? (ii) How does the participation in the project influence innovative and incremental development projects in the enterprises? (iii) To what extent and in what way did new connections between the participating enterprises come into being? (iv) Do the LDOs function as the single point of contact towards higher education and R&D institutions, and have these contacts been elaborated during the programme? Additionally the whole role of the LDO as co-ordinator and facilitator was analysed, with specific attention to the dilemma between resources required for daily operations and the possible space to fulfil change and innovation activities.

Regarding whom the enterprises appoint as LDO, they chose somewhat differently than was intended at the start. The enterprises mainly chose three different models as to whom

they appointed for this role; (a) the general manager, (b) a management team collectively entering the role or (c) the general manager picked one person closely linked to him as the LDO. The choices taken by the companies seemed to influence how well the LDOs were functioning in the enterprises. In those enterprises where the general manager or a management team took the role of LDO, there was a strong tendency for having difficulties in launching new projects.

There was considerable variation between the enterprises as to what extent and in what way the new role was linked to the organisation. In some enterprises the employees were fully informed about the new role. Other enterprises hardly communicated anything about the new role to the rest of the organisation. Not surprisingly, those enterprises that followed the recommendations regarding who should hold the position of LDO, were also those informing the employees most extensively. The role of LDO has nowhere been an issue for negotiation between union and management. This could indicate that a kind of trust developed between union and management, based on previous experiences of collaboration, specifically from the ED 2000 programme.

The internal projects in the different participating enterprises were approved by the general manager. LDOs were project managers for the project. In some enterprises, the LDO reported the status of the projects to the managing team, while in other enterprises the LDO ran the projects parallel to what was going on in the rest of the enterprise. There are substantial differences in how the projects were drafted. The variations arose mainly due to how dependent the projects were on what was going on in the rest of the enterprise.

There were strong indications of a 'time squeeze' between operation and development tasks. This was so even after the enterprises had created a position of LDO, and despite the fact that the enterprises had received substantial funding from governmental agencies. The 'time squeeze' was well known from SMEs in both research programmes (VC 2010/ED 2000). Thus this was one of the challenges the project hoped to find a solution to, through additional funding of the position. The management had appointed key personnel to the position to achieve results, but the enterprises found it hard to keep up their daily operations without all of their key employees. Specifically, the LDO required knowledge and skills through their new position that further enhanced their key role in the organisation. Although the LDOs were supposed to have time and space to focus on development, the operational tasks forced them to change focus. External financial support was crucial for the enterprises' participation in the programme. On the other hand, increased skills and knowledge increased the importance of the LDO for daily operations. They experienced an increase in the dilemma between development/change and support of existing production tasks.

The LDOs experienced challenges regarding the linkage between innovation and change projects and the overall strategic considerations of development, improvement and operative tasks of the enterprise. Projects co-ordinated by the LDO were thereby not sufficiently linked and prioritised when strategic decisions were made. To create a 'culture for change' within the enterprise calls for a focus, not only on the individual project, but on overall strategic decisions. Additionally, the diffusion of development competence, methods and experience within the enterprise is required in order to make the culture of change and innovation something that is carried out by the whole organisation, not only individual LDOs and their closest associates.

Through the programme, the LDOs developed a more reflective relation towards their own role as LDO and the potential of the role. They gave critical reflection upon the

totality of the development activities within the SMEs, and the necessity of taking such a general overview of these activities. Such a general overview implies: the work of developing the enterprises' strategy, continuous improvement work and larger development and innovation projects. These features move the enterprises towards an internal culture that accepts change.

One consequence of the appliance of the LDO project was (a) that the enterprises acquired a lot of different innovative projects; product innovations, process innovations and market innovations. Another consequence was (b) that this diversity in the project portfolio required a variety of competence needs within the different enterprises. A third consequence was (c) that this broad project portfolio made the exchange of experiences more challenging. When an enterprise and an LDO focused their energy towards one specific project; could they have also the interest and capacity to discuss a lot of other projects and approaches? Would it be possible in such a context to learn from differences?

The way of organizing the programme, with the launching of very different innovation projects, did not encourage the exchange of experiences. Consequently, at an early stage in the programme, the information was only passed on to the participants in the form of courses. The participants used this information tool etc, in their own projects. There was at this stage less need for exchanges of experience. Later in the programme the situation turned upside down. The participants wished to share their experiences with the other LDOs and bring them into their own project. After they had gained experience from working as LDOs for a period of time, they felt a need for bringing these experiences into play in dialogue with the group of LDOs. The programme was designed to create a need from the LDOs to share experiences through dialogues when they had gained some experience as LDOs. As a consequence of these dialogues some inter-organisational relationships emerged.

In the same way as with the training programme in the Hardanger network, the network dimension was crucial for the LDO programme. As in Hardanger, the introduction of a common set of methods introduced a common development language within the participating enterprises. The introduction of an arena for sharing experiences about accomplishing development projects opened up new dialogues between the LDOs, which again formed closer relationships between the participating enterprises.

Accessible resources could be obtained through collaboration with outsiders (research, strategic customers/suppliers). On the other hand, collaboration with outsiders in order to seek new business opportunities could be blocked for a number of reasons;

- a) R&D institutes do not 'speak their language' (research faces business). An occasion where research faced the lack of communicative performance toward possible collaborators in a network initiating process is presented below, in Case 4.

Case 4. A challenging meeting

The Utne conference

During the process of shaping the Hardanger network, a conference was arranged for potential new members of the network collaboration at a small place called Utne along the Hardanger fjord. The purpose of the conference was to recruit more enterprises into the already launched Industrial Network of Hardanger (the INH network). Present at the conference were also representatives from management and unions in the already committed enterprises, as well as two potential new enterprises still uncertain whether to participate or not. Representatives from the regional public support system, the labour market parties at the national level and action researchers were present also. Among the enterprises that supported a network construction were representatives from the major process industrial enterprises located in Odda (see Case 1 and the Introduction).

The steering committee of the project aimed at launching a network collaboration in Odda (see Case 1) were eager to encourage new enterprises to participate. They were especially eager to recruit enterprises from across the entire Hardanger region, including enterprises located in several small places along the Hardanger fjord. The meeting at Utne was symbolic in that the conference was held in the middle of the Hardanger fjord, and thereby without preference for any specific location. In addition, the intention of becoming a regional network, attractive to enterprises from the entire region, was articulated. To become a regional network, a wide range of different enterprises geographically distributed along the Hardanger fjord had to be recruited. Expanding the network to the whole region would also give external credibility, not least to regional and national funding agencies that already had expressed these requests through the regional development coalition (DCHR, see Case 6 below).

An important aspect of this conference was to introduce the advantages of collaborating with researchers in networking activities. Confidence and trust in this external actor were lacking for these potential new members, as was the case when the network collaboration was initiated between the enterprises located in Odda (see Case 1). In order to attract new enterprises to join the network, the advantages of membership had to be demonstrated. Specifically, this goes for networks founded on collaboration between the labour market parties, the unions and management, as well as employees through direct participation. Collaboration between union and management on change activities was something new to the participating enterprises. Support for this collaboration by research, a strange external actor in itself, made this setting quite delicate for the participants. Introducing these ideas of collaboration between union/employees and management by such a strange actor in this delicate situation was quite a challenge for the researchers. This way of getting the information and message across was not a straightforward process of communication. Giving credibility to a network collaboration based on these fundamental participatory aspects was a whole new experience in itself.

The conference started with several presentations made mainly by researchers. Emphasis was given to the introduction of the foundations that the network collaboration was based upon. Specifically, the participatory aspect mentioned above was given extensive attention in the presentation. Presentations of outcomes of network participation were given in more general terms.

As the conference went on, unrest among the participants become audible and visible. Questions arose among researchers, regarding what this unrest was all about. Receiving

frank and direct feedback made reasons for the possible unrest apparent. The main cause of unrest was due to the fact that representatives from management and unions could not identify the benefits from networking that the researchers and network administration were eager to communicate. A number of subsequent speakers addressed the same issue; how could networking possibly benefit the enterprises?

The conference came close to disaster. Fortunately, a couple of presentations from those enterprises which had already participated in the training programme were on the agenda. The presentations by already participating enterprises turned from the general, of what was experienced as theoretical issues, towards more practical examples and cases. One of them was the downspout example, see Case 7. These examples demonstrated that enterprises investing small amounts of money and other resources could benefit quite considerably. The examples were catching. They utilised the 'Arrow' (see Case 2) and thereby demonstrated some of the advantages of a close collaboration with researchers. Additionally, the projects explained in a simple and easy-to-understand way how employee participation had been crucial for a successful accomplishment of the projects.

The participants in the conference easily related to the practical cases that were presented. This turned the mood of the conference. It became evident to the participants what networking could be about.

b) Business actors hesitate to trust their partners (Harrison 1994 a and b). This was clearly the situation in Case 4, specifically towards the external partner, the action researchers. In Case 5 below we will illustrate a collaborative effort where lack of trust is overcome, at least to a certain degree. Lack of trust was challenging in this case (5) because of the high risk involved for all participants. The customer also lacked previous experience and knowledge about the trustworthiness regarding the supplier's ability to handle huge and demanding tasks and projects, specifically with the high risk and significant innovative aspects involved.

c) Businesses do not know where to find support and resources necessary to initiate their development projects and innovations. In Case 5 below we try to illustrate in some detail how a collaborative local network structure can facilitate the lack of existing support and resources currently available in many Norwegian local business environments.

Case 5: 'The construction of a new fully automatic foundry station'

The context

In VC 2010 one of the major innovative activities was located in the small industrial town, Odda (see Introduction and Case 1 above). Here two key manufacturers, utilising cheap locally available hydro-electric power as major resources in their production processes, were holding crucial positions in the local business environment. A number of small and medium size suppliers were fertilising the key producer's value creation

processes. In this context, research together with regional and local stakeholders initiated network collaborating activities for different purposes; knowledge and learning, HSE, development and improvement projects and market initiatives are examples of activities encouraged by network collaboration (see Case 1).

In the present case, one collaborative activity will be explored more closely. The current example directs specific attention to a collaborative project, aimed at creating a new production line in one of the key enterprises. This production line was to be developed as a new product from local suppliers in close collaboration with the local customer. The customer received a new innovative production line, and the suppliers a possible new and innovative product for the world market, with the potential need for similar production facilities.

The project initiation

This collaborative project was to develop a new fully automatic foundry station. The initiative arose when one of the suppliers acted on a request from the local customer. In the local network in which customer and supplier participated, several arenas were created to encourage dialogues about improvement and innovation. At these network arenas, personnel from all of the enterprises attended, and the suppliers were eager to receive signals from their customers about possible new projects. These signals from the customers to the suppliers included vital market information for the suppliers.

On several occasions the customers in the network stressed one issue: they would like to see suppliers who did not just respond to requests from customers, but instead started to offer new technology, products, and services that challenged their daily operations. The researchers collaborating closely with the participant in the local network had been the hub of the network construction process. These researchers had been continuously involved in the operation of the network as facilitators, teachers and advisors. The researchers had prepared, in collaboration with local actors, for different network arenas to appear. Establishing dialogues at these arenas became crucial and an important part of the operation of the network arenas. To start dialogues about development and innovation, someone has to challenge the existing relations and operations of the enterprises. Researchers played a crucial role in initiating critical reflections on the existing ways of operating core production and business activities, as well as existing, or rather lack of existing, collaborative arrangements and relations. Critical reflection was one way of opening the way for new alternatives and variations in operations of production, business activities, relations and collaborative arrangements. In this specific case, providing the suppliers with the message that the customers had a set of new expectations was backed by the researcher who exploited newly created collaborative structures and arenas. The researchers were able to do so, due to their position of defining the agenda in the different arenas. Participating in the different arenas, researchers were able to address a number of development issues, and thereby facilitate opportunities for the different members to take part in the activities launched.

There were great risks involved in this particular project initiative. Although the suppliers were local, the customer lacked experience with the supplier's capability of producing an adequate solution. The local suppliers put at risk their existing confidence and reputation with the customer.

A new and innovative solution

In the manufacturing of metal, founding is important. The metal is, after some sort of a chemical process, transformed into a liquid. The liquid is then poured into moulds to

harden. The process from liquid to solid metal forms the founding process. Since the solid metal is the end product of the manufacturing process, it has to meet a number of quality standards to be accepted.

At the actual zinc manufacturer the foundry process consisted of a number of manual and semi-manual operations. The main arguments to maintain the manual process were based in severe quality standards. Still, the existing process caused breakages up to a level that threatened the manufacturer's profitability. At the same time, the manual operations created a tough and physically challenging work environment. Thus, the development of a fully automatic foundry station, capable of removing breakages and the physical challenging work environment, was the highest priority.

The main technical challenges were to reduce the amount of foam from transporting zinc, and to find a way to move floating metal without reducing the quality of the end product. To be able to solve these challenges, a multi-skilled team had to be assembled, comprising personnel from different enterprises, with special skills and competences.

Enrolling the participants

The working methods, already established as part of the network collaboration, supported the launching of the project, and framed the project in a way that made the customer willing to take the risk. This included involving the customer in the creative and goal-oriented innovation processes, utilizing the competences of both engineers and operators, and using risk-reducing project management methods.

The challenges for the initiating supplier were revealed immediately. First, this border-spanning project involved not just the supplier's own enterprise, but also several additional suppliers. Here a multi-skill project cutting across several differences of interests between private owned enterprises (both customers and suppliers) had to be handled in a common integrated project. Second, accomplishing the project was thought of as very costly for the local participant, who also needed external funding support from different sources in order to launch such a project.

The project was constructed as a network project, even though one of the enterprises was not part of the network. The fourth enterprise, not part of the local network, was recruited into the project, despite experiencing only weak ties (Granovetter 1985) with two of the other enterprises in the project. Membership in the network enabled the supplier to take advantage of the network structure, gaining access to established methods and resources. Using the resources in the network, it was possible to mobilize other enterprises, and to establish a project team consisting of personnel from four participating enterprises and a researcher. Although these enterprises had done business with each other for years, this project represented something different. They had to act as partners, reveal their internal processes, participate as equal partners in each other's strategic decisions and agree upon the distribution of risk.

When initiatives were taken, support was needed to carry them through. Bringing ideas into reality is difficult and demanding, in particular, such a large border-spanning project containing several challenging technological innovations and involving a number of differences of interest. When the supplier, based on the input from the customer, came up with the idea to develop a new foundry station, the researcher was able to facilitate in the mobilizing of the project. Although the supplier had received positive and encouraging feedback from the customer, further clarification had to be done. The customer organisation was large and the project had to be anchored by the project manager for the continuously expanding project to proceed. It was necessary to find approaches and

funding mechanisms that would make the project so attractive that the customer could not refuse to participate. In this phase of the project, the researchers worked closely with the management of the suppliers, to generate approaches, suggestions and variations on alternatives.

Why were the researchers, with no technological knowledge or skills, accepted as a partner?

Process of translating interest

The researchers became part of the project team. The project organisation was established with a project chairman, project leader, steering committee, joint project team, and internal project teams in each of the participating enterprises. Participation from the researchers was especially important in the early phases of the project: defining the task in detail, writing a project description that all of the participating enterprises could agree upon, and applying for funding. It was important for the project team to come to an understanding of the content of the project: the distribution of responsibility, risk-sharing and sharing of economic responsibility.

The researchers helped with the conflicts of interest that can often develop in such processes. In the process of reaching a common understanding, the researchers acted as a kind of moderator, playing into the discourses the interpretation of the different actors' positions, and interpretations of the role of the network. This project involved a customer - part of a larger consortium and a rather large enterprise itself, with around 360 employees - as well as three rather small suppliers. The suppliers would prefer to see the largest actor taking the largest risks and the largest share of the necessary funding. From the customer's point of view, it was not obvious that they should take the greatest risk. As a mediator in the project, it was the researcher's task to interpret the positions and signals from the different actors and to find acceptable and operational solutions. In this phase, the researchers were involved in gathering the necessary information, and writing the project description based on the decisions taken by the participating enterprises. This was done in co-partnership with the supplier's project leader. The researchers also brought in a government funding agency. This government agency was part of the regional coalition specifically created through VC 2010 to facilitate development and innovation activities in the region (see introduction above as well as Case 6 below). The researchers utilised these coalition relations in order to establish a dialogue to explore, together with the agency, opportunities for funding. This is an example of the more general role of the researcher in the network that is closely linked with the ability to provide the enterprises with useful tools, methods, and legitimacy for change and development.

Project experiences revitalizing the network discourses

In the early phases, the researchers were regarded as neutral actors, possessing integrity and a set of working methods that the participants saw as the glue in the project. The network arenas were important, and partly facilitated by the researchers. To get networking going, there was a need to feed experiences from individual projects back to collective arenas. The present project was a major innovation project in the network, where three out of eight membership enterprises participated. How the project came about, participation from engineers and operators with the customer and suppliers, how the project was organised and funded, and the market possibilities, were all features that were very important to share with the rest of the member enterprises. These experiences could encourage new joint projects that opened new possibilities for the member enterprises by playing these experiences back to all of the members at the different network arenas. In this way the learning cycle could be completed. The network

collaboration and arenas for participation regarding a multitude of issues was a major source of support for development and innovation projects. As such the whole collaborative structure of this local business environment mimicked some of the barriers that enterprises experienced when they did not find the support and resources necessary in order to encourage development and innovation activities.

This case is presented here to illustrate some of the obstacles businesses experience in finding the support and resources necessary to initiate development and innovation. It also illustrates ways of handling these obstacles through network facilitating arrangements. In later discussion the case will be supplemented and discussed in order to illustrate other aspects and issues regarding integrated innovation.

- d) Important conditional aspects such as market entry, venture capital, partners and market possibilities could be insufficient (as was initial the situation in Case 5 (see also Case 3)).
- e) Approaches to work organisation and styles of management can be supportive of the tacit knowledge of the workforce as a collective resource for product and process innovation. This has been the occasion in many of the cases which is presented in this publication (see Case 5 above, Cases 7 and 10 below).

Innovation can produce radical changes in a long term perspective. Whole new business opportunities could be created through long term projects. Such ambitions can make innovation processes cumbersome. A large long-term project requires a diverse set of skills, competences, resources and partners. Participants with different skills and knowledge would be needed. Skills, knowledge and competences in technology, organisational development, market opportunities, economy, leadership and planning would be needed in order to create the necessary *variations and alternatives* in order to initiate change and innovation processes. To integrate differences, and make them create a collaborative outcome, can be challenging. Both diversity/variation and integration/incorporation are needed. This was certainly the circumstances in Case 5 above. Several challenging questions arise in this respect.

- How is it possible to bring about collaboration between a set of partners where integration of different skills, perspectives, professions, institutionalised specialities and competences are needed?

- Can ‘hard’ technologists and ‘soft’ social experts and scientists work together in long-term project involvement?
- What are the opportunities and obstacles?
- How is it possible to orchestrate multi-skill and multi-task projects that have strategic and practical significance?
- Under which forms of work organisations and job designs can innovation harness the energies and commitment of an entire workforce?

We have worked closely with several industrial networks and a considerable number of participating enterprises in ED2000 and VC2010. This involved long-term collaboration between ‘soft’ social experts and ‘hard’ technologist (see Case 5). Some of the enterprises in these networks were competitors operating in the same market, while others operated in different business segments. Although approaching collaboration from different positions, most industrial enterprises struggle to find slack and the necessary resources required to launch improvement and innovative activities. Collaborating with other enterprises addressing development and innovative processes appears as a way to encourage the initiation of such processes within the individual enterprise (see Cases 1 and 5). There are several ways to encourage collaborations that integrate different skills, perspectives and professions. Here are some important ones identified from our experiences;

- common training of personnel
- the introduction of common development methods
- a common development language
- common arenas for sharing of and reflection over experiences
- joint available expert resources
- extending the role of participants to include engagement, joint problem solving and improvement activities with customers, suppliers and technical experts.

Additionally, there is a great need for careful orchestration of enablers to activate multi-skill and multi-task projects. This has already been elaborated above (see ‘*Orchestrating Integrated Innovation*’ page 30).

In the solid network structures referred to (see Case 12), a *systemic approach* has been utilised to organise development and innovative processes that overcome some of the

challenges referred to above. More attention to what such a systemic approach can contribute with will be outlined below.

Creating variation encouraging innovation through collaborative arrangements

Managing differences in skills, interests, competences, gender, geographical location and so forth is not straightforward. On the other hand, such differences could be crucial contributors to innovation and change processes. Based on research activities conducted in ED 2000 and VC 2010, we will make critical reflections on experiences in trying to cope with and utilising diversity in competences, skills and knowledge in innovation activities cross-cutting administrative, geographical and political boundaries.

Enterprises cross cut administrative and political barriers in their business operations. At a municipality or county level there are arrangements not necessarily supportive of, or even hampering, this mobility. Businesses in their operation, on the other hand, require resources, preparation of infrastructure and partners, regardless of these boundaries. The concept of *regional innovation systems* tries to grasp issues related to the level of operations of businesses within and across local administrative arrangements, resources, support systems, boundaries and obstacles (Asheim 2007, Cook and Memedovic 2003, Lundvall 1992, Cooke 1992 and 2002 and Wood and Wiig 1995). Enterprises face challenges on how to handle these arrangements in regional innovation systems.

‘Triple Helix’ collaborations, in coalition/partnership structures and in networks, (Leydesdorff 1997, Ennals and Gustavsen 1999, Arbo 2000) are approaches with ambitions to orchestrate improved regional business operations that cut across local administrative and geographical boundaries. A collaborative coalition/partnership and a number of networks have been created between industry, public institutions and R&D, as basic features in VC 2010. The coalition created in our research at IRIS covers two counties and cut across the boundaries between two independent administrative systems, while the networks cover smaller geographically areas, also cutting across administrative/political boundaries. This system consists of three levels: the individual enterprise, the networks and the coalition. The coalition collaborates with a number of networks, as well as enterprises. Most important regarding Integrated Innovation is the *systemic* nature of the innovation system. The systemic nature points to the systematic and strategic approach by which the coalition was shaped. In Case 6 this systematic and strategic approach is presented.

Case 6: Shaping a coalition between two counties on the South West Coast of Norway

Along the South West Coast of Norway a partnership or coalition between the two counties Hordaland and Rogaland has been created. In initiating this coalition, the Development Coalition of Hordaland and Rogaland (DCHR), research played a key role. Through the researchers' systematic action, as action researchers, the coalition was shaped as a response to the demands from the national programme committee and its stakeholders. As mentioned in the introduction to this publication, several regional stakeholders were approached in order to engage these stakeholders in specific tasks and objectives that were to be the content of the performing coalition. How this was done will be described more closely in this case description.

Knowledge institutions, regional actors providing public support and regional representatives of social partners play a multitude of roles and are engaged on a number of arenas in order to support regional innovation. The DCHR was intended to create greater interaction between national, regional and local actors as means to increase innovativeness.

Politicians play a considerable strategic role in the context considered in this example. Despite this fact, politicians have not been directly involved in the specific collaborative effort presented here. This is partly due to the fact that politics to a greater extent involves specific interests (geographical, groups, private, etc). They are thereby called upon to fulfil obligations that might intervene with more independent strategic considerations regarding regional/local enterprise development and innovation issues. Key coalition partners were chosen based on their ability to take into account competitive advantage, more independently of local and regional political considerations. This is the main reason why politicians were left out of this choice. Lack of political linkages indicates a possible absence of democratic presence within the innovation system. Possible democratic deficiencies will be further elaborated and discussed in specific contributions below.

The shaping of a development coalition emphasised tripartite actors that were important in business processes on the regional level. This objective was strongly emphasised in the national VC 2010. Lack of regional strategic priorities was regarded as a major weakness in VC 2010's forerunner, ED 2000. In VC 2010 this weakness was to be met by shaping development coalitions. These coalitions involved; public representatives on county level, the regional public support system, the labour market parties, the R&D institutions and representatives from higher education in the region.

Rather than limiting activities within existing political/administrative borders, an important challenge at the regional level was addressed. The intention was to adapt to the major structure of local/regional business life. At the south west coast, the action researchers at IRIS initiated the construction of a coalition that cut across two large counties, Hordaland and Rogaland. This was due to similar business structures in the two counties. Additionally, enterprises in both counties were doing business regardless of the county borders. Making this business structure the baseline for the shaping of the coalition implied the involvement of two counties. The number of actors participating was doubled as a consequence, as were the challenges accompanying such a process of integration and collaboration. On the other hand, the joint force of the collaborative partners in the development coalition enhanced the potential for strengthening and increasing the ability to set priorities and address activities. Additionally, this cross-county collaboration could be a strong unit when questions of resources and

acknowledgement became crucial. Much of this applies also to other coalitions, such as the coalition created between the two Agder counties (see contributions below in this publication).

Actors involved in shaping the coalition

The shaping of the Development Coalition of Hordaland and Rogaland was initiated by action researchers at IRIS. Mobilising different actors with different strategic agendas belonging in different counties was a big challenge. Here the action researcher emphasised a legitimate neutral role, striving to act independent of political/geographical constellations of interests. In this specific process, the actors from Rogaland County, both the representatives from the labour market parties and the county administration, supported the initiative. This was due to their involvement in the previous programme ED 2000. The actors in Hordaland were not familiar with the action research approach utilised in the previous programme. They needed time to gain confidence in the new way of working with development issues. Researchers repeatedly visited and discussed the initiative with these actors. A lot of diplomacy and dialogue was conducted by the action researchers. However, through the researcher's engagement with the support local/regional actors with previous experiences from ED 2000, the actors in Hordaland were slowly convinced about the opportunities linked to the initiative.

Specifically the labour market parties became key actors. They became directly involved in creating networks and linking up enterprises as participants. This happened for instance in the initiation and construction phase of INH. The labour market parties had many contacts throughout the counties. They utilised these contacts in the initiation processes. On the other hand, the labour market parties gained experience in conducting new and direct involvement in development and innovation process both in network collaborations and internally in single enterprises. Simultaneously, the labour market parties acquired a sense of ownership, and responsibility for the processes they became engaged in. Thereby they utilised their contacts and links in order to make strategic considerations into practical solutions. Additionally based on what is presented above, they became the key actors in initiating and governing the coalition and its different activities.

Action research and the shaping of the coalition

The national programme committee of VC 2010 placed responsibility for initiating and operating the development coalition with the action researchers at IRIS. How the creation and operation of such a tripartite partnership was to become a practical working arrangement was decided upon by the regional actors and the action researchers themselves.

Using researchers to initiate regional collaboration was a strategic choice from the Norwegian Research Council. Letting action researchers, trained to mediate and facilitate, prepare the process of unifying a number of interest into a joint partnership, was a strategic decision by the national programme VC 2010. The labour market parties on the national level played a crucial role in this respect.

In the field of regional development, a number of interests and accompanying actors were present. Letting one of these actors take a lead role, initiating and promoting a new

partnership, could have hampered the process due to the change in the power relations between the actors. Thus, launching a neutral research institute as a key player without any identified role in local/regional power games was a strategy to avoid hampering the construction process. This move placed the action researchers as key actors in the construction process. Even if the researchers had no interest in positioning themselves in the power game between the other actors, the move of placing them in the centre of key regional innovation processes challenged the action researcher's ability to create dialogues with all actors involved. Thus, the learning process for the researcher as action researcher was an important outcome.

A steering committee was organised where the major stakeholders were members. The labour market parties became chairmen of the board. The position as chairman circulated among the labour market parties of the two counties. IRIS was allocated the position as project manager of the coalition, and held the position as secretary of the steering committee. The research institute was responsible for accomplishing the strategic decisions made by the steering committee.

None of the members of the coalition questioned the role of research. After three years, the role of research was questioned through a critical internal evaluation carried out by the researchers themselves. This internal evaluation of the whole process was executed as a self-critical reflection, questioning, among other things, the role of research in the coalition.

After a process of considerations regarding the future of the working arrangement of the coalition, the members were asked to make suggestions for other alternative ways of operating the coalitions. No alternative suggestions were made. Responses from the members were that they saw no suitable alternative to the present role of research as a secretary and key person in the operations of the coalition. This was due to the presence of researchers at all levels and arenas of importance in the different activities, a *multilevel presence*. Multilevel presence was seen as an assurance that first hand information and knowledge was transmitted, without limitation, through all levels and decision-making arenas, from the regional level to the local level, network arenas and individual enterprises involved, as well as linkages to the national level. Additionally, research was the only member and actor that could play a necessary independent and neutral role. No other actor at the regional level was identified as a possible challenge to this role of research.

Coalition activities

One major purpose of the coalition was to examine and review projects as well as prioritise and co-ordinate the resources supplied from different funds. Members of the coalition already possessed crosscutting contacts, through a number of existing decision-making arenas at different levels. Their existing linkages became crucial in order to position strategically chosen development and innovation projects within VC 2010.

The operation of the coalition involved the possibility of a number of learning processes. By actively facing the difficulties and the successes of the networks and the enterprises participating in the programme, and by having close and continuous dialogues with the management and the union representatives within the enterprises, knowledge about the field among the actors within the coalition was transferred and developed. The coalition partners became significantly more engaged and committed to the key processes in VC 2010 than was the case in ED 2000. Multilevel performance of the coalition transmitted

information and knowledge into strategic decision making and prioritising by the coalition. This was additional to the information and knowledge transmission conducted through the multilevel performance of action researchers. Multilevel performance by members of the coalition also presented an opportunity to check on the trustworthiness of the information and knowledge feed back.

Operating the coalition implies more than just running the meetings of the steering committee of the partnership. Adjustments of learning processes within the coalition are important implications. Learning processes, decision making and participating have contributed to a transformation of the coalition, from being an assembly of development actors, to becoming a strong team able to play a role as a facilitator of local/regional business development. This has been demonstrated on several occasions.

Members of the coalition have, on several occasions, made presentations, advanced interests, negotiated conflicts and created new opportunities. On these occasions members of the coalition present themselves as a team aiming at advancing the business interest of the common region, crosscutting county borders and specific interests. The coalition has emerged as a new regional body of significance to business development and business interests, regardless of political and administrative barriers. In this way it could be regarded as a contribution to the evolvement of a regional innovation system in its own right.

Such transformation has not appeared by accident. It is a result of a deliberately planned process conducted by the action researchers. This is unlike other more arbitrary evolutions at the regional level. Several meeting places have emerged inside the counties, more or less organised to take care of initiatives coming from the national level. Both counties have organised several of the members participating in the coalition, more or less as direct responses to national initiatives.

A frequent response at the regional level has been to create arenas that distribute regional development resources from the national government for different tasks. These meeting places emerge as a response to initiatives taken by the central government or political apparatus. They did not originate from strategic considerations by the regional/local actors and businesses themselves. By the involvement of action research in this region, these strategic considerations identified specific needs for collaborative efforts to encourage development and innovation activities on different levels, with specific outcomes.

The action researchers operating the coalition could be regarded as a 'neutral, friendly outsiders' (Greenwood and Levin 1998). To have a 'friendly outsider' presents some possible benefits for the operations. When disagreements occurred the 'outsider' played the role of mediator, to find solutions that the actors found workable. The action researcher's ability to fulfil expectations in collaborating on the different levels was crucial.

Confidence is a delicate matter. If they have not fulfilled obligations, action researchers in our regions have quickly experienced the loss of confidence and trustworthiness among members of the coalition and actors in the business environment.

A result of the operation of the coalition is the rotation of the role as chairman of the board between the representatives from the labour market parties in both counties. The chairman position is rotated every year, so that all four representatives of the social partners have served as chairman within a four-year rotation. This has developed close links between these representatives and the researchers, as they have jointly developed

knowledge about operating a coalition.

Representatives who have served as chairman have also been involved in business development issues within their respective organisations outside the coalition. An outcome is that they have gained additional understanding of the field. Activities in the broader field have supplied the coalition with knowledge and experience from similar activities in other contexts. Starting as an initiative from the researchers much depended upon their knowledge and skills. Gradually the situation has changed, through broader engagement by representatives from the labour market parties and the other members of the coalition, bringing in their knowledge and skills. Transfer of knowledge is no longer solely a task for the researcher. It is carried out by other actors in the coalition as well.

The collaborative arrangement described in Case 6 above are aspects of what could be phrased as *regional innovation systems*. The concept of regional innovation systems is neither straightforward nor uncontentious. Among other things it appears insufficient in order to identify specific feature of business processes and actors on different levels (Doloreux 2004). At the regional and local level a number of interests, contradictory processes, power plays and political games create far more diffuse arenas than the pictures portrayed by outside spectators who failed to look into the practices and processes taking place. This is at least the experience from recent years, specifically from the involvement of IRIS in VC 2010 and the practice of the coalition built between the counties of Hordaland and Rogaland (see Case 6). It certainly is the experience also from the coalition shaped between the Agder counties (see contributions later in this publication). Research and practice from elsewhere in Europe confirms these reservations, revealing a very mixed picture in relation to the extent of consensus and cohesion amongst regional development stakeholders.

Changing objectives regarding the concept of Integrated Innovation

Preliminary objectives regarding the project on integrated innovation have evolved and changed through the project itself. In the proposal to the project on integrated innovation, we emphasised integration though balancing differences of interests, more or less in order to utilise these differences to enhance creative and innovative capabilities. Coping with balancing and encouraging integration were more or less interpreted as a contribution to a 'Third way'. This 'Third way' of doing innovation was supposed to emphasise joining differences into workable arrangements. These workable arrangements were to be shaped as a methodology, 'thing', tool or product to be delivered to the research community, practitioners and other possible customers/users, as a solution to identified dilemmas, paradoxes and contradictions.

Coming close to the termination of the project, we will argue quite differently, based on the outcome of the project. Potentials for utilisation of the dynamics of differences and diversity are the outcome of our critical reflections, not specific key observations or tools shaped for this purpose. Making an ‘end user’ solution to paradoxes and dilemmas would risk the possibility of destroying or transforming the dynamic creativity inherent in such paradoxes and dilemmas. Differences and diversity could be viewed as obstacles to be levelled, with the risk of being destroyed altogether. They could also be encouraged and promoted in order to produce variety and alternatives. This could promote the opposite possibility, to explore their sources for change and innovation, an approach that will be emphasised here⁴.

One way of handling dilemmas and paradoxes is to transform them into solutions, dominated by one aspect of the dilemma on behalf of the other. This could imply destroying the paradoxes or dilemmas altogether. Transforming or destroying paradoxes and dilemmas could risk the hampering or destruction of their dynamic and creative potentials. Contributions in social science could on the contrary be aiming at nurturing the dialectic potentials of diversity and ambiguity. Luhmann system theory has in this respect appeared as a source of inspiration. His main point of departure is to emphasis the dynamics of entities in social arrangements through the handling of differences and ambiguity within the social entities themselves. Keeping the paradoxes and dilemmas ‘alive’, *not* making a dialectical unrecognisable mixture, destroying or levelling them, is a key feature in this respect. In accordance with Luhmann’s system perspective, the ambition is *to build on nurturing, selecting and managing paradoxes and dilemmas to create more variation and more alternatives for the enterprises to select from.*

Critical reflections on previous research have been one of the major activities in this project. These reflections include major issues, questions and results found in the different projects in the two programmes VS 2010 and ED2000. Rather than just reflecting upon what has been achieved, a different approach will be emphasised here. Emphasis will be given as much to the identification and reflecting upon *why* certain actions, approaches, arenas and work forms have *not been initiated* by market and business actors themselves. Rather than describing just

4 A third way or ‘Mode 3’ solutions would be far from any instrumental orientation of consultancy, as already indicated above. ‘Triple Helix’ for instance seems to imply a role of universities where their Humboldtian traditions of engagement as independent stakeholders are lost to this more instrumental role in regional innovation (see Lantz and Totterdill 2004). This is precisely the challenge with research pointed at previously which in this respect runs the risk of being a sole producer of commissioned work.

what has happened and focus on a successful end product, the question of why it *did not* happen will also be addressed. Here are some examples to illustrate this point.

- Why did industrial actors in Odda not form network collaborations by themselves, if this is a competitive advantage (see Case 1)?
- Did not regional actors have the capacity to form a regional coalition themselves without the initiative from research (see Case 6 for an extensive elaboration and empirical illustration of this point)?

In the summary of this chapter we will give some additional examples of major issues addressed, discussed and illustrated throughout the project on integrated innovation;

- *Continuous improvement or radical change (exploration/exploitation)*. Cross company collaborations on improvement projects and projects aiming at renewing existing production to enhance competitiveness and market opportunities. The Odda smelter examples presented in Case 7 below exemplify continuous incremental change taking place in daily operations. In Case 7 ‘the Arrow’ was applied as a systematic approach in order to launch and fulfil the objectives of the project. In Case 5 a more radical change project was launched. Case 5 demonstrated a project where outcome, economic estimates of cost and benefits were less obvious than in Case 7. Additionally, the organisation of the project in Case 5 was more complicated, involving multidisciplinary personnel belonging to different enterprises that had to collaborate in order to produce a workable solution. The differences between Case 5 and Case 7 indicate what can be viewed as a difference between incremental change and more radical and innovative change projects. In comparison with Case 5, Case 7 is presented below, in order to give some account of this possible distinction between development, incremental change and more radical innovative changes.

Case 7. The downspout example

As part of the training programme presented in Case 2, the participants had to complete a development project. This was not just an exercise. It was a real project, important for the operation of the enterprises and intended to be accomplished as part of the training programme.

This project, presented below, was a practical improvement project exemplifying incremental changes of production equipment essential in the daily operations of production processes. Improving daily operations through small but significant solutions can in the long run give economic and productive benefits. This is demonstrated by the

downspout improvement project. Additionally, this project utilised the 'Arrow' (see Case 2) in order to gain acceptance and necessary economic resources disposable in order to fulfil the solution identified. The 'Arrow' was also a tool applied to identify the problem, possible solutions, choices made, cost estimates and economic benefits from the project. Thus the application of the 'Arrow' in this project demonstrated the importance of common tools like the 'Arrow', creating common references when discussing and deciding upon projects to support and solutions to go for.

Project initiation and the enrolment of participants

In the foundry department, the operators experienced frequent replacement of parts of the downspout at one of their foundry lines. The replacements of parts were four times more frequent than with another line in operation in the foundry. This difference puzzled the operators and the replacement cost was considerable. Based on this information, the internal facilitators who were participating in the training programme described in Case 2, launched an improvement project with the aim of reducing the replacement cost by 50 per cent. In using the common methodology, the 'Arrow', introduced in the training programme, the operators discovered possible causes, as well as the core causes behind the more frequent and costly replacements on one of the foundry lines. Thus, personnel in the foundry operating the specific equipment participated in defining the causes behind the differences. Second, they came up with possible solutions, and participated in producing their preferred solutions. The preferred solution was reached by analysing the different possibilities about the effects, and difficulties in implementing such solutions. To convince the foundry managers to finance the preferred solution, the project group had to develop a cost-benefit analysis. This was convincing, and the management decided to implement the project. The result has been a considerable reduction, more than the targeted 50 per cent, in the cost of replacing the elements of the downspout. The project group measured the expenditure cut resulting from the project. The results they came up with were larger cuts in expenditure than had been anticipated.

Project experiences revitalizing network discourses

The results from this project were presented internally in the enterprise for personnel from other departments and groups. Equally important was the sharing of experiences with trained facilitators from other enterprises in the network. The project was presented several times at different network arenas. This enabled personnel from other enterprises to reflect and discuss the results of this specific project and the way their common tool of reference, the 'Arrow', was utilised. The project was the result of a network initiative, and the experiences and results from the project were channelled into the same network arenas in which it was initiated. In this was a learning cycle was completed (see Cases 1, 2 and 3 for this and similar examples of knowledge sharing in network collaborations)

- *Challenges of innovating in daily operation.* The ambitions of SIN and the ambiguous roles of the network facilitator. A contradiction between a development and change on the one hand, and the daily operational work organisation on the other. How could the link be made without losing the necessary disengagement? Distance versus closeness (see the SIN example Cases 1 and 12).

- *Orchestrating regional innovation systems.* Triple Helix and collaborative arrangements on a regional level. Here basically the Developmental Coalition of Hordaland and Rogaland (DCHR) is analysed and critically reflected upon (see Case 6).
- *Orchestrating actual network collaboration.* The orchestration of innovative networking processes involving a number of enterprises and R&D by increasing the variation range (see Case 1)
- *Participatory innovation* as an alternative to individual intra- or entrepreneurial approaches, based on experiences from improvement projects run in ED 2000 and VC 2010. The role of the union (see Case 8 below).

Case 8: Participation and the role of the union

Globalisation of business life has exposed the local market to international competition. International enterprises have entered the local market. Even though they are located far away from the market, they are able to compete and win contracts on services and equipment that the local SMEs have had a monopoly for providing for years. This competitiveness challenges local employment and work places, creating the fear of unemployment. How do the local unions face these challenges? This is one of the major issues addressed in this case.

An initiative to create an industrial network with local industrial enterprises as members was taken by the development coalition of Hordaland and Rogaland (see Case 6). The main aim of the network was to support the member enterprises in their efforts to maintain or increase their competitiveness; focusing on continuous development and innovation. This focus was mainly carried out through specific improvement and innovation projects, initiated within and between companies in network collaborative structures supported by the DCHR coalition through its strategic decisions and actions. The network initiative and project activities were based on the principles of wide employee participation and collaboration between the labour market parties.

A network represents a structure that can support the enterprises in their efforts to improve their operations. Unions can be vital actors, by giving legitimacy to the involvement in development activities of the employees. Involvement of employees is, in the Norwegian context, governed by the General Agreement. When development activities are transferred beyond the enterprise borders into networks, a new situation is created. This situation goes beyond activities and involvement stated in the General Agreement. Challenges facing the involvement of unions and individual employees in network collaborative activities are exemplified in the case below.

Emphasizing the role of union – the Tinfos case

Tinfos is one of the two major production facilities in the Hardanger network. The other is Boliden. Both are located along the Hardanger fjord close to the small town Odde.

They are almost opposite, facing each other with the fjord between them. Both utilise hydroelectric power supplied from their mountainous surroundings. These enterprises are both smelters, though they produce quite different products, and have very different production processes to manage.

In the Tinfos case, union and management took the initiative to shape a contract regulating the way enterprise development activities were to take place. This contract regulated the improvement and innovation activities within the enterprise. The contract became a supplement to the national and more comprehensive General Agreement, signed at national level.

An in-house agreement emphasised two important issues regarding employment conditions; outsourcing and lay-offs. Management and union(s) signed a contract, where management made a commitment that no outsourcing and no lay-offs should take place as a result of improvement projects. Unions on the other hand committed the employees to full support and active participation in the improvement projects. Thus, the agreement constituted a solid foundation for close collaboration between management and unions/employees. In this way management ensured support and active participation from the unions and their members. The unions, on the other hand, received an agreement assuring that no outsourcing and no lay-offs were to take place as a result of the project activities. In this respect the union was equipped with an agreement that they could confront their members with as a guarantee, in exchange for active participation in developing their own work place. Both management and union experienced advantages by signing the agreement.

However, to initiate and sign the agreement, the labour market parties had to have a fundamental understanding of the importance of employee participation in improvement processes. First and foremost, the labour market parties regarded the employees as a resource, able to identify obstacles in the line of operation, and to solve specific problems. This was mainly due to the employees' hands-on knowledge about their work environment. Second, through agreeing responsibility for creating improvements, the implementation of changes was made easier, since the affected personnel were already involved and committed in the development of these solutions.

Understanding these basic conditions around employee participation was necessary, in order to prepare the improvement process. However, it is noticeable that this called for a deliberate strategy from both the management and the unions. If this understanding is not shared between the labour market parties, it may severely hamper the initiation of improvement projects that include the employees.

Based on this agreement, an organisation to promote continuous improvement was launched. It was organised as a steering committee. The members of the committee came from management and the unions. Additionally, small improvement committees were established in all the departments in the enterprise. Members of these committees constituted the department manager and the union representatives/employees from the department. These committees were responsible for initiating and accomplishing improvement projects only involving their department. Integrated projects involving more than one department had to be handled by the steering committee.

The departmental committees had extensive room for action. They were given a considerable amount of money annually, which they were responsible for, to operate their activity. As a result of the work within the groups, a number of improvement projects were launched and accomplished.

Tinfos was a strong supporter of the industrial network in Odda, and became a driving force behind the network. Both the management and the union carried heavy burdens in the initiation phase, spending time and resources on building the infrastructure and filling the network collaboration with content. When building the network, it was acknowledged that it was necessary to give responsibility to important actor(s) to implement the idea of a network in Hardanger. Tinfos became a major actor, which was reliable in the early phase, as well as later when the network was in operation. Tinfos supported the network with human resources and operated as a strategic partner. Their representatives always attended the meetings and initiated a number of in-house improvement projects that they shared with the rest of the network participants.

The internal relationship between the management and the unions was one of reciprocal understanding. However, the parties did not agree on every single issue. On the other hand, a fundamental understanding of each other's different positions was acknowledged. Understanding and acknowledgement of each other's different positions and perspectives was made possible through extensive communication, aimed at identifying solutions that both sides could agree upon. This was reflected in the separation between formal negotiations and dialogues on specific development and innovation issues. Agreements were reached through discussions, rather than the arrangements characterising the regular and formalised wage negotiations.

Improving without formalised agreement – the Boliden Odda case

The other smelter in the network, Boliden Odda, did not sign any formal agreement regulating development activities when these activities were initiated. An improvement project was launched that aimed to place a shift team in the centre of the organisation, rather than having them located in the periphery of the enterprise.

Although the starting points regarding formal agreements were quite different between the two enterprises, the ways of organising the projects were quite similar. At Boliden the unions were brought into the project and had a place on the steering committee. Thus, when the project was launched, it was supported by the unions, by their agreement to participate in the steering committee. However, there is one remarkable difference between the projects in the two enterprises. In the Boliden case, as opposed to the Tinfos case, the labour market parties did not spend any time on searching for some basis for their collaboration. Although the management and the unions negotiated an agreement concerning this specific project, this agreement did not consider any possible difficulties concerning issues such as lay-offs and outsourcing. It focused on the aim of the project, project organisation and giving the project management a mandate. A baseline of agreement regarding difficult issues was not touched upon. Thus basic trust between the participants and their differences of interests was not reached through any formalised agreement.

The project was initiated and strong employee involvement was developed. Unfortunately, due to interference caused by a huge construction project involving the whole enterprise, the development and improvement project was not prioritised. Given less priority had a negative influence on the further execution of the project. This negative influence may not have been the whole story. A hidden agenda by the project management may also have been influential. The project management was met by accusations from other participants in the project, regarding a possible hidden agenda that involved reducing the management apparatus and making the organisation in the

department more horizontal. Employees in the participating departments viewed this unfavourably.

Unions in the enterprise did not interfere in this situation and did not search vigorously for a solution to the conflict. They rather preferred to place themselves somewhere on the periphery of the problem arenas. This created a tougher situation for the union representatives at the department level, specifically related to the project management. Lack of common understanding about basic issues concerning development and improvement by the labour market parties, contributed to the creation of a basic distrust regarding this specific project at Boliden. This was opposite to the experiences at Tinfos, where the unions, through a preliminary agreement in advance, created a supportive role towards the development activities. The lack of agreement at Boliden in the end caused a permanent halt to the project.

Boliden supported the network construction in Odda, as did Tinfos. The enterprise supplied the network with a network manager in the early phase of the networking processes. This was of great importance for the network, and decisive for the whole process of the network collaboration. On the other hand, only some of the employees in the enterprise were participating in the network activities. These activities were never regarded as really important in Boliden. Additionally, the dominant union at Boliden was reluctant about the network collaboration. The union participated in the network arenas, but expressed no real interest in using the network to prepare for improvement and innovative projects, in-house or between participating enterprises. In contrast to Tinfos it seemed that the understanding of the union's role as development actor was less present in the union at Boliden. Other obvious differences between the unions were apparant. The union at Boliden emphasised negotiation rather than collaboration and dialogue. Reaching an understanding of basic aims was less evident.

One reason for the differences for the unions and employees' involvement, and roles in development and innovation projects between the two enterprises Boliden and Tinfos, could be due to former experiences and competences regarding such involvement. Tinfos had formerly experienced collaboration with research in launching development projects in ED 2000. In the ED 2000 development projects unions at Tinfos acquired lots of experience and knowledge of participation and role performance in such activities. This was not the case at Boliden, which had no prior experience of participating in collaborative improvement projects before their enrolment in VC 2010. It is possible that these differences in experience account for the variations in participation between the two companies that were encountered in the networking activities and improvement projects in VC 2010 in Hardanger.

- *Knowledge transfer and developing of new knowledge.* Researchers are members of a research community, with strong obligations to make knowledge and experience a common good. An example of how differences of knowledge and experiences can be integrated into a common good in enterprise development is given in Case 9 below.

Case 9. Transfer of knowledge

Transfer of knowledge

One difficulty researchers run into is the possibility of identifying and transferring knowledge produced in one context to different contexts. Applying knowledge across contexts can assist different members of the (action) research community in their collaboration with new actors in new contexts where new projects are launched. This is an issue of how knowledge is utilised in new settings, away from where it was originally produced. The case presented below is intended to show how locally developed knowledge about different aspects of business development can be transferred into a new context, in order to initiate new networking processes.

In the ED 2000 programme, several regional institutes around Norway were engaged in business development within their region, using different approaches. Among these institutes were Agder Research and International Research Institutes of Stavanger (IRIS). Agder Research initiated a project involving several process industrial enterprises, mainly smelters. Much emphasis was given to the development of a methodology for initiating and accomplishing development projects within individual enterprises. Some of the smelters were part of larger corporations that had smelters outside the Agder region. IRIS emphasised network collaboration in order to encourage participating enterprises to become more innovative. IRIS applied methodologies, though these were not well suited to the new contexts in VC 2010, specifically the Odda context and the emphasis on innovation. Agder Research on the other hand had suitable approaches to be built upon in the collaborative processes initiated in this new context, partly due to their previous experience of collaboration with enterprises in the region.

In VC2010 the Development Coalitions (DCHR), heading the programme in Hordaland and Rogaland Counties, decided to establish an industrial network in Hardanger (see Cases 1, 6 and 12). This was a region IRIS was less familiar with. However, Agder Research had collaborated with one of the smelters in this region during ED 2000, the Tinfos smelter (see Cases 8 and 10). This fact became decisive for a collaborative effort between the two research communities in the initiation of the new network in Hardanger.

IRIS was asked by DCHR to do the preparations in order to initiate networking activities in Hardanger (see Cases 1 and 6 for further details). In this process Tinfos, the smelter with previous experience from collaboration with Agder Research, urged IRIS to involve Agder Research in the networking initiative. It was claimed that Agder Research had a suitable methodology that could be useful for the future networking enterprises. Agder Research was invited to participate with IRIS in the collaborative efforts in Hardanger, specifically with the participants located in Odda.

The research group consisting of researchers from Agder Research and IRIS decided to develop Agder Research's business development tool to be applicable in the network setting. Simultaneously, the construction of the network was accomplished, building on the experiences IRIS had from the ED 2000 programme and the SIN network (see Cases 1 and 12). SIN was the solid network that was to become some sort of model for the objectives of the networking activities in VC 2010 in Hardanger (see Case 12). The Hardanger network and the researchers involved used the experiences from SIN when the new network was initiated. The solid network structure contained network arenas and networking processes, facilitated by a network administrator. This network administrator could support the development, change and innovation activities initiated internally as well as among the participating enterprises. Agder Research supplied important input in

the development of useful tools (such as ‘the Arrow’, see Case 2). IRIS supplied experiences from solid network arrangements in ED 2000. Both research communities supported each other mutually in their collaborative efforts with local actors in the Hardanger region. This was the case at least in the initial phase of VC 2010 in Hardanger.

Case 9 presents collaboration between two research communities, integrating their differences of perspectives, knowledge and experiences. In addition to increasing alternatives and variations to choose from, this collaboration also gave the opportunity to integrate differences in order to produce new solutions. This was the case with ‘the Arrow’ (see Case 2) as well as the solid network structure (see Case 12). Both of these features were brought into the networking processes initiated in Hardanger. New hybrids became the outcome of the collaboration between the two research communities.

Collaboration between researchers from different research institutes or communities opens the possibility for co-generative self-reflection and the enhancement of self-critical capacity. Differences of opinion can be presented, discussed and reflected upon in order to support the creation of new and integrated (hybrid) alternatives to be applied in the processes where action researchers are engaged, as in the Odda/Hardanger context. An example of such a ‘hybrid’ alternative was ‘the Arrow’, a tool extensively utilised by IRIS in learning and competence building activities as well as by enterprises in their internal improvement and innovation project activities. Additionally ‘the Arrow’ was utilised in collaborative activities between enterprises.

Self-reflective and self-critical capacity and ability to hold such a position is an advantage possessed by the researcher and the research community. These capacities were part of the knowledge transformation and co-generative learning in the collaborative efforts between research and the field, as well as internally in the community of researchers (see Case 9). Research additionally reflected on the implications of making itself superfluous/redundant. The SIN and INH networking collaborations are cases presenting ways that research can be made superfluous/redundant (see Case 12 and specifically Haga 2007 for more in-depth discussion on this topic).

In addition, we may point to the different ambition between the researchers and the enterprises. While researchers particularly emphasise improvement and innovation to be reported back to the responsible funders, as well as the research community, the enterprises need to consider both innovation and operation of the enterprise as an ongoing challenge. This difference points to some of the major characteristics of the way the research community

operates as an integrated system, to apply the conceptualisations of Luhmann (see for instance Luhmann 1997).

2.9 *Conceptualising integrated innovation*

In this chapter we will start out presenting the two concepts, innovation and integration. The presentation emphasises critical reflections on the two concepts, as well as the linkages between them. Our presentations and reflections will be associated with a diversity of contexts and levels. Diverse local, regional and national contexts will be discussed and classified. Individual actors, enterprises, networks and regions will be the foundations for our reflections. Cases presented will be utilised as empirical material to illustrate points argued.

The concept of Innovation

Innovation can be defined as the introduction of new goods, methods of production, markets, raw material and organisational solutions (Schumpeter 1934, Swedberg 2000). This classical definition will be discussed in more detail below. First, however, attention will be drawn to innovation as a way of producing variation, in order for new alternative approaches, solutions, products and business opportunities to occur. New alternatives to choose among imply *producing variation* and *making preferences*.

Innovation does not necessarily imply the strategic selection of new alternatives in order to make changes. Strategic selections can also imply making *no change* as an alternative, when a change target has been set. In other words making a decision not to act, according to a change alternative, involves producing variation and making strategic selections between preferences where the final choice can be the status quo. A possible choice of a no change alternative is presented in Case 11. In Case 11 the alternative of no change was chosen when employees argued against the economic and strategic aspects of outsourcing utilising tools introduced in a training programme (see Case 2).

Innovations can come about as collaboration between enterprises, where differences of perspectives are utilised in order to create variation and alternatives to choose from and produce new solutions. This has been the case in an example where two producers discovered that what was a costly waste problem for one of them, could through some specific technical solutions be made an input resource in the other manufacturers production process. In Case 10 below this is exemplified through an innovative collaborative project.

Case 10: Zinc to the zinc producer (Boliden)

“Yesterday was an historical day for Boliden Odda (BO) and Tinfos Titan & Iron (TTI)⁵. A newly constructed system for utilisation of waste from TTI as raw material for BO was opened. The delivery of 400 tons of waste from TTI will leave BO with additional 70 tons of pure zinc, their main product.” wrote Hardanger Folkeblad, the local newspaper at October 14 2005.

Locally this project was regarded as an important advance in collaboration and innovation between two of Odda’s key enterprises (see Case 1 for elaboration of the context). This is reflected in the local newspaper article cited above. The article points to what became the reputation of the local network collaboration as well as linkages with research and the regional coalition DCHR (see Case 6). One of the projects that made the results visible locally and regionally was this collaborative project between the two key enterprises in Odda. The image produced through this project is contrary to the impression researchers got at an earlier conference trying to convince new enterprises of the advantages of joining network collaboration, such as the Industrial Network of Hardanger (INH), see Case 4.

The project is about utilisation of electro-filter dust from TTI, which consists of approximately 17 per cent zinc, as a raw material in the main process of a zinc producer, BO. TTI is a titanium oxide and iron producer. Electro-filter dust is a waste product from the main process at TTI. The dust is classified as toxic and must be stored according to strict government regulations. Historically, the dust has mainly been shipped by trailers to a special waste storage area in the eastern part of Norway. Meanwhile, some of the dust has been transported to a neighbouring enterprise, BO, where it was mixed to be part of their raw material. Handling the dust represented a work environmental problem both at TTI and BO. As the dust was handled manually workers came in direct contact with the toxic dust because of the tools that were used in the handling. Thus, it represented both an external environmental problem and a work environmental problem in both enterprises. For BO, which produces nearly 150,000 tons of zinc per year, the profit from the possible additional deliveries of zinc from TTI represented a minor economic potential. Large investments in a new receiving station for dust were out of the question. TTI owned the dust problem. From BO’s perspective a solution to this problem had to be initiated by them. On the other hand, it was costly for TTI to transport and store the dust at the special waste storage facilities. For TTI, there was the potential to increase profits by solving the dust problem.

Discussions between employees at both enterprises about the problem had been going on for quite some time. Employees from both enterprises had a common understanding that the problem needed to be solved permanently. By the time the network collaboration in Odda was launched (see Case 1) a joint development project was established with participants from both enterprises. The aim was to solve these waste problems. The project consisted of different internal groups of personnel from the two enterprises, both blue collar and white collar, which handled the internal issues. In addition, a joint project group was established that consisted of personnel from both enterprises. These project groups designed: (a) new dust handling stations in both enterprises, (b) a new feeder

5 Boliden Odda Ltd. and Tinfos Titan & Iron Ltd. are two of the main industrial enterprises located in Odda, Hardanger, see Case 1.

system that carefully feeds dust into the ore at the BO plant, and (c) a new transportation system for transporting the dust from TTI to BO. The technical solution that was chosen solved the work environmental challenges connected to the handling of dust in both enterprises. This was mainly due to suggestions from blue-collar workers who participated in the project groups, and their knowledge about how the dust behaved in different settings. Technical solutions were presented for the management at both enterprises, and were accepted. The project group not only design a new technical system, they also developed cost-benefit analyses for both enterprises (see Case 2 and 'the Arrow'). According to suggestions from the project group, TTI had to finance the new technical systems at the BO plant in addition to their own new technical system, and TTI agreed to do so. The suggested investment was intended to pay off in a period of less than two years. It appeared as a profitable investment for TTI and BO. This is in addition to solving the major external and internal environmental problems.

This narrative demonstrates the innovative potential in enterprise collaboration facilitated by action research. Joint development projects, and joint problem-solving activities between personnel from collaborating enterprises, may not 'just' result in improvements of production processes, the work environment and market initiatives. Collaborating in developmental projects can be possible in the creation of major innovations as well. In this case the project gave new products, new work processes and new organisation solutions, which are some of the characteristics of innovation projects, if we follow the definition of Schumpeter (see page 96).

Creating a network collaboration that can facilitate in producing solutions, as in the narrative above, does not happen accidentally. It is the result of deliberate actions directed by a particular group of actors, supported by co-ordination and the orchestration of specific enablers (see Case 1). Thus, deliberate actions and involvement of specific actors are needed to establish necessary networking processes.

An enterprise in a local context has a waste problem in its value creation chain. This waste problem is expensive and cumbersome to overcome (see Case 10). The waste is a complex mix of substances, including zinc. A nearby enterprise, not competing in the same market, is a producer of this particular metal. In other words; for one of the enterprises this metal is a waste problem, while it is the main input in the line of production for the other. Neither of the two enterprises had explored the possibility of collaborating in finding a profitable solution for both by the exploitation of this waste product. Creating this alternative solution, profitable and workable for both enterprises, was initiated through networking activities and close collaboration with researchers acting as action researchers in this particular setting. This made it possible to create variations and specific alternative solutions to the less profitable 'business as usual' alternative. Here the action of bringing actors together and integrating the perspectives on their value chain was an important element in the action research activity. Action researchers mainly facilitated and orchestrated dialogue between selected personnel from the participating enterprises. Although it might not seem such a big thing, careful

orchestration of these processes utilising key enablers (see Case 1), specifically dialogue between key persons, can be the key to unlocking greater potential. This was one of the intentions in the presentation of Case 10. Additional to the innovative solution produced, this case also demonstrates that such changes and innovations can have a significant impact on the local community. Such ‘happenings’ (see the introductory paragraph to Case 10) can enhance favourable attitudes towards networking processes orchestrated by collaboration with key external actors such as research and coalitions (DCHR, see Case 6).

Enterprise interconnectedness is on the contemporary research agenda, as a consequence of a possible positive effect on enterprise innovativeness (Porter 1990, Cooke 2002, Brulin 2002). The need for faster processes and product renewals due to rapid market changes calls for attention to the enterprises’ innovative ability and the ability of public policy systems and other systems to support innovation (Porter 1990, Aasheim 2007, Reve and Jacobsen 2001, Cole 2001). Constructing interconnectivity between enterprises has become a widespread strategy (Leydesdorff and Etzkowitz 1996, Gibbons *et al* 1994, Gustavsen *et al* 2001, Brulin 2002).

In this context one may question whether this really counts as an *innovation*. The process of creating a solution profitable for both enterprises in Case 10 had some elements of surprise. The surprise is not so much the solution, but the obvious discovery that here was a potential which these two enterprises had not been able to explore through collaboration. Several preconditions for this collaboration in order to produce variation and alternatives were created through the participation in a wider research context of the national programme VC 2010. For the actors involved in this particular case, this example was experienced as an innovation. It changed processes and lines of production in both companies. On the one hand it added possibilities for input for one of the involved enterprises, while it eliminated a costly waste handling process regarding the other participant in the project. For both, it could be viewed as a new method of production contributing to increased productivity for both. But was it an innovation?

On the enterprise level it can be difficult to give clear indications of what counts as an innovation, and what not. Sources of increased competitiveness can come from a diversity of factors such as monopoly, changes in market prices and variations in availability of resources. A certain element of monopoly, protection from market competition, etc is always involved, and could be a significant cause of successful market and economic performance, though hard to argue as an innovation, at least on a society level (Johansen 1983).

It is important to note the surprise element in this example. Both enterprises in the example above were surprised to find that they had the possibility of creating a common solution profitable for both, by addressing what was regarded as a waste problem for one of the enterprises. This is one of several ways to consider what innovation can imply. Although not necessarily sufficient, this publication presents several examples of more or less astonishing surprises that are relatively obvious, and still not exploited by the participant in the change projects (see Cases 5, 7 8 and 10). Terms such as exploration and exploitation, continuous versus radical changes, all point to the ‘innovativeness’, ‘newness’ or creativity of the alternatives and solutions created and chosen. These terms will be part of a more thorough investigation into the concept of innovation (see Chapter 2.9, subchapter ‘The concept of Innovation’ page 71)⁶.

An alternative to the change element in innovation is the possibility of making no change a way to create variation, as indicated above. In an example from the same location as above, the management in an enterprise decided not to take up a suggested outsourcing of the transport department, because of input from the employees. The employees did not agree that outsourcing would give the expected expenditure cuts. Rather they argued that the opposite outcome was more likely. In order to convince the management they used a specific tool developed and introduced as part of a competence building programme in the local development network (see ‘the Arrow’ Case 2), in order to generate a report showing that the outsourcing solution was less profitable than keeping the disputed unit in-house (see Case 11 below). Here the alternative was no change.

Case 11: How outsourcing was prevented by utilising tools introduced in the network

In the production at Tinfos several steps are dependent on internal transportation. Loading shovels perform the transport of raw materials, semi-finished products and finished products. The transport department handles the internal transportation and

6 There are also a number of examples where long-existing knowledge held by employees in a company is harnessed through the establishment of partnership between internal and external stakeholders. In the case of Tegral Metal Forming, an Irish construction materials company, the creation of a partnership structure involving management, employees and regional trade union officials provided frontline workers with the context in which they could articulate knowledge of wasteful production processes leading to an immediate saving of £(IR)100,000 per annum. Similarly it is not clear whether such examples represent actual innovation, or just a belated recognition of the value of tacit knowledge. Tegral workers had known for a long time that such waste was unnecessary but had not perceived it to be part of their jobs to bring this to the attention of management.

operates several vehicles, mostly loading shovels, to do the job. To operate such vehicles call for someone to maintain them. Tinfos had personnel that took care of this. Since Tinfos has several large vehicles, and some advantage of scale to lower the maintenance costs could be obtained. Operating costs of the vehicles were high. The most important causes were lack of standardisation of the vehicles, and the age of the vehicles.

The lack of standardisation meant there was a need for diversified stocks of spare parts, and few opportunities for borrowing parts from one vehicle for use with another. The extended use of the vehicles caused frequent interruptions where the vehicles were out of operation for shorter or longer periods.

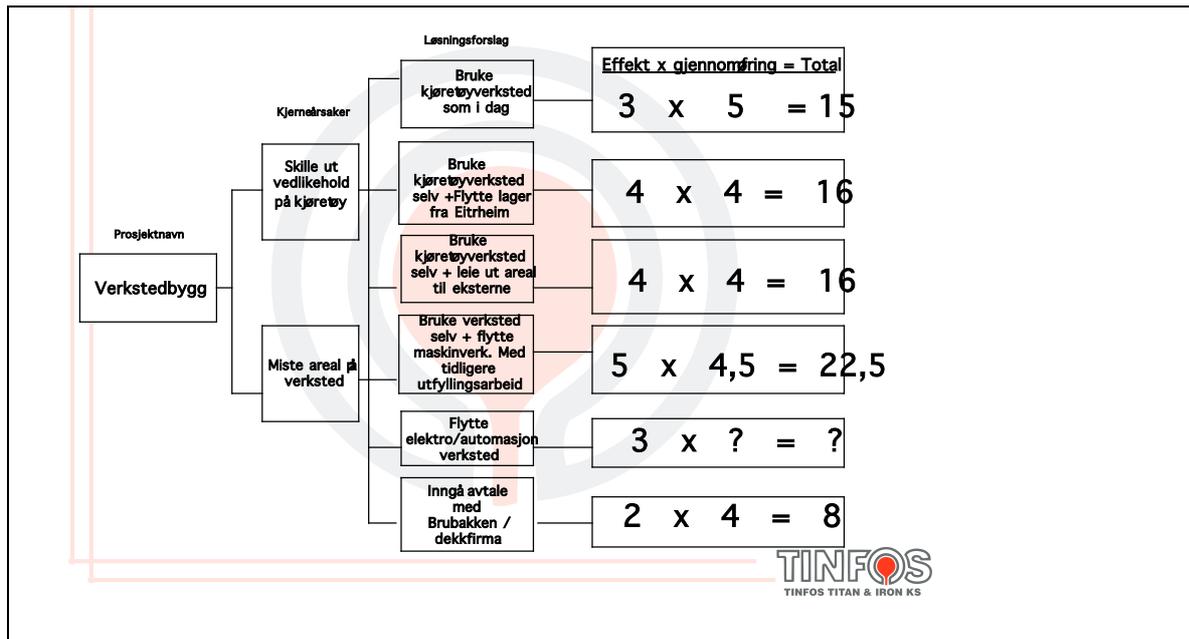
As a consequence of the high maintenance cost, management were looking for ways to lower the costs. An area was rented out to an enterprise specialising in supplying organisations, such as Tinfos, with vehicles. This specialised enterprise not only supplied vehicles, they also offered to handle the maintenance of the vehicles. Located almost inside Tinfos this looked like a good opportunity for Tinfos to hand over the operation of the vehicles to this enterprise. Tinfos asked for a tender from the supplier to compare their figures with their own.

Before deciding upon the tender, which displayed a potential cost reduction, management informed the affected departments and the unions about the tender. Tinfos decided to buy services rather than having these in-house as part of their own organisation. Personnel working in the maintenance department had to be retrained and start working in other departments within Tinfos. Dismissals as a consequence of the decision to outsource were to be avoided. On the other hand, the personnel involved were disappointed, and started to ask questions about the contract and the economic benefits.

Supported by the unions, they obtained access to the tender and examined it. They discovered several elements that they perceived as unclear and economically less favourable for Tinfos. The unions suggested that a group of relevant personnel should be given the task to prepare a report containing an internal solution for the operation of the vehicles. The Unions used 'the Arrow' (see Case 2) to accomplish the task. When management accepted this internal group to examine the tender, the group was also provided with the necessary figures.

The appointed group utilised 'the Arrow' to identify the main causes and obstacles regarding the outsourcing problems identified. They also suggested the best solutions to eliminate them.

Below is a matrix illustrating how solutions were reached.



Members of the group had first-hand experience from operating the vehicles, and knew what the main costs were. Simultaneously they considered a number of other issues, such as the utilisation of buildings, etc. The illustration above considers finding the best way to organise the repair shop. Members of the group created better solutions, and were even able to reveal new and innovative ways to organise the operations. They presented a cost-benefit analysis to the management, showing that their solutions would give better results than outsourcing.

The report from the working group convinced management at Tinfos that the decision to outsource was wrong. Figures and solutions were consistent and innovative. Management turned down the offer to outsource from the supplier of maintenance services. The maintenance unit was kept as part of their internal operations, just as before.

The alternative of no change was argued using tools and competences acquired in other contexts for other purposes. The training programme where the tool was introduced also created the foundation for increased competence in making strategic selections among the produced variations (see Case 2). The tool ('the Arrow') created some basic requirements for common perspectives between management and union/employees despite the fact that their opinions were contradictory at the outset. A recognised (neutral) tool was in this case contributing to common conditions for dialogue on alternative solutions, where the involved actors had differences of opinions. The case demonstrates a possibility that tools can function as common conditional requirements to facilitate communication and dialogue between differences of interest. This points to some of the important aspects of the common training programme, introduced as part of the initiation of networking activities between different participants (see Case 2).

When the final strategic selections and decisions were in favour of the employees and their specific solution not to outsource, the process promoted the acknowledgement of employees as recognised participants (broad participation) in innovation and enterprise development (Case 11). Additionally, it produced the confidence and trustworthiness of the participating parties in these change/no change activities. Collaboration with research was an additional favourable experience in the case presented above.

Innovation in the context of this publication is thus seen as *the shaping or creation of variation*, whether or not a favourable strategic choice is made between the newly produced alternatives. It is a further part of the innovation process to argue for or against strategic selections among the created alternatives and variations. Last, but not necessarily least, is the *incorporation* of the variation and strategic selection in the operations and reproductions of the system (enterprise, co-operation, agency, region) itself. This involves some of the basic elements in our conceptualisation of innovation.

The concept of innovation presented we have presented here can be illustrated as follows:

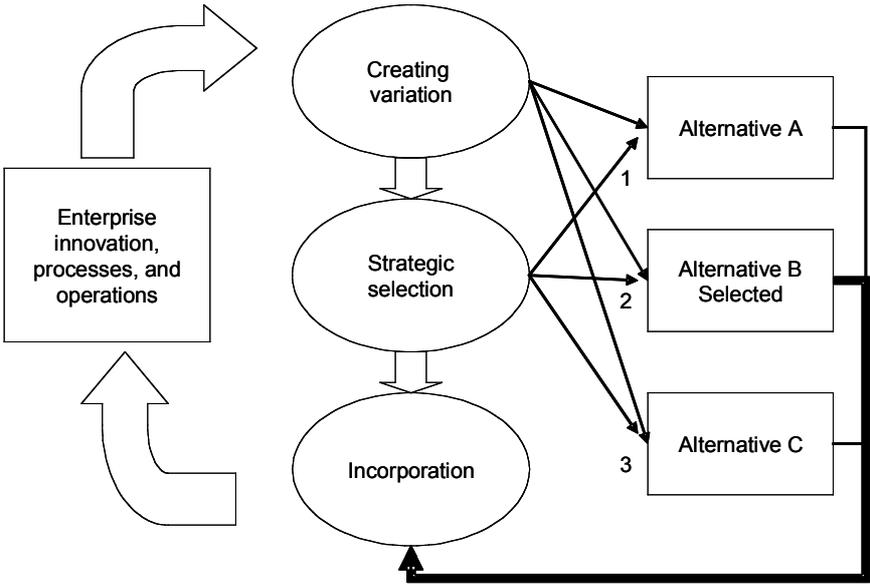


Figure 4: illustratin of the concept of innovation

In this illustration, the three concepts: variation, selection and incorporation, are sketched in order to indicate their linkages. Alternatives A, B and C are shaped through the creation of variation as a foundation for choice. Through the strategic selection process alternative B is selected in the illustration above. This process of strategic selection and its results are fed back through a process of incorporation, which is then integrated into the historically allocated ‘memory’ of the organisation (model inspired by the outline of Luhmann’s

organisational theory, Luhmann 2000 and Luhmann's system theory, Luhmann 1997). By redirecting the attention to Case 5, a practical example of this innovation model will be presented.

In an enterprise in Hardanger one of the process industries, a smelter producing zinc, was approached by one of its local suppliers with the idea of creating a whole new foundry line based on new technology. Before entering deeper into this specific case, the starting point needs to be sketched. For a supplier with limited resources to have the confidence to suggest a joint resource-demanding project for the smelter is exceptional. How did the supplier possess the courage to make such a suggestion?

The projects took place within a local network of industrial enterprises (the INH network, see Case 1). As a result of the dialogue established between the enterprises participating in the network, the message from the customers, the large process industry enterprises, towards the suppliers appeared clear and crisp: prepare in order to become lead technological partners. Thus, the solid network collaboration, which INH was about to become (Case 12), supported the initiatives from the suppliers to play such a role, initiating technological innovative projects.

The supplier suggested a project as a collaborative effort in order to create several alternatives. One main objective was to create a whole new technological solution. The idea was to produce a foundry line based on new technological solutions as a prototype. This prototype would then emerge as an innovative product, to be presented on the world market as a new business opportunity for the supplier. Although the presentation to the world market could diminish some of the competitive advantages for the customer (Boliden, the zinc producer), it was still regarded as a profitable project for both participants.

As a starting point several alternatives (variations) regarding different technological solutions were created. Strategic choices (selection) were then made between possible solutions. In the final stage the prototype solution would be fed back into the supplier's own production as a new business opportunity on the world market (this is elaborated in Case 5).

To what extent this case is an innovation is hard to justify at this level of analysis. However, the collaboration between the different suppliers and customers involved, as well as the actual outcome, was regarded by the participants as an innovation. It is important to keep in mind that the participant's opinions are not sufficient to make a final judgement about the innovativeness of the project. On the other hand, in this publication, where innovation is seen

as the shaping or creation of variation, the current case counts as an innovation (see discussion above).

The foundry station case (Case 5) may be used as an introduction to discuss integration and systems. To develop a fully automatic foundry station calls for diverse skills and competences, not found in an individual enterprise. Four enterprises were invited to participate in the project, the smelter and three suppliers. The suppliers represented complementary skills and competences as well as the smelter, and these were *integrated* in the project, creating and increasing the number of alternatives. At the same time it is important to emphasise that this did not occur coincidentally. It was a result of deliberate solid network collaboration and the utilisation of a systemic approach.

The term “solid collaboration” indicates the creating variation is something that does not happen incidentally. In the research at IRIS this has been experienced through specific network collaborative structures, labelled “solid network structure”. In this context it implies the possibility of making collaborative structures that guide the creation of variations as part of an innovation processes. The solid network structure will be discussed and analysed on many occasions below. Here it is presented as a potential collaborative structure to guide strategic change, improvement and innovation processes.

What the term “solid network structure” implies is presented in Case 12.

Case 12. Solid network

Networking activities and network collaborative structures are governed and managed in different ways, depending on the kind of collaborative activities they are aimed at facilitating. Two different networking processes can be differentiated when it comes to organising local and regional development processes in the current context. On the one hand, a *strategic process* can be identified that calls for broad participation from the participating enterprises, from different levels within these enterprises as well as from actors in the region (such as a coalition like DCHR, see Case 6). On the other hand *task-oriented process* can be identified, where the aim is to execute definite activities. This last networking process can be a project organisation where; a limited number of tasks to be performed are taking into account, where the time period is restricted and where the resources available are limited. Thus in a task-oriented collaborative arrangement the collaboration is less comprehensive, arrangement of the collaboration more temporary, content regarding tasks/activities simpler and there is a need of less resources compared to strategic processes.

Networks require specific organisational structures in order to adjust to the diverse needs of different collaborative arrangements. In this context the strategic and task-oriented networking process will be compared, in order to conceptualise a *solid network structure*. The solid network structure covers the characteristics of the more strategic collaborative

structures in ED 2000 and VC 2010 that researchers at IRIS have been deeply involved in. Researchers in the two programmes have been involved both in collaboration, shaping and running of networking processes and structures.

Shaping collaborative structures in ED 2000 and VC 2010 has mainly been taking place at two levels. On the one hand, collaborative structures have been created among regional partners in order to form a *coalition*. The creation of the coalition on the regional level is presented in Case 6. In this case we will focus on the presentation of a *solid network structure* involving participants from enterprises, research and specific stakeholders. This solid network structure is embedded in a local context cutting across a number of municipalities. There are also examples in ED 2000/VC 2010 of network structures cutting across county borders. Cutting across municipalities and counties is something strategically guided and facilitated at the coalition level.

There are two examples of network structures in the current presentation. One was created at the initiative of action researchers in VC 2010, backed by the coalition formed between two counties of Hordaland and Rogaland (see Case 6). This was the INH network (see Case 1). The other network has been mentioned in the presentation of the “Lead Development Officer” (LDO) in Case 3. A competence-building programme aimed at producing LDO’s took place in the Sunnhordland Industrial Network (SIN). This network existed prior to the collaboration activities linked to research that took place in ED 2000 and VC 2010. In the SIN collaboration, research was involved with an already existing network structure that was not created on the initiative from action researchers, as was the case with the INH networking activity.

SIN is an example of a solid network structure, governed much like a traditional organisational structure of a corporation. It has an annual general meeting of shareholders. Here the different enterprises in the network are participants. They operate as shareholders in this general meeting because it is required for every member to pay a membership fee, which is regarded as a share in the network organisation. The network is a Ltd Company, and the share is a token both of the ownership of the network and the membership in network generated activities. This general meeting gives guidelines for the board of directors. The relations between the two functions, the general meeting and the board, resembles in many respects the relations in any corporation.

The board of directors comprises representatives from some of the participating enterprises. This board and the general manager do the strategic planning for the network. To ensure that all of the member enterprises in the network are given an opportunity to give input to strategic processes, the strategic plan is the subject at a ‘net meeting’. During the year, the enterprises are invited to approximately eight such meetings.

The network has organised several sub-networks based on issues such as health, safety and environment, human resource management, developmental issues, logistics, etc. These sub-networks are active as long as the members express their needs for these collaborative arrangements. The network has also decided to participate in R&D programs, such as ED 2000 and VC 2010. If the board decides to enter a programme, their member enterprises are free to choose which forms of relations to the research programme each individual enterprise want to enter into.

The network administration consists of a general manager, an enterprise advisor, and a part-time secretary. It is the leading operative unit in this solid network structure.

The formal SIN-organisation developed close linkages with a regional R&D institution. This regional R&D institute (IRIS) decided on the other hand locate some of their

researchers together with the SIN administration. This co-location was a sign of the close collaboration with the SIN network.

The collaboration with the SIN network and the R&D institute has first and foremost taken place through the two big R&D programmes, ED 2000 and VC 2010. Through this programme many project activities took place. One is presented in Case 3.

Additionally several arenas were established where personnel from the enterprises in the network carried through collaborative activities:

- (a) a forum for enterprise development (FFB)
- (b) a general manager forum
- (c) a forum for union representatives
- (d) a forum for internal consultancies.

Through these arenas relations were developed, not only between the general managers, but also between employees at other levels in the enterprises.

To govern the ED 2000 programme within SIN, a steering committee was organised. In this committee, the following positions were appointed:

- a) representatives from the enterprises, both from management and unions
- b) one representative from an institutionalised collaborative arrangement between the major employee/employer organisations nationally
- c) one representative from the R&D institute
- d) the SIN General Manager.

The Industrial Network in Hardanger (INH) was at the time the networking activities were launched, more of a task oriented project organisation. INH was then close to how the SIN network organises its R&D programs. Here is an illustration of the INH network organisation in the initial phase of launching the network;

There are differences as to how the two networks are organised. The organisational structure of INH is a mix of a formal and task oriented project organisation. A steering committee deals with strategic decisions and runs the R&D programme in INH, while this is taken care of by a formalised structure of an administrative unit, the board and the general meeting in the SIN network. This more bureaucratic structure of SIN assures clear procedures and involvement of all decision makers affected. In INH this is not necessarily the case. INH is characterised by a more informal project organisation. This structure is not put up in order to make sure that decision making runs according to procedures structured to assure stakeholders positions and opinions. Democracy in work life is less apparent in the more informal task oriented project organisation at INH. On the other hand the R&D institute became more closely involved with INH than the SIN network during VC 2010. This can be due to the more preliminary stage of networking that characterises INH compared to SIN. The SIN network possesses greater capability to facilitate networking processes than INH, which on the other hand is in greater need of assistance from research. Additionally researchers have been directly involved in initiating networking activities right from the start at INH, while the network structure was already established when the R&D collaboration was initiated with SIN.

Above the difference between strategic networking processes and task oriented networking processes were presented. In the networks which researchers have been working most closely with in ED 2000/VC 2010, there are attempts to move to a more strategic and solid network structure. Dialogue is an important principle in this (Gustavsen 1992, Ennals and Gustavsen 1999) movement. People come together to discuss and formulate pathways for activities and objectives for networking activities.

Networks organise a variety of projects like TQM projects or more radical innovative projects (see Cases 5, 7 and 10 for examples). Long-term collaboration, risky projects and the need for external financing seems to be facilitated through more strategic network collaboration. More strategic network collaborations seem suited in order to develop strategic relations with external collaborators such as public authorities, financial resources, politicians, R&D, educational and national stakeholders.

A formal organisation runs the risk of becoming formalised and bureaucratic. Network relations based on trust could be substituted by instrumental and formalised relations. The aim of constructing networks is to create places where people can meet; exchange experiences, explore possibilities and collaborate in task oriented improvement and innovation activities. In INH one of the projects was a consequence of improved communication between the enterprises, see Case 10. In this setting, major project work was executed outside any network arena, just in the communication between employees from the enterprises. The network arenas on the other hand have the potential of facilitating more informal collaboration and exploration of opportunities. This way a mix between task oriented networking processes and more solid strategic networking processes, something of a mix between SIN and INH, can be a possibility to avoid some of these dilemmas and challenges when it comes to choosing network collaborative arrangements.

Case 12 has illustrated different degrees and ways of structuring network collaborations. A looser task-oriented process does not integrate the participants in the same systemic way, as is the case with more strategic processes configuring a more solid network structure. The SIN network in Case 12 was a typical example of a solid network structure with many of the characteristics of a regular company's organisational structure.

A solid network structure ensures a committed long-term relation between the participants. These participants will also have the chance of developing a strong 'we' with a clear differentiation towards the surrounding business environment and local/regional communities (Luhmann 1997 conceptualises this aspect of (organisational) systems). This is the case with the SIN network collaboration.

A more task-oriented process is not to the same extent characterised by long-term relations between the participants. This was the case with the INH, at least in the initial phase of the networking process when the participants were less confident with the usefulness of such collaborative arrangement. On the hand a strong 'we' existed in the Odda context, due to the specific geographical location on an isolated spot at the end of a small branch of the Hardanger fjord, where they on several occasions had experienced a common destiny. This in some way compensated for the lack of a solid network structure when it comes to the experiencing of a strong 'we'.

INH was in the process of shaping a network structure more or less modelled by the solid structure of SIN, see Case 1. On the other hand there are examples of collaboration between enterprises regarding innovation projects which did not directly involve the network collaborative arrangements, see Case 10. This indicates that both strategic processes and task-oriented processes can occur simultaneously in the same context and run as parallel processes. Advantages and disadvantages regarding both processes can also be handled by the same participants in their common interactions, as is indicated in the presentation of Case 10. In ED 2000 and VC 2010 we have experienced integration and collaboration more or less systematic and structured, producing different challenges in a multitude of contexts. Some ways of handling dilemmas and challenges have been indicated in the presented cases. What structures and collaborative network arrangements are to be advocated is not to be finalised, based on the experience so far.

But what then can be understood by the terms integration and system/systemic?

The concept of Integration

Integration is, in the current publication, not to be regarded as a concept in its own right when compared with innovation. It will be regarded as a way of *characterising a system or systemic approach*. In this context integration has to do with the *solidity* of an arrangement within, or between, certain actors (see Case 12). Important aspects are the way systems/systemic practices can be identified as a unit with its own identity, behaviour, traditions, norms and codes of conduct. An identity can be judicial, as for a formal private organisation (enterprise), an individual actor (employees) or stakeholder (government agency, research institute). Most important, the *solid* arrangements or systems connect multitudes of individuals, professions, enterprises and business segments. Within the framework of this publication we are faced with different integrated systems linking one or several actors, in specific arenas where they interact in ways more or less identical to systemic relations. Whether or not they fulfil the specific definition of a system indicated here (see Luhmann 1997) is a matter of empirical investigation. The enterprise itself is an obvious candidate. Less obvious are different networks or collaborative arrangements (as presented and discussed in Case 12).

In the context of this publication, a network can be a system. This implies that it differs from a lot of actual and conceptualised network arrangements, which are more loosely coupled (task-oriented), such as for example supplier-customer relations in a regular market arrangement, clusters, industrial districts, regional networks and Triple Helix (see Haga

2007). The concept *solid network* is used to characterise a network arrangement where the network is a *system*. A *solid network system* has a management, shareholders, board and to some extent department like units. One obvious candidate to be conceptualised as a solid network is located in the Hordaland County, the Sunnhordland Industrial Network (SIN, see Case 12).

Specific individual actors/stakeholders can also be regarded as systems, in the perspective of some theoretical approaches (Luhmann 1997)⁷. The concept of system will be used to cover a broader judicial unit with its own identity, behaviour, traditions, norms and codes of conduct. All of these characteristics are concealed in the coding of the specific unit in question through language metaphors. The coding is the language of reflection that the system utilises, in order to mark its boundaries towards its environment and reflect upon its own particularities as a unity. Reflecting upon its particularities as a system is an imaging process, where the surrounding opinions about the system as well as the way opinions of the surroundings are imagined, is important. In most of the reflection processes (presentations, workshop, network meetings, etc) the SIN network expresses a strong notion of a ‘we’, marking a clear identified border towards different ‘others’.

It is possible to define trust as; (a) linked to place and kinship, (b) the actual membership in a professional community, (c) shared historical experiences and (d) mutual dependencies (Powell 1996). Such a division may explain the pretty strong ‘we’ in our solid networks located in ‘remote’ areas and the problem of establishing such ‘we’ in more urban areas.

The way of expressing an identity is much as any enterprise unit would express their identity in different contexts. Who are ‘we’ and who are ‘others’ can vary to some extent, but the identity is clearly manifested in coding, judicial specifications, behaviour, traditions and norms (see the creation of INH and local cultural potentials, Case 12). Actors included can vary. In some instances, external researchers with a long tradition of participation can be included in the ‘we’, as was the case in the collaboration between SIN and IRIS (see Case 12). On other occasions they can be excluded, as when researchers and collaborative partners (solid network actors) are competing for resources allocated to different local activities. Such competition has occurred on some occasions between participating researchers and the management of the SIN network. Sorting out the potential for conflicts in these events is of

⁷ A specific application of systems as ‘psychic system’ can be perceived as odd, and will not be emphasised here (Luhmann 1997).

outmost importance, in order to maintain a longitudinal collaborative working arrangement between AR engaged research and the field.

A system, like the solid network, can be faced with different change stimuli that more or less threaten the integration of the system. Such ‘shake ups’ have to be managed in some ways in order for the system to function. The SIN network is an example in this respect. It had to widen its definition of membership allowing other branches into the network, in order to avoid the shaping of competitive arrangements (networks) in its area of operation. The coding of the ‘we’ was expanded and changed, in order to meet these challenges. New types of enterprises had to be integrated into the existing network configuration in order for it to persist, though changed. On the other hand the changes could have been necessary in order for the (network) system to continue its existence. Producing variation and alternatives, and then integrating them, could be a challenge for any system.

A crucial aspect linking innovation and integration is through *the creation and production of variations and alternatives*. Producing variation and alternatives is making diversity. Making and incorporating diversity implies that strategic selections are integrated into the change process as variation and alternatives to select from. Additionally this diversity is a constant source of comparison and further development/changes of the existing selections and solution produced. In other words, integration is as much about making a coherent whole of business operations, as it is about creating variation and diversity. This is an important element to reflect upon in critical review activities that are taking place at different levels of innovation, development and change. In the context of this publication, integration is understood as a system’s ability to create variation by utilising the presence of a range of different actors, skills and competences.

Innovation takes place in and through specific contexts. In these contexts there can be more or less identifiable actors present. Thereby innovation is closely linked to integration and the concept of system. This will be outlined further below.

Conceptualising the systemic/system level

Based on the reflections made above, we will try to reveal some more specific notions of the thematic field of inquiry in this publication, specifically the *context*. First the sketching of what notion of context implies is presented through a classification.

Here is an overview of some of the actors, stakeholders, arenas and organisations we are working with. The structuring principle of this overview is based on Luhmann's organisational theory (Luhmann 2000);

Level/ Systemic	Enterprise	Network	Regional	National
Group/arena	Development organisation, project organisation	Conference, meeting place, customer/supplier, multi-enterprise project organisations	Coalition, partnership.	National innovation system (NIS)
Functional	Linkages to larger functional systems		Linkages to larger functional systems	Economic/legal/ Political/research
Organisation/ legal/individual identity	Enterprises, actors, stakeholders, professions	The solid network organisation	Counties, legal business association	Main national employee/employer organisations

Trade associations could be an example of a functional system to the extent that they are formally organised and thereby operate as enterprise organisations (like Ltd (Limited Company), PLC (Public Ltd Co)).

The overview above is structured according to some basic principles. First there are four levels of classification indicated horizontally. These are the enterprise, the network, the regional and the national level. One could here add the global/international as a separate level. Among the reasons for not doing this, is that at the level of discussion in the current contribution, the global/international level constitutes more vague surroundings and environments compared with the other levels. Global/international contexts will therefore not be treated as an enclosed entity with a specific systemic significance. Activities on the other levels are influenced from processes and stimuli originating from a wider global/international context. No identifiable global/international arena where practical activities take place will be emphasised as significant, for the processes and activities taken place on arenas on the other levels in our inquiry. Thus, the nation is the 'highest' systemic level considered in this contribution.

The vertical rows in the overview above cover the systemic. Basically these are levels of systems identified from Luhmann's theories (see Luhmann 1997). The 'lowest' level is the group/arena. This is not a system level in itself (according to Luhmann). A similar view is expressed in this publication. Groups/arenas have no judicial formal foundation. They are less permanent. Regarding we/others there is less of a stable identity. Coding and borders are less

clear. Other systemic identifications overrule the structure of group/arenas. This characterises a weaker level of integration than the specific system level. An example can illuminate this point.

The coalition structure of two counties in VC 2010 (Development Coalition of Hordaland/Rogaland, DCHR) is typical in this respect (see Case 6). It is an arena for activities and strategic decision-making among important actors and stakeholder in the region. This arena has no judicial formal structure comparable to the enterprise or *solid* networks operating in VC 2010 and ED 2000. It has no specific structure of coding. The 'we/other' identities are overruled by other systemic memberships. Borders are less clear. Reflections are less unifying, and the stability of the structure is constantly questioned and challenged (see the evaluation of the coalition presented in Case 6), not least by other system configurations in the regional context. This has become specifically obvious when all sorts of partnerships are created at the regional level, constantly competing with the coalition for the attention of basically the same group of actors/stakeholders. Although tensions at the regional level between counties, actors, local municipalities, etc are constantly present, tensions are enhanced when the government intervenes in the way the local and regional level is operating and differentiated. This has been a significant experience with the coalition in Agder (see chapter III.1 "A Practical Normative Approach to Development – Some Initial Experiences With VRI Processes in the Agder Region by Roger Normann, James Karlsen, Hans Chr. Garmann Johnsen and Jens Kristian Fosse page 172).

When it comes to the organisation/individual, it is the organisation which is given most attention in this publication. The enterprise is an obvious candidate here. A solid network corresponding to an enterprise structure is also regarded as a system in this respect. The SIN network is here an example. This network arrangement has its own management, shareholders, board, etc. We use the term *solid* to emphasis the system aspects of this unit, as presented above (see Case 12). This is important in our study as we reckon that we, through this emphasis, move away from traditional theories of the firm, and turn emphasis towards the systemic aspect.

The functional system level indicates larger social systems in society. They have not been given any considerable explicit attention in the research accomplished in VC 2010 and ED 2000. Considering the functional system level has complicated the attempts to anchor our change activities, as well as our reflections upon different aspects of collaborating at different levels. On the other hand this could be an important system level to consider. In both of these

research programmes, there are possibilities to identify the importance of these systems in the innovation and development activities accomplished. One could consider that we here experienced the interaction between the business/economic system and the research system. Two systems with specific coding, code of conduct, norms, values and behavioural patterns are interacting or experiencing difficulties in their practical interactions. This is experienced in many of the projects where action researchers approach the field. Considering this functional system level could be a way of illuminating how these system interactions produce the scepticism and obstacles experienced by the participants in their practical collaborative activities. This will be discussed more closely with reference to Case 4 above.

In competence building and education there is a certain functional system structure, specifically in the education system. Here is an important aspect to consider when focus shifts between teaching and learning. In our examples both teaching and learning have been core activities in change and innovation processes (see Case 2). Focusing on the education system as a functional system is equivalent to considerations of the political, legal, research and economic system. Also health care could be regarded as a system. In the context of this publication, we will give specific attention to the economic, research, political and education system, leaving out the legal and the possible health system.

In development projects we have experienced that different professional/educational background, community membership (research community), political and economic system linkages could collide and increase tension in initiating specific activities. One such example was experienced in Case 4. In the first phase of constructing the Hardanger network, the process came close to being terminated by representatives from the enterprises. At a network meeting, a researcher made a presentation about the possibilities linked to network collaboration. Although it was discussed internally among the researchers, the message in the presentation did not come through to the representatives from the participating enterprises. It was not understood or received favourably. Then a decision was made to present some practical examples. The examples explained for the participants what this was all about, and what specific outcomes to expect. These exemplifications produced a favourable attitude towards the suggested collaboration with researchers and the enterprises in order to participate in development projects. Cases like this indicate that in the initial stage of collaborative initiatives between different professional or language communities/systems, it is crucial to make linkages and bridging efforts in order to reach some common ground and understanding. Dialogues structured to fulfil such obligations could be crucial in this respect.

This has been experience in many instances in ED 2000 and VC 2010 (see as one additional example Case 6 where such structured dialogues were of outmost importance in the initial phase of the shaping of the coalition DCHR).

In taking different levels into account, this overview tries to make a catalogue of some different social structures and actors that are operating in the context of this contribution, mainly based on experiences by IRIS in VC 2010 and ED 2000. It also considers some of the challenges facing actors at different levels with different interest, when they are struggling to integrate their differences into common actions conducting development and innovation activities.

The following sub-chapter makes a brief positioning of presentation of integrated innovation in relation to some general issues concerning innovation. Based on this positioning and the presentation above, the concept of innovation applied in this core chapter is reviewed.

2.10 Positioning integrated innovation

Examples and issues addressed in the present contribution, as well as in most of the other contributions in this publication, are about organisational change and innovation. On the other hand, cases, illustrations and examples rely heavily on processes and arrangements that are not directly covered by solely focusing on organisational issues. Collaborative structures, inter-organisational linkages (networks), differences and diversities of interests and actors involved, cover many topics related to organisational issues, but not necessarily covered by these issues. This marks some of the differences between a handbook of organisational change and innovation (Poole and Van de Ven 2004), and a handbook covering innovation more broadly (Fagerberg, Mowery and Nelson 2004). In the following presentation, the broader issues regarding change and innovation will be considered, though closely linked to issues of organisational change and innovation. The brief accounts made here will be utilised to position and review the concept of integration and innovation applied in the context of this contribution. We will start off by presenting some issues, concepts and dilemmas covered by theories of change and innovation.

The process of innovation can be split into different stages. A creative stage can be viewed as the initial phase. Here the first occurrence of an idea arises. The idea can be a new product or process. This first occurrence can be conceptualised as an *invention*. It can be distinguished from *innovation*, when innovation is regarded as an attempt to carry out the invention into

practice (Fagerberg 2004). Inventions can be more creative processes carried out by research, entrepreneurs or universities. Innovations on the other hand, are carried out in private or public enterprises/organisations.

The distinction between invention and innovation addresses the issue of creativity and generation of new ideas in an initial phase of radical change processes. This is important in a discussion on what innovation is all about. On the other hand, in collaborative activities in or between actors/enterprises/regions, this distinction can be difficult to hold on to. Creative ideas and processes can occur continuously as they are put into practice, and change the outcome considerably all along. Thus, a clear distinction between first occurrence and later practices risks downgrading the dynamics and creativity of the whole innovation process. The dynamics and creativity of ideas played through dialogue and learning from differences, runs through the whole project of change and innovation. It is a significant aspect of the action research conducted in several of the cases already presented. The distinction between invention and innovation, thus important in some respects, will in this contribution be phrased as aspects of creativity in change and innovation activities, rather than separated as distinct phase of invention in change and innovation.

Innovations can be differentiated according to how *radical* they appear to the actors involved. Change can be considered as *continuous improvements* that are *incremental*, often closely linked to changes in daily operative activities. Such marginal changes can be differentiated from more radical innovations (Freeman and Soete 1997). Brand new production equipment based on technological revolutions can count as radical innovations.

Technological revolutions can be the product of, as well as utilised by more sophisticated high-tech industries. A classification can be made between different degrees of technological sophistication. *High, medium and low tech* can be classifications indicating intensity of R&D in products and solutions (Pavitt 1984). As with classification according to how radical an innovation is, degrees of sophistication can be ways to differentiate more obvious innovations from more marginal improvements in daily operations. On the other hand, this distinction is not that obvious to apply in the context of practice, as has been pointed out several times in the current contribution.

The distinction between *product* and *process* innovation is commonly applied in change processes. New products are assumed to give growth in business operations and employment. This is less obvious regarding process innovations which have linkages to cost-cutting,

restructuring and outsourcing processes (Hammer and Champy 1993, Bruland and Mowery 2004). A similar distinction related to process innovation is made between *technological* process innovation and *organisational* process innovation, the former addresses material, machinery, etc., while the latter focuses on aspects of work organisation (Edquist 2001).

Innovations happen in processes characterised with feedbacks, choices between different pathways that emerges, variations in time span between different stages, etc. It is not a *linear* model where some specific researchers or project leaders carry the process through in a foreseen manner. Rather it is more dynamic, changing in pace and pathways as one goes along, and often driven by users. Trial and error, shortcomings and failures characterises the process (Kline and Rosenberg 1986).

Inventions contribute to the creation of variations to select and choose from. In this contribution this is a stage associated with creativity. On the other hand, it is difficult to differentiate innovation into distinct stages, as indicated by the criticism of the linear model, referred to above. Variations can be created to creative inventions all through the innovation process. There is though a tendency to chose or select among variation and stick to the choice(s) made. This is referred to as *path dependency* (Arthur 1994).

Varieties to choose from and strategically consider requires competence, skills and knowledge of an organisation. It also has to do with the *capacity to absorb* information and knowledge about the alternatives or varieties to choose from (Cohen and Levinthal 1990). The capacity to absorb innovations is constantly challenged through the diffusion of new innovations (Rogers 1995), which takes place through different pathways, networks, structures and systems in the business environment.

Making early selection among varieties of alternatives can give competitive advantages. It can create the possibility of implementing new solutions ahead of competitors. Competitive advantage achieved by being the first to utilise innovations is sometimes referred to as being the *first mover*. Being the first mover articulates a dilemma. It creates a possibility of enjoying the benefits of becoming the first actor to utilise an invention in a competitive context. On the other hand there is a great risk involved. Going for a specific selection of varieties to choose from, can produce a *path dependency* indicating that one is stuck or locked in with the choices made. If this happens and the choice is occurring not to be the most advantageous choice, and the competitors come up with superior solutions, being the first mover can be a costly or wasted choice. Openness to new inventions, ideas and solutions has to be strategically

considered against the advantages of being the first mover. Here is one of the dilemmas of innovation, additional to the ones already touched upon.

How these dilemmas are handled in practice becomes part of *organisational memory* (Levitt and March 1996, Nelson and Winter 1982). Learning through practice, as well as reflecting upon practice and outcomes, becomes an essential aspect of the history of an organisation. This organisational memory evolves into the coding and language of an organisation (Luhmann 2000).

The small sample of categories utilised in innovation theories sketched here, are on different occasions applied in order to reflect upon innovation processes occurring in practice. Theoretically they can be applied to reflect more comparatively and generally upon what characterises innovation processes. Among actual actors, practitioners as well as (action) researchers, consultants, etc they can be utilised in order to enhance knowledge and reflective capacity on the actual processes of change and innovation taking place. They can enhance the communicative skills and actions among practitioners in their actual dialogues upon which different aspects of innovation processes take place. This can become part of the communicative capacity, language, memory and history of organisations. It can constitute the organisational system, structures of business communities and social systems that dialogue, communication and actions take place within and are structured by, both in the present and future (see specifically Luhmann 2000).

In this contribution less emphasis is placed on the discussions of separate categories and theories of innovation, as for instance those presented above (for an overview see Fagerberg, Mowery and Nelson 2004 and Poole and Van de Ven 2004). More attention is directed to the *systemic nature* of innovation, as an additional aspect of the dialogue and communicative approaches. This is a point of departure already outlined several places in this contribution. As Fagerberg puts it;

“Thus, what we think of as a single innovation is often the result of a lengthy process involving many interrelated innovations. This is one of the reasons why many students of technology and innovation find it natural to apply a systems perspective rather than to focus exclusively on individual inventions/innovations” (Fagerberg in Fagerberg, Mowery and Nelson 2004 page 5-6).

The systemic nature of innovation pinpoints the collective and participatory aspects of these processes. Numerous of actors and participants in different social contexts, both private and public, participate and contribute in innovation processes at all stages. Likewise innovations are linked to historically accumulated knowledge, experiences, products and processes. Thus, the view of the individual lonely entrepreneur starting out with two empty hands is a fiction, just like the individual economic man acting like a Robinson Crusoe, only interacting with his companion Friday, is another classical fiction in economic theory. This view of isolated actors without history and linkages to a wider business and social community, prevailing in many theories of economic development and innovation, has been thoroughly criticised in classical debates (Smith 1977/1776, Marx 1972/1861-63). Division of labour and interdependency between producers are just one aspect of the collectivity of economics.

In innovations there are stronger and weaker interrelationships/ties between firms, local/regional actors and the public sector making up a wider framework in which processes of change and innovation are embedded (Edquist 2004). The wider framework of which innovation processes may take place has been conceptualised as *regional* or *national innovation systems* (Lundvall 1992, Nelson 1993 and Asheim and Getler 2004).

The systemic nature of the conceptualisation of systems of innovation implies a focus on relationships between actors (firms, regions, networking activities, coalitions, etc). These relationships are viewed as facilitating structures, more or less enduring, that supports innovation activities. The structural conditions supporting innovation is emphasised and presented. These structural conditions are characterising the nature of these relationships (strong or weak ties, temporary or permanent, dependency/interdependency, clusters, market/hierarchy, etc). Less emphasise is placed on the system as a foundation for innovation processes. Systemic aspects concern the nature of the actors, their activities, dialogues and communication on all levels from work organisations to national and global contexts.

When the systemic nature of innovation is focused, it seems in many cases to imply a focus on *infrastructural* conditions for innovation, more than the nature of the systemic relations themselves as essential aspects and foundation for any perspective on activities of change and innovation processes. In this contribution the more fundamental foundation that a system perspective holds, in all aspects of change and innovation, is the point of departure.

The fundamental foundation of a systemic perspective has many features. A systemic perspective can highlight the way language and communication is structured. Language and

communication constitute the way categories and concepts are utilised to make common reflections processes a way of integrating and utilising differences and diversity of perspectives and interest, to be dynamically at play in innovation processes. Rules, procedures, technologies, beliefs and cultures are conserved through systems of socialization and control (Levitt and March 1996). Language coding and procedures structure communicative and dialogue practices. Amongst the theoretical concepts presented in the discussion above, codes of communication can be identified that facilitates interaction and integration of actors in change and innovation processes. These concepts (and others) can be the communicative codes, skills and language structure that are utilised when actors in innovation processes present and integrate their differences and diversities through dialogue. Some examples will be given in order to clarify this point.

Reflecting upon what counts as a radical change or innovation project, can encourage us to critically reflect upon whether or not the selection chosen counts as something assumed to be creative and innovative. Does the implementation and application of the chosen solution or pathway give us the advantages of the first mover? Or are we just putting efforts into projects where one or several competitive alternatives to the outcome chosen to be our innovation processes, already exists? By questioning how to identify an innovation, and what counts as an innovation, we may encourage a process of critical reflections and considerations regarding whether or not we gain a competitive advantage, through our choices of being a first mover with a certain alternative. Similarly, reflections on the dilemma of been a first mover, and the possible path dependency, can make us more aware of avoiding a lock in where openness to new alternatives is inhibited. Reflections on the dilemmas of path dependency, being a first mover, creativity as spontaneity and other innovation dilemmas can encourage both academics, applied (action) researcher, consultants and practitioners to constantly engage in dialogues and critical reflections on chosen, as well as new alternatives that challenge change and innovation processes. Categories and dilemmas present in the field of change and innovation can encourage these dynamic reflection and communication processes by addressing and questioning different positions and perspectives. Theoretically reflected categories and dilemmas can be structuring guides in the system of coding and language that change and innovation processes and practices are embedded in, as well as utilise.

Sketching the identified field of change and innovation, as intended above, outlines some possible categories and dilemmas to reflect upon. Reflections and critical reviews contribute

to the initiation and structuring of a constant dialogue on practices of change and innovation. Procedures, collaborative arrangements, networks, participatory structures, etc are additional guiding principles contributing to change and innovation processes that make up the systemic feature of integrated innovation as something more than incidental and occasional happenings. Identifying common concepts, dilemmas, arenas, structures and arrangements make up a system that integrates our differences of interests, perspectives and opinions into common dialogues and communicative practices. In the context of this contribution, we are hereby promoting a wider system perspective with broader implications, than a merely emphasis on (infra-) structural conditions regarding change and innovation.

2.11 Reviewing the concept of integrated innovation

The classical definition of innovation (as entrepreneurship) mentioned earlier emphasises the introduction of new goods, methods of production, markets, raw material and organisation (Schumpeter 1934, Swedberg 2000). ‘New’ is here an important element, but what is new? The question of newness was addressed specifically in Case 5.

In Case 5 innovation was about:

- a) new goods like the automated foundry station
- b) methods of production like the new foundry process
- c) new markets for the suppliers that produced the new foundry station in the collaborative project with the customer (Boliden) Odda utilising the facilitated networking processes
- d) new organisational solutions through the collaborative arrangement of networking.

These were experienced as new and innovative outcomes by the participants. Whether or not these outcomes could count as innovation is harder to state through an overall judgment based on experiences from individual enterprises.

Context dependent approaches emphasises innovation as any idea, practice or material artefact recognised as new by those adopting it (Zaltman 1973, Holbek in Grønhaug and Kaufmann). This is an obvious fact in the case of Odda (see Case 5). Do context dependent approaches just define as innovation anything that somebody considers innovation?

Focusing on the individual entrepreneur might hold on to the classical myth of someone starting with two empty hands building his/her business (Smith 1977/1776). This was

certainly not the situation in Case 5 where a number of preconditions were fulfilled in order to encourage the project activities. The reason for presenting the enablers and the systemic approach to innovation was in order to address preconditions prevailing in the innovation activities initiated in Odda. Many of these preconditions are not addressed explicitly and sufficiently in discussion on innovations. Insufficiency regarding discussions and conceptualisations was addressed in the presentation of the innovation dilemma.

Other classics emphasise that any economic activity is dependent on production equipment, resources and knowledge right from the start, implying that starting with two empty hands is a myth with little foundation in reality (Ricardo 1977/1817, Marx 1972/1861-63). Such preconditions were also important in Case 5. People co-operate to a large extent in innovative activities (Burns and Stalker 1961). The network collaboration and specific project cooperation made this a characteristic feature in Case 5. Solid network structures (Case 12) were experienced as supportive of strategically guided long-term improvement, change and innovation processes. It consequently becomes difficult to focus mainly on single point innovations practiced by isolated individuals (Juran 1995/1964, Swedberg 2000).

Innovation might take place inside enterprises by individuals, as *intrapreneurs* (Pinchot 1987). Inside enterprises, innovations might be organised as strategic projects requiring collaborations, resources and support from the organisation as a whole (Burgelman 1983). It has been indicated that innovations are made only by big leading firms. How can it be that bigger companies, leading firms, even monopolies, innovate successfully (Griffith and Van Reenen 1999)? They are even considered to innovate *more* successfully than smaller firms facing more serious entry barriers (Entre 2004). Does this indicate that innovation is encouraged by organisations, systems, structure and resources⁸?

Two issues will be highlighted from this discussion;

- It might be useful to consider innovation from different perspectives, opening up greater variation and possible new ways of dealing with innovation. In the current contribution, new ways of dealing with innovation have been considered drawing on

8 Some caution regarding the statements made here has to be presented. Rosemary Exton's work (see chapter III.3 page 209 in this publication) within the UK National Health Service suggests that large scale innovation programmes do not succeed and are not sustainable if they are delivered as strategically driven linear processes. She draws a clear distinction between the compliance of organisational actors with centrally driven expectations and targets ('ticking boxes'), and policy entrepreneurship characterised by the emergence of key actors willing or able to work outside formal structures and protocols in ways that are themselves innovative.

concepts and perspectives from system theory (Luhmann 1997) applied to contexts and empirical material from two research programs (ED 2000 and VC 2010) presented through cases.

- In relation to the main proposition in this contribution, innovation is considered in the light of collaboration, participation, multiple skills, the crossing of lines of demarcation, and integration of different actors. An example of the potential in this respect is the demarcation of the differences between the ‘soft’ social sciences and the ‘hard’ natural technological sciences (see Habermas 1968, 1970, 1981 and 2004 as a classic). An interesting alternative to consider in this respect is a uni-science approach cutting across traditional barriers between social ‘soft’ and technological ‘hard’ science and research (Luhmann 1997).

Although the discussion in the current contribution tries to reveal what counts as innovation, or at least give some guidelines for indicating what we consider as innovation, there is a basic paradox inherent. The paradox to consider in this respect adds to the paradoxes we already have pointed at above.

Innovation on the enterprise level gives little or no indication of what counts as innovation at the society level. The zinc smelter counts as an example here (see Case 5). A very similar example is given by social economists (Johansen 1983) that was also applicable for Odda, regarding conflicts of interests between manufacturing industries on the one hand and tourism/farming/fishing on the other hand.

The smelter in question is located in the Hardanger fjord (see Case 5). It is producing zinc. Together with other industrial enterprises at the same location, it has produced huge amounts of very dangerous and damaging waste material, and dumped it in the local environment. Fishing and tourism has suffered and there have been constant conflicts between actors with different interests in the area. What has been profitable for one or some enterprises (the zinc smelter, Boliden) seems to have been damaging for the wider context of business interest⁹. Today these conflicts are less articulated due to improved waste handling. On the other hand the example in Case 5 indicates that what counted as innovative and profitable for one (or

⁹ In addition this raises important questions about the nature of corporate power and the failure of regulation. Steven Lukes’ book, *Power: A Radical View*, discusses similar cases, and explores the conditions under which the nature of corporate power in local economies can become hegemonic (Lukes 2004). Although important, this discussion will not be elaborated in the context of this contribution.

some) industries, was not necessarily beneficial for other enterprises, the community or society as a whole. In other words, what counts as an invention, innovation or business opportunity at the enterprise level, does not necessarily count as such at a societal level.

The example above counts as an important paradox when considering innovation, business opportunities, profit and prosperity. There is a qualitative difference on what counts as an innovation at the individual (subjective, enterprise, regional, network) level, and what counts at the level of a whole society.

When it comes to the term *integrated innovation*, the emphasis is on the creation of greater *variation to select from*, in order to achieve new business opportunities and market possibilities. Greater innovation opportunity in this respect relates to cutting across traditional boundaries and differences in order to utilise variations. New varieties are considered to emerge when:

- Enterprises create *new varieties* and ways to co-operate, participate, utilise, learn, etc. in order to select and create business opportunities and market possibilities. Cutting across traditional differences of interests between social partners, professions, departments, positions in the organisation, competences, gender, etc are ways of creating new opportunities and greater variety to choose from.
- Enterprises *collaborate* in networks, clusters, joint ventures, etc in order to enhance their competitive advantage. Collaboration can be around product development, productivity, logistics, sharing of competence, market efforts, collective service provisions, learning networks, etc. By co-operating in networks, new possibilities emerge as the more or less fixed barriers between enterprises and business systems are crossed (Levin and Knutstad 2003, Skorstad 1999, Pyke, Becattini and Sengenberger 1990, Brusco 1990, Edquist 1997, Nelson 1993, Levin 1993, Lundvall 1992, Pior and Sabel 1984). We have in this respect specific experience with both horizontal networks and clusters (value chains) in ED 2000 and VC 2010.
- Partnerships, *coalitions* and 'Triple Helix' (Arbo 2000) express collaboration at a regional level, in order to create greater variation and possibilities for innovations (Lundvall 1992, Nelson 1993). Crossing different political, administrative and geographical boundaries creates a new variety of strategic evaluations, access to resources, support systems, competence, infrastructure requirements, etc. In VC 2010

an experience with partnership/coalition between the county of Hordaland and Rogaland forms an interesting setting to learn from, both regarding possibilities and obstacles in regional development and innovation systems (see Case 6).

- As indicated in Case 5, R&D collaboration with enterprises and the business environment can be enhanced through the shaping of large long-term projects *crosscutting traditional barriers* between professions, different competences, knowledge, enterprises, etc. One important matter in this respect has been to consider ways of making it possible to utilise ('unlock') potentials in collaboration across traditional boundaries between social 'soft' research and science, and more technological 'hard' research and science, as well as barriers between different R&D institutions, counties, public support institutions/systems, etc. In VC 2010 several long-term projects in collaboration with industry and other regional partners were launched (see Case 6 that illustrates this point).

Several of the bullet points above address collaborative arrangements. Collaborative arrangements like coalitions and networks have been presented throughout this contribution both in discussions and through case material. There is a vast theoretical and empirical material on such collaborative arrangements, provided from previous contributions and other contexts than those which have been in the core of our presentation here. The Italian industrial districts have served as one such important context for discussions on collaborative arrangements. We have not intended to reopen a comprehensive debate on industrial districts, flexible specialisation, clusters, networks, etc in this contribution. Here just a few comments regarding the issue will be presented.

As indicated above, cutting across organisational barriers between networks can unlock possibilities for co-operative arrangements (Skorstad 1999, Totterdill 1999, Becattini and Sengenberger 1990, Brusco 1990, Edquist 1997, Nelson 1993, Levin 1993, Lundvall 1992, Pior and Sabel 1984). Network collaboration is one such co-operative arrangement, which has been discussed and documented in case material in the present contribution. Similar co-operative arrangements have been described, analysed and conceptualised in the contexts of the Italian districts. The Italian industrial districts literature has described features of such arrangements as something significant in a culture of collaboration and interdependency between small firms as an extension of a peasant culture. Others have viewed comparable phenomena arrangements built on communist solidarity. Even claims of paradigmatic changes

from 'fordism' to flexible specialisation have been promoted (Skorstad 1999, Pyke, Becattini and Sengenberger 1990, Brusco 1990).

Here are a few remarks on these issues;

- a) The significance of flexible specialisation as a paradigmatic shift has been criticised as exaggerated. Enterprises specialise, automate and generalise their production constantly. Such processes have taken place throughout the whole history of industrialisation. Paradigmatic shifts from fordism to flexible specialisation is hard to argue and identify as something empirically significant (see Skorstad 1999 for a summary on this topic), at least on the general level claimed by its advocates when it is presented as paradigmatic (Piore and Sabel 1984).
- b) The advantages, significance and solidity of collaborative arrangements in the Italian industrial districts has been critically examined and questioned. These arrangements have been viewed as feudal like (family based, poor work arrangements and conditions, etc). Their significance, temporality, size and number has been questioned, as with the textile industry where harsh takeovers centralised the whole enterprise structure and nearly destroyed what was regarded as significant for this context of the Italian district structure (as was the case with Benetton some years back, see Harrison 1994 a and b).

Some policy guidance to collaborative networking processes has been mentioned in connections with the Italian industrial district, but nothing resembling the strategically guided networking processes experienced in the context of solid networking processes in south west Norway, presented in the cases in this contribution.

The remarks made here indicate that comparisons and lessons learned from the Italian context can contribute to broaden the perspectives on integrated innovation. On the other hand, we see that basic arguments and contextual findings will not change significantly by bringing these comparisons and discussion regarding the Italian districts further. These remarks and the discussion will therefore not be elaborated further in this context (see Haga 2007 for a more in-depth presentation and discussion on some of these topics).

One of the perspectives that was considered is Nielaus Luhmann (1997 and 2000), who has developed a system theory perspective based on a multitude of approaches and perspectives cutting across traditional research and science barriers. He has received increasing attention in connection to (a) organisational development (Luhmann 2000, Voss 2002), (b) enterprise and

network development (Vos, Keizer and Halman 1998, Vos 2004) and (c) innovation in businesses and economic life (Baecker 2000, Vos 2004).

In this context Luhmann has been emphasised for the following reasons:

- Basically his approach cuts *across traditional barriers* in science and research. Luhmann has a uni-science perspective, lacking the traditional demarcation between social and natural science as is the case with Habermas (see Habermas 1970, 2004). This is important when ambitions to shape long-term large projects consisting of a multitude of partners and stakeholders, professions, perspectives etc. are considered, as in Cases 5, 6 and 10).
- Luhmann's perspectives on the overall development of society represent new ways of grasping essential aspects of innovation. New ways of *handling the 'innovation dilemma'* could be a possible and useful outcome. This is specifically so regarding his emphasis on the structuring conditions (systemic) of individual interaction in different conditions. Innovation comes to be regarded as something other than just an incidental happening.
- In his system theory Luhmann tries both to *highlight the dynamics* and *expand the range of variation and hence expand possibilities for selection*, as well as the necessity to incorporate new achievements into the existing structure to make the system reproduce. In other words, his concepts can be used to highlight the realisation of new market and business opportunities, and at the same time consider ways of incorporating new business opportunities into the existing business (Vos 2004).
- Viewing relations inside enterprises, between enterprises in networks and partnerships in regional innovation systems (Asheim 2000, Asheim and Pedersen 1998) represents new challenges in order to grasp both theoretically and empirically what goes on, in order to approach and utilise these relations in new ways. Here action oriented and consultancy based activities need more research in order to find new ways of handling opportunities and obstacles (Claussen 2004). Luhmann's concepts have been applied in order to see if they represent new opportunities to enrich the understanding of this field and create new possibilities, in order to shape practical and workable solutions in R&D collaboration with the business environment.

Creating possibilities for business and market opportunities implies creating greater variation. *Variation* has to be created in order to get a greater variety for *selection*. For Luhmann (1997) variation and selection has to be *functional* for the actors, in this case the enterprises. The function to fulfil is the increased competitive advantage of enterprises, regions, as well as nations (Porter 1990 a and b).

Emphasise on Luhmann's system perspective and conceptualisation in integrated innovation needs some critical considerations. Luhmann's system perspective has been the core of a critical discussion between two of the most prominent social scientists after World War II, Luhmann and Habermas. In an early contribution to the debate (Habermas and Luhmann 1971), Habermas presents one of his first drafts of his so-called linguistic turn and his theory of communicative action.

The theory on communicative action and interpretations emphasising dialogue-based interactions in enterprise development, has been the dominant pulse of theoretical conceptualisations and analyses produced in ED 2000 and VC 2010 (Gustavsen 2001 *et al*, Ennals and Gustavsen 1999, Gustavsen 1992). Differences of interests, as between employees/employers, research/businesses, regional actors, etc, have been balanced and utilised through the application of dialogue-based arrangements, like *the development organisation* (Pålshaugen 1996 in Gustavsen and Toulmin 1996). Utilisation of dialogue-based arrangements to promote enterprise development and innovation in local and regional business context has also been extensively applied by IRIS in ED 2000 and VC 2010, as demonstrated in the case material in this publication. No doubt this has, and currently is, a cornerstone in enterprise development and innovation activities taking place in a multitude of contexts.

As presented in Case 12 on the solid network collaborative arrangement, there seem to be great challenges facing the prolonging of continuous improvement and innovation activities both within and between enterprises. This challenge has also made itself apparent also on the coalition level, see Case 6. The coalition between Hordaland and Rogaland (DCHR) has recently shown a decline in activities, and is presently evaporating. Possible causes behind these challenges are some of the underlying reasons why we have redirected attention to Luhmann and his system theory. This will be further illuminated in the lessons learned at the end of this chapter (see 'Lessons learned so far' page 109). Here we will give a brief account of these reasons related to the debate between Habermas and Luhmann.

Habermas argues that Luhmann's system theory is mainly regarding the enhanced governing capacity in the evolution of society, based on process framed by strategic action and social/technical planning/decision making. There is a *technical instrumentality* in the whole approach of the system theory of Luhmann, according to Habermas (Habermas and Luhmann 1971). This system theory approach will not grasp the emancipatory processes underlying changes of institutions, ideologies and practises, according to Habermas. In the context of integrated innovation, this critique could be phrased as the bureaucratisation problem in the innovation dilemma, addressed earlier in the present publication. The basic argument of Habermas is that these emancipatory processes of change can only be addressed by his theory of communicative action. In the context of ED 2000 and VC 2010, dialogue based processes would be the sole contributor in the creation of collaborative arrangements facilitating improvement and innovation activities.

As stated earlier, there is no doubt that communicative action and dialogue based collaborative arrangements are key 'unlockers' of potentials for change and innovation. On the other hand these arrangements need guiding systems and structures, such as solid network and coalitions, in order to avoid becoming temporary and incidental point of actions without thorough strategic and consciences considerations and decision-making. In accordance with the innovation dilemma, action of creative change needs guidance in order to prevent such changes from being mere spontaneous accidental events. Guiding structures and systems can be the necessary arrangements for prolonged involvement and legitimacy for change and innovation in and between enterprises, as was demonstrated in several of our cases (see Case 8 as an example of the advantage of agreement between employee/employer in improvement and innovation activities). Habermas seems not have taken sufficiently into account the necessity for systemic and system structures, regarding institutions and organisations that will give continuity and structure to the dialogue and communicative interactions to which he directs attention. Here is where we have found it useful to address Luhmann's system theory, in addition to the contribution from Habermas and his theory of communicative action.

There are two important critical remarks to address regarding the application of Luhmann's contributions at this point;

- Luhmann's system theory could imply adherence to a technical instrumental rationality, a possibility that Habermas emphasises. We want to give attention to another possible utilisation of system theory where this danger is to be avoided. The system theory of Luhmann emphasises a dimension of we/other, right/wrong,

false/true, as the basic coding of opposites in the language of social systems. He bases his philosophy of language on Hegel's logic (see Hegel 1969/1812. Hegel's philosophy is also important to Habermas (see for example Habermas 1983). This makes it possible both to address dynamic and communicate aspects of Luhmann's system theory, something that has been the underlying ambition in this contribution (see the 'we' extended to include the initial strange action researcher as a close collaborator in the SIN network).

- System theory endangers the possibility of homogenising social relations, and implying a conflict free arrangement of actors. This could be damaging to an organisational system based theory, as the one advanced by Luhmann. By emphasising the dynamic social and communicative conceptualisation based on Hegel (see point made above), we think it is possible to prevent these dangers. On the other hand, the possible basic contradictions between employees/employers, labour/capital, outlined by Marx (1972/1861-63), is not highly regarded either by Habermas or Luhmann, though it can be addressed as the basics of any agreements or collaborative arrangements in working life.

A more thorough discussion of these and other topics related to the bullet points above, are presented in Claussen 2000 a and b.

In order to link to the existing business, variation and selections have to be adjusted and incorporated into the existing business. Regaining of control (Juran 1954, 1995/1964, Deming 1986) over the 'breakthrough' (Juran 1995/1964) has to be achieved in order to continue the co-existence between present business and the newly acquired business opportunities.

Luhmann points this out as necessary for the *re-stabilisation* of the system.

Managing re-stabilisation of the system is necessary in order for a business to continue to exist. Succeeding in re-stabilisation also contributes to enhanced independence and self-control of the system in its surrounding environment. This is, in other words, the way enterprises strengthen their market positions as competitive and fit for future challenges (Vos 2004, Vos, Keizer and Halman 1998). Luhmann's perspective has shown itself useful both to highlight the functional requirements for change and instability, at the same time pointing out the necessity for re-stabilising in order to gain control and continuation of the existing business. This points to, on the one hand, the dilemma between development/ change/

innovation and, on the other hand, requirements from daily operations of the enterprises (see Case 3).

In order to produce new opportunities, it is necessary for the environment and enterprises themselves to produce variation and opportunity to select from. If this process of creating variation to select from is to be successful, it has to be functional for the enterprises. Relations to the environment can in this respect represent important opportunities. Collaboration with R&D institutions, networks, clusters and innovation system (Asheim 2000, Gustavsen 2001 and 2004a) represent some of the potentials to create variation. Linking up to these opportunities in the environment implies emphasising the interrelations and *interdependency* regarding the surrounding environment. On the other hand, it is a necessity to use these possibilities in order to create greater competitive advantage and *independence*. Greater dependency and linkage to the environment is supposed to create greater *independence* for acting enterprises. This dependency/independency relationship is a paradox in all social systems, just like the innovation dilemma mentioned earlier. Handling such paradoxes and dilemma is a functional requirement (Luhmann 1979). How to deal with these paradoxes and dilemmas in the practical context of the enterprises and business environment, finding workable solutions, have been the challenges in most of the experiences and examples presented in this publication.

Two additional issues to address

Learning from differences has shown itself to be an important issue to consider in our research. In ED 2000 and VC 2010 we experienced that learning from differences is crucial in order to create new opportunities. ED 2000 engaged collaboration between numbers of different enterprises in different networks. These networks were located in different regional contexts, and the participating enterprises were engaged in quite different market segments and belonged to different business areas. This diversity increased in VC 2010 as regional actors from two different counties were engaged in a Development Coalition (see Case 6). This structure increased the diversity of participating enterprises, both regarding branches, business opportunities and market segments. Although the diversity was present and increased, the enterprises were still mostly manufacturing industry, with some exceptions from service industry. They were all located in counties where the oil and gas industry dominate the economy. Differences and resemblance were balanced so that comparison and learning was possible, as well as network collaborative activities.

From the research point of view, the overlap of professional background (social science, technology, humanities) was a challenge, but also a tremendous potential present already with the launching of ED 2000. Multi-disciplinary background and approaches were utilised, although they also represented great collaborative challenges. Throughout the research in ED2000 and VC2010, participating action researchers with very different professional backgrounds have been engaged in the same projects and working together with the same enterprises/networks. From their different backgrounds they have been able to deploy and test out quite different approaches. Additionally, the different researchers have had the opportunity to learn from others' different approaches and professional backgrounds, creating new opportunities and ways to deal with the tasks confronting them in the action research projects they became engaged in.

Learning from differences is one way of creating variation that has been important in the research done. The creation of variation has been obvious when it comes to local, regional and enterprise differences. Professional background of participating researchers has also been a source of creating variation. This goes also for the differences among the collaborating actors in the coalition. Less obvious are the creation of variation related to new business opportunities, market segments, and products. The Odda case with the foundry station can count as an exception here (see Case 5 for details). The new foundry station was at least a new product for the suppliers, and could count as a technological innovation allowing the customer to operate the founder in a completely new way.

There are at least two possible reasons for the lack of ability to create variation and innovation in our research:

- The focus was mainly to get something done without any systematic and conscience reflections on the strategic choices made, and whether or not they would count as innovative.
- The whole programme of VC 2010 was limited in scope, and encouraged neither enterprises nor researcher to really engage themselves in creative efforts to create variation and innovation. Researchers were too focused on their engagement on the premises of the participating business community and stakeholders. The business community and stakeholders had possessed a short-term perspective on their change efforts.

In other words the preconditions and enablers in order to create variation and innovation were insufficient. Related to what has been elaborated above, one could claim that the system requirements were not sufficient to create variation and innovation that would be of obvious significance to the participant or the surrounding environment.

The system requirements point to the importance of the necessary precondition to produce variation and innovation. Researchers belong to a research community. This is both so regarding the competition for funding of projects, as well as the measures of outcome of research conducted by the rest of the research community, stakeholder, partners and the environment as such. Action researchers in our projects belonged unquestionably to a wider research community or research system (a functional system). Identity, demands, codes, traditions, resources, norm and values make this a system in its own right. It limits the scope and perspectives of the participants. At the same time it has boundaries towards other systems that make up its identity and the difference to others (a 'we'). This creates variation between the research community and the business community as a resource for innovation. Difference could here be a source for mutual learning and capabilities to exploit in joint innovative activities. On the other hand, this differentiation between the research community and the business community creates the boundaries that have to be managed in order to collaborate in joint activities. Here is a balance between the creative resources of difference and variation against the boundaries, and obstacles that these same differences and variation create, based on their linkages to two different functional systems, as was demonstrated in Case 4.

The possibility of learning from differences is an important precondition for the creation of variation and innovation. Linkages between different functional systems (business and research) are one way of learning from differences. When different functional systems are linked, they give opportunities for the learning from differences. On the other hand they can be regarded as boundaries that have to be crossed, and obstacles to be handled in order to make collaboration happen. Our examples of introduction to the field as action researchers demonstrate some of the dilemmas involved, when researchers representing their functional system meet with participants from the economic business system in industrial enterprises. The possibilities of producing variation based on these differences, and at the same time creating common collaborative efforts, are embedded in the preconditioned functioning of systems and their surroundings.

Lessons learned so far

Considerations this far have been based on theoretical and analytical reflections on case material produced by IRIS researchers in their action-based research activities in ED 2000 and VC 2010. Close collaboration with actors contextualised on local/enterprise, regional, and to some extent national arenas, has been the core of the production of this material. Critical analytical and theoretical reflections has been a co-generative learning process, where a wider context of researchers and academics from Kingston have been specifically important, together with colleges from the Nordic countries and other research communities nationally (Agder).

The lessons learned so far are summarised in the two bullet points that follow.

- Dialogue and communication are important aspects of change and innovation processes in the contexts regarded in this contribution. There is a need to address the necessity to emphasis structure and system, in order to make change and innovation ongoing activities, to ensure competitive advantages for the participants. In many of the cases we have experienced (enterprise development, networking and coalition collaboration), interactions have been temporary, task oriented and incidental. As for the coalition DCHR, a weak 'we' with no explicitly articulated boarder demarcations towards the surrounding environment, indicated lack of possibilities for institutionalisation, organisational structuring and prolong system arrangements. Lots of dialogic based clarifications to create trust and participatory linkages were needed to compensate for the lack of procedures, formal agreements and lasting structural arrangements. The evaporation of the DCHR collaborative arrangement indicated the task-oriented features of this co-operation, as has been the case with several local network and collaborative activities in and between enterprises (see case material for examples).
- The solid network structure has been presented as the most structured system arrangement in our case material, besides from the enterprise organisation itself. Here is a solid strategic arrangement, structured and institutionalised as a judicially governed entity, much like the enterprise organisation. The solid network structures marks a strong 'we' with clear border demarcations towards the surrounding environment. This prolonging systemic arrangement is guided at continuous and lasting improvement activities, governed by more or less strategic considerations and

decision-making processes. There is less need of revolving dialogues in order to recreate trust and participatory arrangements. Cases in our contribution emphasise that structure is an important aspect of making lasting improvement and innovation processes occur in the context of integrated innovation addressed in this contribution. Here is where Luhmann and his system theory has been important in order to illuminate this possibility, as an addition to what has been emphasised by the key role Habermas and his interpreted dialogue and theory of communicative action has highlighted.

2.12 Literature

AAD (2001) *Intensjonsavtalen om et mer inkluderende arbeidsliv*. Oslo.

Altwater, E. and Mahnkopf, B. (1999) *Grenzen der Globalisierung*. Westfälisches Dampfboot.

Andersen, Svein S. (1997) *Case-studier og generalisering. Forskningsstrategi og design*. Fagbokforlaget, Oslo.

Anker-Ording, A. (1965) *Bedriftsdemokrati*. Universitetsforlaget, Oslo.

Arthur, W.B. (1994) *Increasing Returns and Path Dependency in the Economy*. Ann Arbor.

Asheim, B. and Getler, M.S. (2004) The Geography of Innovation: Regional Innovation Systems in Fagerberg, J., Mowery, D.C. and Nelson, R.R. *The Oxford Handbook of Innovation*. Oxford University Press.

Asheim, B. (2007). Learning and innovation in a globalising economy: The role of learning regions in Gustavsen, B., Nyhan, B and Ennals, R. (Eds) *Learning together for local innovation – the promotion of learning regions*. Cedefop, Luxembourg 2007.

Bardi, A. (2007). Emilia-Romagna after industrial-district: Regional policy implication in Gustavsen, B., Nyhan, B and Ennals, R. (Eds) *Learning together for local innovation – the promotion of learning regions*. Cedefop, Luxembourg 2007

Bradley, H., Erickson, M., Stephenson, C. and Williams, S. (2000) *Myths at work*. Polity.

Bruland, K. and Mowery, D.C. (2004) Innovation through time in Fagerberg, J., Mowery, D.C. and Nelson, R.R. (2004) *The Oxford Handbook of Innovation*. Oxford University Press.

Brusco, S. (1990). The idea of the industrial districts: Its genesis in Pyke, F., Becattini, G. and Sengenberger, W. *Industrial districts and inter-firm co-operation in Italy*. ILO Publications.
Busch, K. (1992) *Umbruch in Europa*. Bund-Verlag.

Claussen, T. (2000a) *Bedriftsutvikling, arbeidsmiljø og filosofi*. Unipub forlag.

Claussen, T. (2000b) Et bidrag til arbeidslivets filosofi. Noen refleksjoner over betingelsene for demokrati i arbeidslivet på bakgrunn av Rawls og Habermas. *Norsk filosofisk tidsskrift* nr. 2 2000.

Claussen, T. (2001a) *Arbeidslivets klassikere og dagens arbeidsliv*. Unipub forlag.

Claussen, T. (2001b) Verdiskaping i Utviklingskoalisjonen for Hordaland/Rogaland. Søknad til Industri & Energi, Norges forskningsråd.

Claussen, T. (2004a) Participation and enterprise networks within a regional context: Examples from South-West Norway in Fricke, W. & Totterdill, P. *Action Research in Workplace Innovation and Regional Development*. John Benjamins, Amsterdam.

Claussen, T. m.fl. (2004b) *Integrert Innovasjon*. Prosjektbeskrivelse for 3-årig SIP ved IRIS.

Claussen, T. (2006) *Reflexions on the Relation between Flexibility, Globalisation and Working Life* i Skorstad, E. og Ramsdal, H. *Facets of Flexibility*. Østfold University College.

Cohen, W. and Levinthal, D. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly* 35 page 123-133.

Dei Ottati, G. (1994) Trust, Interlinking Transactions and Credit in the Industrial District, *Cambridge Journal of Economics*, 18, page 529–546.

Durkheim, E. (1964/1893) *The Division of Labour in Society*. Macmillan, N.Y.

Edquist, C. et al (2001) *Innovation and Employment: Process versus Product Innovation*. Cheltenham: Edward Elgar.

Edquist, C. (2004) Systems of Innovation: Perspectives and Challenges in Fagerberg, J., Mowery, D.C. and Nelson, R.R. (2004) *The Oxford Handbook of Innovation*. Oxford University Press.

Ennals, R. and Gustavsen, B. (1999) *Work Organisation and Europe as a Development Coalition Dialogues on Work and Innovation*. John Benjamins, Amsterdam

European Commission (1997) *Partnership for a New Organisation of Work*. Green Paper.

European Commission (2007a) *European Social Reality*. Special Eurobarometer.

European Commission (2007b) *Joint Report on Social Protection and Social Inclusion 2007*. Memo/07/66.

Fagerberg, J. (2004) Innovation: A Guide to the Literature in Fagerberg, J., Mowery, D.C. and Nelson, R.R. (2004) *The Oxford Handbook of Innovation*. Oxford University Press.

Fagerberg, J., Mowery, D.C. and Nelson, R.R. (2004) *The Oxford Handbook of Innovation*. Oxford University Press.

Fleming, D. (ed.) (1998) *Global Redefining of Working Life*. Nord 1998:12.

- Freeman, C. and Soete, L.G. (1997) *The Economics of Industrial Innovation*. London.
- Fricke, W. and Totterdill, P. eds. (2004) *Action Research in Workplace Innovation and Regional Development*. Dialogues on Work and Innovation 15. John Benjamins.
- Gambetta, D. (2000) Can We Trust Trust? in Gambetta, D (ed.) *Trust: Making and Breaking Cooperative Relations*. Univ. of Oxford.
- Gandrud O., Haga T. and Tønnessen T. "Pilotprosjektet "Utviklingsansvarlig i SMB", RF-report 2004/010. Based on material from the project "VS2010 Industrinettverket for Sunnhordland" This project is a part of the regional partnership "VC2010 – The development coalition of Hordaland and Rogaland"
- Gustavsen, B (1992) *Dialogue and Development*, Van Gorcum Assen/Maastricht.
- Gustavsen, B. and Toulmin, S. (1996) *Beyond Theory*. John Benjamins.
- Gustavsen, B. et al (2001) *Creating Connectedness*, John Benjamins.
- Gustavsen, B. (2001) *Theory and Practice: the Mediating Discourse in Reason P & Bradbury H Handbook of action research*, Sage, London .
- Gustavsen, B. (2004a) Participation and local organisation in Fricke, W. & Totterdill, P. *Action Research in Workplace Innovation and Regional Development*. John Benjamins, Amsterdam.
- Gustavsen, B. (2004b) *Benchmarking av innovasjonsprosesser i Norden – arbeids- og utviklingsorganisasjon*, Report to Vinnova and the Norwegian Research Council, under publication .
- Gustavsen, B. (2007) paper in *Action Research*.
- Habermas, J. (1970): *Erkenntnis und Interesse*. Suhrkamp Verlag, Frankfurt am Main.
- Habermas, J. and Luhmann, N. (1971) *Theorie der Gesellschaft oder Sozialtechnologie – Was leistet die Systemforschung?*. Suhrkamp.
- Habermas, J. (1981): *Theorie des kommunikativen Handelns*. Bind 1 og 2. Suhrkamp Verlag, Frankfurt am Main.
- Habermas, J. (1983) *Moralbewußtsein und kommunikatives Handeln*. Suhrkamp.
- Habermas, J. (1992) *Faktizität und Geltung*. Suhrkamp.
- Habermas, J. (1995) Reconciliation through the Public Use of Reason: Remarks on John Rawls's Political Liberalism i *The Journal of Philosophy* Volume XCII, Number 3.

- Habermas, J. (1996) *Die Einbeziehung des Anderen*. Suhrkamp Verlag, Frankfurt am Main.
- Habermas, J. (2004) *Wahrheit und Rechtfertigung*. Suhrkamp.
- Haga, T. (2007) *Orchestration of networking processes*. Doktorgradsavhandling NTNU Trondheim.
- Hammer M. and Champy, J. (1993) *Reengineering the Corporation*. London.
- Harrison, B. (1994a) The Italian Industrial Districts and the Crises of the Cooperative Form: Part I in *European Planning Studies*, Vol. 2, No.1, 1994
- Harrison, B. (1994b) The Italian Industrial Districts and the Crises of the Cooperative Form: Part II in *European Planning Studies*, Vol. 2, No.2, 1994.
- Hegel, G.W.F. (1969/1812) *Wissenschaft der Logik. Bind 1 og 2*. Suhrkamp Verlag, Frankfurt am Main.
- Hvid, H, Lund, H. and Mac, A. (2007a) *Work place conceptualization of psychosocial working environment related issues in knowledge work*. Paper under utarbeidelse og presentert på VIPS konferanse våren 2007.
- Hvid, H, Lund, H. and Pejtersen. (2007b) *Control, Flexibility and Rhythms..* Paper under utarbeidelse og presentert på VIPS konferanse våren 2007.
- Juran, J.M. (1995/1964) *Managerial breakthrough: the classic book on improving management performance*. Revised ed.
- Johansen, L. (1983) *Samfunnsøkonomisk lønnsomhet*. Tanum Nordli.
- Johnsen, P. (1982) *En fagforening i Lokalsamfunnet*. Stens trykkeri.
- Kanter, R.M. (1988) *When a Thousands flowers Bloom: Structural, collective and social conditions for innovation in organisation*, Research in Organisational Behaviour, Vol. 10, pp. 169-211.
- Karlsson, J. Ch. (2006) Bra och dålig flexibilitet – en litteraturöversikt. *Arbetsmarknad & Arbetsliv* årg 12 nr. 3.
- Kettunen, P. and Rissanen T. (1995) *Arbete och nordisk samhällsmodell*. Tammerfors.
- Kettunen, P. (1998) Globalisation and the Criteria of "Us" i Fleming, D. m.fl. *Global Redefining of Working Life*. Nord 1988:12.

- Kline, S.J. and Rosenberg, N. (1986) An Overview of Innovation” in Landau, R. and Rosenberg, N. *The Positive Sum Strategy: Harnessing Technology for Economic Growth*. Washington.
- Lantz, A. and Totterdill, P. (2004) Linking workplace innovation and regional development: Towards new roles for the university sector, in Fricke, W. & Totterdill, P. (eds.) *Action Research in Workplace Innovation and Regional Development*, John Benjamins, Amsterdam.
- Levitt, B. and March, J.G. (1996) Organizational Learning in Cohen, M.D. and Sproull, L.S. (Eds.) *Organizational Learning* (pp 516-540). Thousand Oaks, CA: Sage.
- Luhmann, N. (1997) *Die Gesellschaft der Gesellschaft*, Teilband 1 und 2, Suhrkamp.
- Luhmann, N. (2000) *Organisation und Entscheidung*. Westdeutscher Verlag.
- Lukes, S. (2004) *Power. A radical view*. Palgrave.
- Lundvall, B.Å. (ed.) (1992) *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London.
- Lysgaard, S. (1996/1961) *Arbeiderkollektivet*. Oslo.
- Lysgaard, S. (1978) *Utviklingsoppgaver i det videre arbeid med ”den sosiologiske tankemodell”*. Arbeidsnotat Institutt for sosiologi, Oslo.
- Maciejewski, F. et al (1973) *Theorie der Gesellschaft oder Sozialtechnologie*. Band I and II. Suhrkamp.
- Marx, K. (1972/1861-63): *Das Kapital*. Bind 1,2 og 3, Dietz Verlag.
- Nelson, R. R. and Winter , S.G. (1982) *An Evolutionary Theory of Economic Change*. Harvard University Press.
- Nelson, R. R. (1993) *National innovation systems: a comparative analysis*. Oxford University Press.
- Nord, W.R. (1994) *Resistance & Power in organizations*. Routledge.
- Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-Creating Company*. Oxford Univ. Press.
- Nowotny, H., Scott P. & Gibbons, M.(2001) *Re-Thinking Science*. Polity.
- NOU 1992:20 *Det gode arbeidsmiljø er lønnsomt for alle*.
- NOU 1999:34 *Nytt millennium – nytt arbeidsliv?*
- NOU 2000:7 *Ny giv for nyskaping*.
- Olberg, D. m.fl. (1995) *Endringer i arbeidslivets organisering*. FAFO.
- Pavitt, K. (1984) Sectorial Patterns of Technological Change: Towards A Taxonomy and a Theory in *Research Policy* 13:343-373.

- Pinchot, P. (1985) *Intrapreneuring : why you don't have to leave the corporation to become an entrepreneur*. N. Y. Harper & Row.
- Piore, M.J. and Sable, C.F. (1984). *The second industrial divide*, Basic Books
- Piore, M.J. (1990) Work, labour and action: Work experience in a system of flexible production in Pyke, F., Becattini, G. & Sengenberger, W. *Industrial districts and inter-firm co-operation in Italy*. ILO Publications.
- Pollert, A. Ed (1991) *Farewell to Flexibility?* Oxford: Blackwell.
- Poole, M.S. and Van de Ven, A.H. (2004) *Handbook of Organizational Change and Innovation*. Oxford University Press.
- Porter, M. (1990a) *The Competitive Advantage of Nations*. The Macmillan Press Ltd.
- Porter, M. (1990b) The Competitive Advantage of Nations i *Harvard Business Review*.
- Pyke, F., Becattini, G. and Sengenberger, W. (1990) *Industrial districts and inter-firm co-operation in Italy*. ILO Publications.
- Rawls, J. (1996/1993) *Political Liberalism*. Columbia University Press. N.Y.
- Reve, T. m. fl. (1992) *Et konkurransedyktig Norge*. Tano.
- Reve, T. and Grønlie, T. (1993) *Styrets rolle* Tano.
- Rogers, E. (1995) *Diffusion of Innovations*. N.Y.
- Schiller, B., Venneslan, K., Ågotnes, K., Bruun, Nielsen and Tølborg (1993) *The Future of the Nordic Model of Labour Relations*, Nordisk Ministerråd, Nord 1993.
- Schumpeter, J. (1934) *The Theory of Economic Development*.
- Skorstad, E. (1999) *Organisasjonsformer. Kontinuitet eller forandring?* Gyldendal akademiske.
- Skorstad, E. (1987) *Teknologi og arbeidsvilkår – forandringer og konsekvenser*. PhD/IFIM.
- Skorstad, E. (1993) *Fra menneske til maskin*. Gyldendal.
- Skorstad, E. and Ramsdal, H. (2004) *Privatisering fra innsiden*. Fagbokforlaget.
- Skorstad, E. og Ramsdal, H. (2006) *Facets of Flexibility*. Østfold University College.
- Smith, A. (1977/1776) *The Wealth of Nations*. Penguin.
- Sraffa, P. (1979) *Production of commodities by means of commodities*. Cambridge University Press.

Swedberg, R. (Ed) (2000) *Entrepreneurship – Social Science View*. Oxford.

Taylor, F.W. (1895) A Piece Rate System: A step toward partial solution to the Labor Problem i *Transactions of the ASME*, 16:856-893.

Thorsrud, E. and F. Emery (1964) *Industrielt demokrati: representasjon på styreplan i bedriftene? Noen norske og utenlandske erfaringer*. Universitetsforlaget.

Totterdill, P. (1999) Workplace Innovation as Regional Development. *Concepts and Transformation* 4:1.

II.2. Tutorial Paper on Working Life Research and Action Research *by Richard Ennals*

Introduction

This Tutorial Paper links to the content of the Kingston Internal Publication, *Integrated Innovation*, whose preparation has been supported by the Norwegian Research Council. It seeks to locate the particular cases and analyses, based on research conducted in Stavanger, in South-West Norway, in a wider context, both in terms of content and of research method. It is intended to enable students, at Master's and Doctoral level, to identify how they could become engaged in Working Life Research and Action Research. Annotated bibliographies set the scene from the literature.

I should acknowledge the debt I owe to the Enterprise Development and Working Life (EDWOR) doctoral programme at the Norwegian University of Science and Technology (NTNU), where many of these ideas were debated over a period of four years. The team of academic staff and students included participants in *Integrated Innovation*. It became apparent that there is no "one best way", but that there is a rich shared discourse based on commonly held values.

The arguments have been developed over several years of lecturing at Kingston Business School, Kingston University. The students on Master's courses, such as in Human Resources Strategy and Change, or Human Resource Management, are in full-time employment, as are most of the students on the Masters in Business Administration or the Masters in Business Information Technology. Students on the Doctorate in Business Administration, a professional doctorate, come with previous Masters level qualifications and long practitioner experience.

There is one important difference. The majority of EDWOR students are employed on regional development projects, where they work within the research tradition of Action Research, and with a focus on the workplace. At Kingston Business School, students are employed in either the public or private sectors, but in the absence of nationally backed consistent policies for regional development, they are most unlikely to be employed on regional development projects. As they consider their plans for research projects, the default

options have been primarily quantitative and positivist. This Tutorial Paper may help to broaden horizons and open new international discussions and collaborations.

A Fresh Agenda

Traditional social science has been challenged. It will never be the same again. It is not acceptable to proceed as if positivism still carried conviction. Social science should not necessarily be cast in the mould of the natural sciences. Social scientists cannot simply claim to be detached observers.

Kingston University Vice-Chancellor Professor Sir Peter Scott, working with a team of academic collaborators (Gibbons et al 1994; Nowotny et al 2001), has set out a fresh agenda. If it were to be addressed in practice, it would involve major change. Often this agenda is seen as applying to new universities, while traditional universities seek to continue as before.

Whereas the traditional vision of universities has been of ivory towers, detached from business and the pressures of daily economic and social life, Scott and his colleagues present the new production of knowledge. Knowledge is derived from practice, which requires engagement with business and commerce. In turn, this means re-thinking science, which cannot be set on a pedestal of abstraction. Leading scientists, in their professional activities, often work in a manner which is both cross-disciplinary and transgressive. Universities who understand the power of this approach will take on new roles as regional actors, partners in development processes. This challenge has confronted the University of Stavanger, as well as the most recent member of the Norwegian university community, Agder University. Should new universities seek to conform with the old orthodoxies, or do they have an opportunity to set a new direction, based on rigorously argued principles?

Planning a Project

We can take account of this agenda when planning future research programmes. This has been the case with recent national programmes in Norway. Enterprise Development 2000 and Value Creation 2010 were both national programmes based on regional development coalitions, in which universities have often played pivotal roles.

Take a recent British example, where the focus has been on communities rather than the workplace. Given a short period before a deadline for the submission of detailed proposals for funding, it can be vital to draw on existing research networks. That implies the development

and maintenance of collaborative relationships. For some institutions this represents a change from traditions of separate independence and competition. The Leverhulme Trust called for proposals for research programmes to address themes including ‘The Management of Cultural Diversity’. Kingston University responded with a proposal based on ‘Community Cohesion as a Process’, to last five years, with a budget of £1.73m. This was to involve Kingston University, working in collaboration with the Council for Education in World Citizenship and the Museum of London Group. The deadline for submission was 11th January. Once that proposal was submitted, it provided the context for a smaller proposal, involving the same partners, to the Heritage Lottery Fund, with a deadline of 21st January. If both bids are successful, there are opportunities for portfolio project management, and the building of new networks. If not, there has at least been the chance to set out a clear position statement, a manifesto, which is intended to form the basis for action.

Working Life Research and Action Research

The two themes of Working Life Research and Action Research are separate, but linked.

Many different research methods, quantitative and qualitative, can be used in Working Life Research.

Action Research has many applications beyond Working Life and organisational renewal, and takes a variety of forms. This can be a cause of confusion, because until relatively recently the different groups were not in regular contact, and made little reference to each other’s work. They were united by their opposition to conventional positivist social science, but often by little else.

Setting about research

Social science researchers are not passive recipients of data, like cameras or tape recorders. They do not start as blank sheets of paper, but bring themselves to the research process. They face initial questions:

- What previous experience do you have of research?
- What is your intended thesis topic?
- What methodology do you plan to use?

Working Life

Particularly with practitioner research and professional doctorates, the traditional separation between the worlds of academia and of practice break down. The researcher does not “begin at the beginning”, but is often already engaged in the field of study. It may be the context for their own working life, as well as their new activities as knowledge workers.

- Do you bring your experience of working life to your research?
- How could it be excluded?
- What is working life?
- Why do we talk instead about business and management?
- Are business schools tackling the wrong agenda?

Working Life Research

Focussing on working life offers fresh and important insights. It can offer an escape from the distorted account of reality, which can emerge from business and management texts, which tend to reflect a management view of hierarchy in large organisations. It can open up the consideration of alternative models of business, and discussions based on work as a common experience. It provides a starting point for applied research, conducted inside the form of life, with a workplace focus, where researchers are seen as development actors (Fricke and Totterdill 2004).

The Working Life Researcher does not necessarily respect the power structure of hierarchical vertically steered organisations. He respects the experience and tacit knowledge of the skilled worker, and notes that this goes beyond what can be made explicit. He notes the increased importance of teamworking and horizontal communications. This may give rise to issues of power, especially at times of change. The Working Life Researcher is accustomed to engaging in dialogue, including with the social partners: employers and trade unions.

There are shared underlying values: respect for the value of work, recognition of the vital role of skill. Work and employment are seen as central to the economy and society. External factors, such as globalisation and technological change, can transform the local situation.

Working Life Researchers tend to be denied access to power at senior executive level. At times of economic pressure, companies may decide to be ‘pragmatic’, withdraw from

arrangements for partnership and dialogue, and engage in ruthless processes of downsizing. This may leave the Working Life Researcher stranded, discarded just when his insights might have been of most practical value.

Changes in Working Life

The pace of change has been turbulent, with many unexpected impacts. There has been no consistent apparent pattern around the world, and factors which can be presented as separate turn out to be intricately linked.

Where countries, such as Norway or the UK, have been proud of their national identity, distinctive traditions, and innovative approaches to policy, globalisation can come as a shock. It is no longer the case that national policy directions will prevail. There can be a harsh awakening, for example when American sub-prime mortgages turn out to have been sold on to banks around the world, so that a collapse in the USA can have immediate effects in each major market. Politicians have to recognise the limits of their power, and social partners have to acknowledge that they may not be present at the table with those who make the real decisions. As for Working Life Researchers, they can engage in efforts to improve the quality of working life, and of work organisation, but their results may not be considered by those who decide the future of organisations.

In Norway, traditional industries such as fish processing and process industries (smelting and refining) face sudden new global competition. Plant closures can remove employment for whole communities in remote regions, posing questions of regional development, and casting doubt over the assumption that market forces can be allowed to prevail.

Technology has been seen as a key to future prosperity, but not all regions can emulate Silicon Valley in being leading producers of hardware and software. It is probably more important to grasp how technology can transform the work of organisations, supporting productive relationships and enhancing the value of knowledge. The City of London depends on harnessing the power of new technology. On the other hand, in principle, that same technology makes it easier for activity to relocate, at short notice.

New forms of work organisation, including virtual organisations, require attention and intervention. In geographically dispersed countries like Norway, where enterprises engaged in related business activities may be far apart, new patterns of collaboration and development are needed. This is one context for the work of IRIS in Stavanger, and *Integrated Innovation*.

Change can be disruptive of neat categorisation of research. Demographic change is a case in point. An ageing population, in countries such as Norway, places strains on the workplace, as supplies of conventional workers may dry up. Jobs may have to be redesigned. Workers may need new forms of education and training. Organisations may need to be redesigned. National policies, for example over labour mobility, employment and immigration, may have to be reconsidered. There are then profound implications for communities, education systems and health services. Explanatory links can come from a Working Life Research perspective, while conventional disciplines continue to be constrained by silo thinking.

Working Life Researchers tend not to want to make universal generalisations. They are concerned to understand local cases, and local knowledge. They can then describe one case against the background of another, and begin to build a wider and richer picture of differences, with new questions.

A recurrent problem is how to make the transition from research to policy, and then to implementation and practice. Professional and institutional structures vary between countries, but there are consistent problems regarding the development of links between distinct discourses. This was noted in the Swedish Work Life 2000 programme of 64 international workshops 1997-2001 (Ennals 1999, 2000, 2001). If researchers inhabit different forms of life, they may find it difficult to communicate and collaborate.

Reflections

Reflection on working life provides access to a valuable resource of experience and tacit knowledge. The researcher is himself a subject for research.

- Where have you been working?
- Where are you working now?
- Where are you going to work?
- What is your research focus?
- Are you engaged?
- What is your chosen methodology?
- How and why do you collaborate?

Practical experience

Practical experience should not be left at the door when commencing a programme of academic study. It is important to have experience from inside the particular form of working life, as opposed to simply taking an external view.

Universities and researchers, as Scott and his colleagues have noted, are engaged in knowledge work. Learning is not a luxury, but a prerequisite for sustainable enterprises. It needs to inform work organisation, which needs to take account of explicit, implicit and tacit knowledge (Goranzon, Hammaren and Ennals 2006; Gustavsen, Ennals and Nyhan 2007).

Academic disciplines

The traditional disciplines have often become vertical silos, obstacles to thought required to address and solve real world problems. Working Life Researchers have come from diverse backgrounds, and tend to find it difficult to be constrained.

What different insights could we expect from backgrounds in:

- business and management
- sociology
- economics
- politics
- psychology
- history
- philosophy
- plus science, technology, medicine, literature

Institutional structures

Most workers are not employed in large workplaces or by large employers. Structures have changed. Work organisation within and between organisations, is vital (Ennals and Gustavsen 1999).

What are the real differences between:

- large and small organisations?

- public and private sector
- national and regional levels

What is the real significance of the social partners: employers and unions?

How can we distinguish between research and consultancy?

European context

There is a wider policy context in Europe, which offers the basis for valuable comparisons and social benchmarking.

- What is the practical impact of the European social model?
- What is the function of European Framework Programmes?
- How do the key European Commission Directorates General operate?
- Which are the most important European Institutions?
- What happened to the 1997 Green Paper “Partnership for a New Organisation of Work”?
- What is meant by ‘Corporate Social Responsibility’?

Each European country is different. The answers will vary.

Sweden

Sweden long prided itself on both innovation and the quality of working life. Sweden had enjoyed remarkable stability of policy and tripartite relations for decades. The set of research institutions dealing with Working Life were reformed, merged and then closed. Much of the research dealt with occupational health and labour market economics.

There had been large-scale national programmes concerned with workplace development (LOM and ALF). Evaluation (Gustavsen et al 1996) challenged conventional assumptions regarding what was achieved. In particular, the lack of correlation between training investment and improved productivity was highlighted. In the final years, relatively little effort went into work organisation and regional development.

Sweden, and in particular the National Institute for Working Life, had seen Swedish expertise in Working Life as an outstanding national strength. On joining the European Union, this

became prominent among international initiatives, such as Work Life 2000 (Ennals 1999, 2000, 2001); SALTSA: a programme of NIWL and the Swedish trade unions, with European partners, addressing change in working life; and Work Life and EU Enlargement, with new EU member countries.

In a separate development, work, which had been begun at NIWL on the Dialogue Seminar Method, has been taken forward by the Royal Institute of Technology and the Royal Dramatic Theatre (Göranzon 1995; Göranzon *et al* 2006).

Norway

Norway has used the opportunity provided by North Sea Oil, to plan for longer-term sustainability. Enterprise development programmes have enjoyed leadership from the labour market parties. Enterprise Development 2000 (ED2000) and Value Creation 2010 (VC2010) have been followed by the new VRI programme for regional development. VC2010 was accompanied by the doctoral programme Enterprise Development and Working Life (EDWOR), and provided the cases which are the foundation of Integrated Innovation (based at IRIS, in Stavanger). IRIS has a strong track record in Working Life Research, and in consultancy support for companies. The two traditions may be said to have fused in recent work on networks of enterprises. There are further Working Life Research projects, such as Active Age (AFI/WRI, in Oslo), Knowledge Economy (Agder), and the comparative project on the Scandinavia Model of Innovation.

Lithuania

The pace of change in Lithuania has been breathtaking. There had been a history of a state socialist centrally controlled economy, with little autonomy for individual workers. The collapse of the Soviet Union was followed, remarkably quickly, by a transition to a western capitalist economy, and membership of the European Union in 2004. This meant corresponding transformations for institutions including universities and research institutes, which had previously followed traditional positivist approaches, in a context of Marxist economic theory. Networks, and network orchestration, had been beyond the experience of most Lithuanians, and there has been much to learn. Comparative studies, for example of attempts to move from defence to civil production in Lithuania (Augustinaitis 2007) and Norway (Johnstad 2007) cast light on aspects of the situation in each country which might

otherwise have escaped attention. Other comparative studies, for example with Belarus, which remains closely linked to Russia and unreformed, and with Mozambique, a former colony determined to engage in economic transition, can also be illuminating (Augustinaitis et al 2008).

UKWON

The UK has enjoyed a common research tradition with Norway, in terms of socio-technical systems, for which much of the key work was done at the Tavistock Institute in London. The subsequent Work Research Institute continued the work, but was abolished by the Thatcher government. Working Life Research has lacked a EU focus.

The UK has not regarded itself as a full and committed member of the EU. The national co-ordinating body for Working Life and Work Organisation, the UK Work Organisation Network, identified as such by the UK government in 1998, has been organised bottom up on a networking basis. It built on foundations of the European Work and Technology Consortium from 1995, and gained strength under the UK EU Presidency in 1998. It involves universities, trades unions, employers, research organisations, and government observers. It is a legal entity: a private company limited by guarantee.

UKWON projects

Without core funding from government, UKWON has depended on insecure project income.

- DTI: Hundredth Monkey
- ESF3 national projects
- EU: Hi-Res
- EU: Innoflex
- SALTSA NICE
- SALTSA Hospitals
- ESF3: Adaptable Enterprises

Details of the projects and outputs are available on www.ukwon.net

Centre for Working Life Research

This cross-disciplinary research centre is based at Kingston Business School, but with extensive networks of contacts and collaborators. It has developed different strands of activity, with sets of partners, including overseas research programmes, NGOs and international agencies.

- Work: UKWON, NIWL, VC2010
- well-being: ICOH, Club of Geneva
- world: CEWC, UKNC
- web: Kingston Platypus, Intel MashMaker

CWLR projects

Again lacking stable core funding, the work of CWLR has been based on an ongoing portfolio of projects:

- EU GEM: digital CVs
- EU DINT: terminology
- SALTSA NICE: innovation
- EU TRIPOD: lifelong learning
- ESF / SEEDA: Healthy Working Centres
- EU MOSAIC: mobile working
- Cedefop: Learning Together for Local Innovation
- EU: Uniting Humanity

Healthy Working Centres

The distinctive characteristics of the South-East region of England (excluding London) were highlighted in the feasibility study project to develop Healthy Working Centres, intended to reduce commuting and enable people to work closer to home. The research was supported by the European Social Fund and the SEEDA regional development agency, and reported (McEwan and Ennals 2005, 2007). With an initial focus on mobile working, the emphasis

moved to the construction of social capital, and the roles of different development actors. Networks were facilitated and orchestrated, with action research interventions.

Annotated Bibliography

Ennals R. *Artificial Intelligence and Human Institutions*, Springer, London 1991.

Human institutions, including in politics, education, health and work, are artificial constructs. This book sought to model and explore, with particular attention given to work, skill, and the transfer of skill.

Ennals R. (Ed) *Building Coalitions*. AI & Society 11.3-4 1997.

This special issue presented reports of Working Life Research from across Europe (including Gustavsen, Göransson, Totterdill) with explanatory insights from Toulmin and a review of the literature on Business, Skill and Technology.

Ennals R. and Gustavsen B. *Work Organisation and Europe as a Development Coalition*. Benjamins, Amsterdam 1999

This book reports the activities of a network of European researchers, exploring the potential of regional development coalitions. There are extensive case studies, and an outline for ongoing research.

Ennals R. *Work Life 2000: Yearbooks 1,2,3*. Springer Verlag 1999, 2000, 2001.

The three yearbooks report the series of 64 international workshops in preparation for the Swedish EU Presidency in 2001, and address topics in Work Organisation, Work Environment, Labour Market, Small and Medium sized Enterprises, Information Society Technologies, Gender and Diversity.

Ennals R. and McEwan A.-M (Eds). *Work Organisation*. AI and Society 15.1-2 2001.

This special issue concentrated on work of the UK Work Organisation Network, reporting developments by partner teams across the UK (including Totterdill, Shapiro, Wilson, Bessant and Gallagher) and exploring new ways of working.

Fricke W. and Totterdill P. (Eds) *Action Research in Workplace Innovation and Regional Development*. Benjamins, Amsterdam 2004.

This collection concentrated on pressures and challenges in European workplaces, and in regional development. Globalisation, technological change and political volatility were seen

as outpacing organisational change. The chapters come from actors in the development process (including Totterdill, Gustavsen, Claussen, Brulin, Banke and Ennals).

Ennals R. (ed.) *Mobility, Technology and Development*. AI and Society 19.4 2005.

This special issue starts with a technological approach to mobile working, from the EU MOSAIC project, considers models such as Healthy Working Centre, and then addresses a set of issues in regional development in the new knowledge society and knowledge economy. Contributors include Schaffers, McEwan, Haga, Langvik, Leirvik, Johnsen, Norman, Karlsen and Fosse.

Ennals R. *From Slavery to Citizenship*. Wiley, Chichester 2007.

Control and Participation in the Workplace is the central theme of this book, published to coincide with the bicentenary of the British abolition of the transatlantic slave trade in 1807. Apart from the core historical narrative, there is consideration of Working Life issues, with short contributions from researchers in work organisation (Totterdill) occupational psychiatry (Levy, Sartorius, Rossi, Kopp and Lau), occupational health (Guidotti, Harrison), and from the African Diaspora community (Klu). There are more slaves in the world today than in 2007. Slavery is at one end of the continuum regarding the autonomy of the worker.

Gustavsen B., Ennals R. and Nyhan B. (eds.) *Learning together for local innovation: promoting learning regions*. Cedefop, Luxembourg, 2007.

Two contrasting policy approaches of regional development and vocational education and training were brought together in a modest project from the European Centre for the Development of Vocational Training, Cedefop (Gustavsen et al 2007). This built on experience in Scandinavia and Northern Europe, but also engaged researchers with case studies from Southern Europe, enabling learning from differences.

Ennals R. (ed.) *The Enlightened Workplace*. AI and Society 23.1 2008.

This special issue, published electronically in 2007, takes an international perspective on Working Life, with contributions from Lithuania (Augustinaitis, Juciute and others), China (Li) and Africa (Odamtten), as well as from the UK (Totterdill, Baily), Sweden (Berglund) and Norway (Haga, Johnsen). How can we learn from experience elsewhere?

Action Research

Amid the controversy, one thing can be agreed. Action Research should be seen as presenting a challenge to positivism. In place of passive observation, we see considered interventions, in general following a 'Plan / Do / Check / Act' cycle.

The *Handbook of Action Research* (Reason and Bradbury 1999, 2007) reports a vast range of varieties of Action Research. At one end of the spectrum we find individual reflective practitioners, in the middle there are approaches to organisational renewal, and at the other end we find Emancipatory Action Research and environmental visionaries. Each tradition seems to continue oblivious of the others, and without making references outside their own community. The foundation of specialist journals, the development of international conferences, and the maturing of the literature is beginning to rectify that disjointed appearance.

Design your own university

Sabancı University in Turkey was designed in an Action Research process led by Professor Oguz Baburoglu, using techniques derived from search conferences and consultancy practice. The objective was to found and build a university with a problem-solving orientation, breaking away from traditional discipline structures, but with international research plans. The next step, together with the annual International Action Research Conference, and the International Journal of Action Research, is to establish the Action Research Academy, based in Kingston.

Action Research traditions

Action Research is a broad church, with many different and separate traditions, often with few cross-references.

emancipatory action research: Freire, Fals Borda

Emancipatory Action Research is associated with liberation movements in Latin America, and a bias to the poor and dispossessed. Workers in that tradition have found it hard to recognise work on regional development in Norway as constituting Action Research.

social activism: Bellers, Sorenson

There is nothing new about identifying a situation which needs to be improved, taking action, evaluating the outcomes, and continuing. Social activists do not necessarily brand themselves as Action Researchers. However, in countries such as the UK social activists, working with NGOs, may take on problems which in Norway might be the responsibility of Action Researchers. Action Research is culturally situated.

Participative Action Research: Greenwood, Levin

Greenwood's background is in social anthropology, which has provided a methodology for participant observation, which has been adapted for Participative Action Research (PAR), where the researcher, from outside, plays a facilitating role in processes of change and renewal.

evaluation: Kemmis, Green

Experienced evaluators of research programmes, in areas such as computer assisted learning, have developed methodologies which are akin to Action Research. The evaluator has to engage in the culture under evaluation, and should not simply observe from a safe distance.

first, second and third person reflection: Reason

At the level of individual reflective professionals, such as teachers, there are well developed traditions of reflection, with objectives of enlightenment and continuous improvement.

socio-technical: Qvale

Extending back to the Tavistock Institute, and continued today at the Work Research Institute in Oslo, as well as in the Netherlands and much of Northern Europe, socio-technical systems thinking has provided a context for much current Action Research. Private sector clients are keen to have access to expert consultancy, and accept that the outcomes can include Action Research publications.

search: Emery, Baburoglu

Fred Emery's work in Australia has been taken forward, in Turkey, by his student Oguz Baburoglu. Tried and tested techniques of search enable broad participation in decision making and planning, in the cause of extending democracy as well as maximising effective decisions.

dialogue: Gustavsen, Shotter, Goranzon, Palshaugen

One tradition within Action Research emphasises the importance of dialogue, recognising that complete information is impossible, and that explicit knowledge deals with only the tip of the iceberg of what is going on in organisations. Verbal encounters and conversations involve speech acts, in which utterances (whether spoken or written) have both content (illocutionary force) and meaning (perlocutionary force). The meaning of a word is seen in its use in the language game.

linguistic turn: Wittgenstein, Habermas

Wittgenstein emphasised the importance of language games, which characterise forms of life, in which participants learn to follow rules. Habermas adopted a related but different position, concerned with communicative action.

regional development: Gustavsen, Fricke, Totterdill,

Within Action Research, regional development tends to involve the facilitation of regional innovation systems, often involving regional development coalitions, bringing together partner organisations to further common purposes. Such processes are aided by the involvement of Action Researchers, seeking to co-generate new knowledge with local participants.

democratic participation: Johnsen, Normann, Ataov, Hilsen

Participation as a priority can raise questions regarding democracy, and underlying power relations. What needs to be understood about relationships beneath the visible surface? How can different interests be legitimately satisfied?

national programmes: Gustavsen

In Norway, and building on earlier experience in Sweden, national programmes of enterprise development have been based on a dominant methodology of Action Research. Thus the EDWOR doctoral programme largely comprised researchers on first ED2000 and then VC2010. The students were largely employed as researchers within this enterprise development programme, where the orthodoxy was seen as Action Research.

Inaction research

What is the alternative to action research? Should we call it ‘inaction research’? Who is arguing the case in favour?

- Can the researcher be truly detached?

- Is quantitative analysis always enough?
- Is the researcher part of the problem?
- What is the role of the action researcher?
- Are words and actions interventions?
- How can action research be evaluated?

Challenges

Perhaps the hardest question is how Action Research is to achieve the rigour which Scott claims to require. To what extent has equivalent rigour, rather than rigor mortis, been offered by inaction research?

How can we “learn from differences”, rather than just enumerating them?

We are dealing here with a paradigm shift in the philosophy of knowledge. We are seeking to break out of silo thinking, and to expose and challenge power structures. We must expect a rocky ride.

- The Action Researcher faces different challenges compared with a conventional social science researcher. He recognises that he is part of the problem, as well as, he hopes, part of the problem. He cannot claim objective detachment.
- The Action Researcher does not intent to leave the situation as he found it. He is engaged, committed to change. New knowledge is intended to emerge. Co-generated with participants. This requires a fresh set of relationships and understandings.
- The Action Researcher devotes effort to reflecting on his own practice, seeking to understand it in context, and to identify areas for improvement.
- The Action Researcher recognises that his words, whether spoken or written, can also be construed as actions. To talk is to intervene. A conversation is an encounter.

On this basis, particular patterns of interaction can be important research tools, There may be an objective, such as problem identification, decision, or relationship building. Drawing on traditions of search and dialogue, tried and tested methods are available.

Integrated Innovation

Integrated Innovation in Norway represents an explicit linkage of Working Life Research and Action Research.. Arguably there are compromises in both areas. Workplaces in national enterprise development programmes tended to be selected and approved by the labour market parties. This meets local and regional agendas, but it may encounter problems at the global level, Traditional approaches to the workplace, including high wage levels and assured stability of employment, are under pressure. Companies can close, threatening whole communities.

Norway cannot be seen as typical of the developed world. Norway has greater equality, in terms of economic, social and gender relationships. It has stronger income streams from North Sea Oil, managed to provide financial reserves for future state spending. Norwegian workers and regions have been insulated from some pressures, but globalisation is having drastic impacts.

In Norway, Action Researchers have often also been state funded, on permanent contracts with publicly supported research institutes. Their status contrasts with that of activists in Emancipatory Action Research in Latin America, where efforts are in behalf of the poor and dispossessed, rather than for regional development in an affluent Western capitalist society.

In Stavanger, booming as a consequence of the oil industry, researchers are being lured away into more lucrative employment. Statoil has commissioned active research from AFI for many years, regarding it as effective consultancy in the sociotechnical tradition. There is now competition between IRIS, AFI and SINTEF.

The research institutes are now required to earn a large percentage of their income from private sector clients, while also seeking to continue with a high academic profile for their research. They miss out on teaching, unless there are particular arrangements with the partner universities who are now nominal owners.

Under recent reforms, there have been two strategic changes. Ownership of many institutes has been vested in new universities, singly or in consortia. The organisation of counties has been restructured, meaning that some institutes, such as IRIS, lose links with established clients and partners.

Journals

Journals represent academic communities, each with a distinctive shared agenda.

Concepts and Transformation was founded in 1996, and succeeded in 2005 by *International Journal of Action Research*. The agenda is Action Research and Organisational Renewal. Special issues have showcased work from Latin America, good practice from around the world, and interactive research from Sweden.

Action Research is of more recent vintage, but has rapidly achieved a leading market position. The approach is more individualist and eclectic.

Systemic Practice and Action Research comes from a tradition of socio-technical thinking and systems.

Human Relations has a long history of associations with the Tavistock Institute and with social psychology.

AI & Society: the international journal of knowledge, culture and communications, established in 1987, has always been concerned with the human side of technology in society.

Action Research Theses

Let us consider examples, from doctoral theses in the Action Research tradition.

Organisational Change

Oyvind Palshaugen, WRI, Oslo

The researcher had been working in a tobacco company. How is an action researcher different from a consultant? What is the role of language?

***Management as Freedom* Erik Lindhult, KTH, Stockholm**

The researcher had been evaluating projects in a national programme, relating them to models from history of European political thought. Was this Action Research or history of ideas?

Network Orchestration

Trond Haga, IRIS, Stavanger

The researcher was a leading actor in regional development in coastal Norway. He concentrated on the role of networks in economic development, with a focus on orchestration. He made active interventions, and presented motivating case studies.

Active Age**Anne-Inga Hilsen, WRI, Oslo**

An experienced Working Life Researcher encountered demographic change, with particular reference to ageing workers. She regarded age and experience as a resource. Her thesis emphasised tripartism and participation. What counts as doctoral research?

Community Development

Anli Ataov, Sabanci University, Istanbul

A well-qualified academic had been working in Kocaeli after the earthquake. Using her consultancy background, and a search methodology, she facilitated decision and commitment conferences. The work represents an important intervention in an immature democracy.

Regional Universities

James Karlsen, Agder Research

The researcher was working in a new university, seeking to take on a new role in a wealthy region. What knowledge is needed for regional development? He considered explicit, implicit, and tacit knowledge. He was actively engaged in the development process, His findings have implications for the new university.

Democracy and Governance

Roger Normann, Agder Research

A well-qualified political scientist offered a critique of models of democracy, including regional development coalitions, presented by Ennals and Gustavsen. He reassessed regional development in the light of neo-liberal economics, and outlined models of multi-level governance.

Exhaustion

Arild Johnsen, SINTEF, Trondheim

A large hospital research project was addressing absenteeism by staff, and in particular attendance by cleaners. They complained of exhaustion. This was linked to their work organisation, and explored through ingenious approaches to communication. One key intervention was the use of research cleaners, instructed by regular cleaners. The research encountered problems of conflicting paradigms.

Dialogue Seminar Method

Johan Berglund, KTH, Stockholm

The researcher has a political science background, and is working with the Dialogue Seminar Method, on the doctoral course Dialogue, Skill and Tacit Knowledge, with a core group at KTH. Research has progressed to involve HR professionals and nuclear power plant engineers.

IT and Health

Rasa Juciute, Mykolas Romeris, Vilnius

The Lithuanian researcher had the opportunity of comparing two major systems addressing IT and Health: Connecting for Health (England) and Informing Health Care: (Wales), with a view to advising on plans for Lithuania. Work organisation is vital.

Leadership

Nazir Walji, Kingston

This Kenyan Asian researcher, with a long background in international management consultancy and NGOs, is researching the role of executive leadership. He is not content with positivism. He has embarked on Participative Action Research, sparring with the leader in a key live case study of engagement.

Action Research and Innovation

There are some important links between action research for organisational renewal and processes of innovation. However at present we are awash with buzz-phrases, and it is less than clear what they all mean, when linked.

- innovation systems
- relational structures
- speech acts
- actions as interventions
- discourse innovation
- regions of meaning
- communities of practice

- semantic web

The Future of Action Research

It can seem that all the different variants of Action Research have in common is that they share the label.

- Is the label useful?
- Has positivism prevailed?
- If so, why?
- Is AR culturally situated?

How are Action Researchers regarded?

- What is the role of government?
- How do we distinguish between research and consultancy?
- Does it matter?

Publishing

When publishing, it is important to be clear about the tradition one is seeking to join, the discourse in the chosen publication, the nature of the audience, and the purpose of the intervention through an article or book. Make the audience an offer they cannot refuse, in a language they can understand.

Annotated Bibliography

Palshaugen O. *The End of Organisation Theory*. Benjamins, Amsterdam 1998.

This is a beautifully written account of a dialogue based case study, with expert commentaries.

Toulmin S. *Return to Reason*. Harvard, Cambridge Mass, 2001.

This is a masterful exposition of the history of ideas, locating Action Research as a robust and worthy approach.

Gustavsen B., Finne H and Oscarsson B. (eds.) *Creating Connectedness*. Benjamins, Amsterdam 2001

This book arises from the evaluation study of the Norwegian Enterprise Development 2000 programme.

Levin M. (ed.) *Researching Enterprise Development*. Benjamins, Amsterdam 2002.

This book is based on the reflections of the researchers who played leading roles in Value Creation 2010 and the EDWOR doctoral programme.

Greenwood D. and Levin M. *Introduction to Action Research*. Sage, Thousand Oaks 2007 (2nd ed.)

This is a classic and not unprovocative account of the field, identifying leading schools and researchers.

Reason P. and Bradbury H. (eds.) *Handbook of Action Research*. Sage, Thousand Oaks, 2007 (2nd ed.)

As with baked beans, there have been 57 varieties of Action Research. The second edition presents a mature discussion of differences.

Gustavsen B., Ennals R. and Nyhan B. (eds.) *Learning together for local innovation: promoting learning regions*. Cedefop, Luxembourg 2007.

This book is based on case study experience across Europe, redescribed against the background of other cases in order to learn from differences.

II.3. Workplace Innovation, Regions and Public Policy

Innovations *by Peter Totterdill*

Innovation at regional level in a global economy

In the context of this volume, the significance of regions lies in their ability to act as focal points for innovation, through the convergence of economic opportunities, technologies, human resources and culture. This concept of the region as an intelligent network of different actors places a premium on the capacity for collaborative actions, based on exchange of experience, experimentation and learning. It requires new ways of modelling regional activity, new strategies and new approaches to public policy intervention that permeate all levels of the economy, integrating strategy at the urban and regional level, the resourcing of change in the workplace and learning for the individual. Such integration must take place, not through the traditional recourse to models of technocratic and directive planning, but by reinventing the public policy sphere as a focus for dialogue, reflective action and innovation.

'Innovative regions' might be considered an absurd notion in the context of a global economy. The free movement of capital, unstable international divisions of labour and the emergence of worldwide labour markets contribute to a sense that regions simply provide a passive, transient locus for economic development, and are relatively powerless to influence its scale or quality. In this view, regions can ensure that the entry conditions for economic development exist in the form of transport and telecommunications, land use planning, vocational training provision and tax breaks, but they can do very little else to ensure success. Competitive advantage is no longer linked to geographical areas, but to the degree to which companies can become truly transnational. Regional competitiveness is thus only measured by those variables thought to influence global investment decision makers - wage costs, corporate taxation, the relative productivity of branch plants in one region compared with another, supply chain logistics, and so on.

Such perceptions have guided regional development practice in parts of Europe for many years. Some areas have been rather good at playing the game, with 'Silicon Glen' in Scotland for example once having portrayed itself as a triumph of national and regional policy. However the low-tech assembly of high-tech Asian or US products has demonstrated serious

limitations as a strategy for regional regeneration, highlighted by the global crises in the electronics sector over recent years. Regions may be able to achieve some transitory degree of success in the attraction of footloose capital, but footloose it remains. Departing multinational branch plants leave little behind them other than empty buildings. Routine assembly operations do little to provide workforces with core transferable skills. Inward investing companies rarely become deeply embedded in their host regions, and there is little evidence that the indigenous economy achieves sustainable benefits in terms of new knowledge, technologies or markets. Public policy has often simply neglected to find ways of embedding new companies into regional economies. Even attempts to build relationships between inward investors and indigenous suppliers may increase the overdependence of the regional economy on branch plants, rather than enhancing capacity for innovation and diversification.

If regions cannot rely on rescue from outside, how can they mobilise their own resources to achieve sustainable growth? The starting point lies in how we conceptualise the relationship between the individual workplace and the wider regional environment. Critically, workplace innovation should be seen as the product of a complex process of learning grounded in, for example, vertical and horizontal interaction within firms, networking between firms (industry associations, supply chain relationships, etc), public policy, vocational training, industrial relations, the financial system, and so on.

Regions are not just the passive recipients of global forces; rather these wider influences are inevitably subject to mediation by local structures and practices (see Figure 1). The potential mobility of capital and labour is in practice anchored by multiple ties, however weak or strong these may be. Labour market characteristics, supply chain relationships, social dialogue, links to local universities, the public policy framework, and many other intangible factors not only have an immediate effect on the performance of firms, but can lead to patterns of regional differentiation which form the basis of distinctive patterns of competitive advantage not easily imitated. Italian industrial districts, for example, provide a paradigmatic example of an innovation milieu, with the capacity to remake themselves on the basis of collective knowledge, learning, reflection and action. Throughout Europe researchers, policy makers and other actors have been probing whether such network capacity can be created through conscious intervention. This entire volume is intended as a contribution to that debate.

Regions as a focal point for workplace innovation

Workplace learning and innovation are typically very localised, not placeless, processes. It is therefore important to discover and to strengthen the characteristics of effective and dynamic systems that support learning and innovation at regional level - for example the types of bridge that can be built between academic research, social partners, business support



Figure 1: Regional influences on workplace innovation and competitiveness

organisations and the individual firm. The Italian industrial districts provide a paradigmatic example of a learning milieu based on such complex interactions (Asheim, 1997). These districts must not be understood as model production systems, but rather judged on their capacity to remake themselves on the basis of collective knowledge, learning, reflection and action. Likewise inter-organisational learning networks at regional level also influence innovation. Participation in learning networks makes the immediate environment larger and richer with all the benefits that this accrues in the form of reduced uncertainty and new stimuli (Fricke and Totterdill, 2004; Bessant, 1995; European Work and Technology Consortium, 1998; Friedrich & Lantz, 1998).

At the European level, diversity of workplace experience between regions is an important learning resource. In terms of organisational development, there is considerable divergence yet much common ground between, for example, Scandinavian approaches to workplace development and the Italian industrial districts (Belussi and Garibaldo, 1996). Both are characterised by partnership and co-operation within firms, between firms, and between social partners and the state. However each manifestation of partnership and co-operation is heavily influenced by local circumstances and cultures, leading to different solutions and experiences. Such divergence provides real opportunities for hybrid innovation through inter-regional comparison, critical dialogue and collaboration.

Public policy must promote a wide range of opportunities for collective learning about the design and implementation of new approaches to work organisation, building broad communities of expertise at local and sectoral levels, and creating new technical resources to support change. Such intervention pursues innovation not emulation. The 'high road' is defined as one in which organisational structures reflect both creativity within the workforce, and interaction with external knowledge and experience. Organisations need to draw on good approaches from the wider world to generate ideas and inspiration, but they must also be able to interpret these examples by means of critical scrutiny, dialogue and open-minded experimentation. For public policy therefore, the test of successful intervention lies in "the extent to which 'technical' expertise . . . ceases to be traded as a consultant's commodity and becomes, instead, the intellectual property and joint intelligence of managers, trainers and operatives alike". New approaches to policy must involve "a break from traditional practice, with its reduction of the process of change to 'casework' - a series of discrete applications by individual companies for subsidised training or consultancy" (Middleton and Totterdill, 1992). In particular spatial proximity and the ability to achieve a critical mass of activity by harnessing the energy and knowledge of a wide range of actors offer strong arguments in favour of intervention at the regional level (Farrands and Totterdill, 1993).

Why public policy?

It is sometimes argued that the design of work organisation is principally an internal issue for companies and public service providers, one in which external bodies have very little legitimate interest. In contrast we argue that workplace innovation is the product of complex social interactions, not just inside the organisation, but between the organisation and its wider

group of stakeholders. Moreover the outcomes of such interactions have economic and social consequences that reach far beyond the boundaries of the individual organisation.

In particular the regional setting within which the organisation exists acts as a gateway to knowledge and resources able to inspire and support workplace innovation. Likewise, through its impact on competitiveness and employment, workplace innovation can have a profound effect on economic and social conditions within the region. Yet in many parts of Europe explicit support for workplace innovation plays no part in regional development policy.

On the one hand, successful and sustainable approaches to work organisation draw extensively on opportunities for learning and dialogue created by social capital including research, specialist business services, formal or informal networking, education and training provision and the system of industrial relations. Regional actors such as universities, intermediate organisations and trade unions can play critical roles in creating the conditions for sustainable workplace innovation (Fricke and Totterdill, 2004).

On the other hand policy makers and social partners also have a direct concern with what happens in the workplace. Changes in the pattern of work organisation affect both the ability of Europe and its regions to compete in increasingly volatile global markets, and the ability of public services to meet higher expectations from citizens. Prosperous and socially sustainable regions are likely to be those in which enterprises increasingly compete on the basis of continuous product and process innovation: a knowledge-based economy requiring high skills and engagement from its workforce in return for high levels of individual and collective welfare. This is competitiveness based on a broad concept of social partnership, recognising that failure to engage and develop all employees and citizens undermines the pool of talent and threatens the social cohesion from which innovation grows. Traditional approaches to work organisation and management cannot deliver this type of competitiveness, which requires work to be redesigned in ways that enable all employees to use their talents and creative potential to the full.

Work organisation design also has a considerable impact on a much wider range of factors. For example:

- Job-related illness is of growing concern to policy makers because it represents an increasing drain on stretched health service resources; moreover sickness absence exacerbates the problems of tight labour markets resulting from demographic change.

New forms of work organisation can have a direct impact on workplace health because of their ability to reduce repetitive and stressful work.

- The consequences of an ageing workforce present major economic and social challenges for Europe. Given increasing expectations of health and longevity, encouraging older workers to remain in employment must constitute an important part of the response to labour market shrinkage. New forms of work organisation and their potential to enhance quality of working life must play a key role in this response.
- Policy objectives within the EU's *European Employment Strategy* (http://europa.eu.int/comm/employment_social/employment_strategy/index_en.htm) have consistently underlined the need for an adaptable workforce capable of responding to increasingly volatile economic conditions. Not only does adaptability affect the competitiveness of Europe but also its ability to prevent widespread labour market and social exclusion as a result of economic change. The employability of individuals is directly related to non-vocational competencies such as teamworking, problem solving and communication skills. Employees with experience of new forms of work organisation are much more likely to have acquired such skills, thereby enjoying a more robust position within the labour market.

Regional policy makers and social partners therefore have a special interest in building the social context needed to animate and support evidence-based approaches to workplace innovation. Yet work organisation remains an under-utilised resource for policy makers and social partners at all spatial levels in Europe. Policy makers and social partners must learn to take sides - in favour of approaches to work organisation that combine both economic and social benefits - and against those that sacrifice long-term competitiveness and innovation for short term gain. This stands in sharp contradistinction to those models of regional development grounded in the attraction of mobile capital at any social cost, including low wages and transitory or unrewarding jobs.

Policies for the high road

Previously in this volume we argued for a 'high road' approach in which product innovation, process innovation and quality of working life intertwine. Such convergence is, as we point out, difficult to achieve. In short it requires a powerful combination of inclusive internal dialogue and broadly based external learning.

Many obstacles arise to cause delay, reversal and distortion of the high road at enterprise level. It is these obstacles which lie at the heart of the need for careful policy intervention. As we have suggested, the spread of high road organisational innovation is limited in Europe. This can be explained by a number of mutually reinforcing factors including:

- low levels of awareness of innovative practice and its benefits amongst managers, social partners and business support organisations;
- poor access to evidence-based methods and resources capable of supporting organisational learning and innovation;
- lack of knowledge-based business services and other publicly provided forms of support;
- the failure of vocational education and training to provide knowledge and skills relevant to new forms of work organisation.

We have argued that this amounts to a missed opportunity for economic and social development, undermining European goals for competitiveness and employment. Actions by public policy makers and social partners are of proven value in addressing these problems through, for example:

- (a) the provision of knowledge-based services and other publicly provided forms of support as a means of raising awareness and resourcing workplace innovation;
- (b) the creation of opportunities for networking and peer exchange between companies as a means of learning through shared experience;
- (c) the capture and dissemination of knowledge and experience from workplaces across Europe to help understand emerging trends and to inform learning and dialogue;
- (d) the widespread provision of support for action research to pilot innovative approaches to change, especially in new contexts;
- (e) the creation of development coalitions at regional, national and transnational levels to close the gaps between key actors and stakeholders with an interest in work organisation;
- (f) the provision of access to training capable of building the competencies associated with new forms of work organisation.

In recent years a number of exemplary initiatives have been developed to address these issues in some European countries (Fricke and Totterdill, 2004; Business Decisions Limited, 2000). Typically these programmes combine several of the elements listed above, involving close co-operation between public policy makers and social partners in both their design and delivery. However the potential effectiveness of such targeted intervention has to be measured not only in terms of supporting change in the individual workplace, but in raising awareness and disseminating experiences more widely. In short, does intervention contribute to a wider climate of change in which new forms of work organisation become part of the 'common sense' of management and workforce thinking? These wider policy objectives typically prove difficult to achieve in practice.

Gaps in the public policy framework

Despite the evidence of successful intervention, a high level of fragmentation can be found in public policy and business support frameworks across Europe. In England for example the comprehensive network of local Business Links that provide business development support to SMEs rarely addresses work organisation as a resource for company competitiveness. Comparable shortcomings can be found among the regional business support infrastructure in most EU member states, including those countries that have a substantial history of intervention at national level (Fricke and Totterdill, 2004).

The policy gap can be summarised in the following terms:

- There are too few spaces in which those with expertise in work organisation come together to compare and consolidate knowledge. Rather, in many areas of business support, there is a wide range of institutions each engaged in relatively isolated activity, often leading to an excess of competing models and approaches. Clearly this confuses employers and weakens the momentum of change. There is a need for the active brokerage and synthesising of knowledge.
- There are also too few spaces in which companies can come together to share experiences and identify common needs. Business support organisations typically focus on individual casework, missing the need to resource and sustain change through shared learning and peer exchange. Employer learning networks are thus relatively rare in many parts of the EU and there is a need for measures, especially at

regional level, to animate and support exchanges of knowledge and experience over extended periods (Fricke and Totterdill, 2004).

- Knowledge about work organisation is often reduced to a consultant's commodity or a recipe, yet as we have argued there is ample evidence to show that this rarely produces sustainable change. More sophisticated tools and resources are needed to overcome obstacles to workplace innovation and ensure long-term results. These should focus on establishing continuing dialogue and improvement rather than on technocratic or top-down organisational fixes.
- It is well understood that the integration of research and practice is weak in much of Europe. Universities are unlikely to achieve the task of bridging this gap on their own. Intermediate institutions, which link research knowledge with business practice, are common in some parts of Europe but not in others. New types of organisation may therefore be needed to support and disseminate evidence-based approaches to workplace innovation.
- In EU and national programmes alike there is often little active management of outcomes to ensure the widespread distribution of new knowledge or innovative practice. Individual projects or initiatives, however successful in their own terms, are never enough. The need is to ensure that publicly funded activities contribute to a managed process of cumulative and collective learning, reducing duplication and enhancing their combined impact.

In summary we are arguing that the focus of policy intervention must lie in building intangible assets: coalitions, networks and other 'soft' structures which enrich day-to-day access to knowledge, experience and dialogue for a wide range of actors. Because such assets are grounded in social interaction, regions and localities provide the most effective locus for capacity-building intervention. The problem for policy makers however lies in the very intangibility of such outcomes. Politicians and public auditors demand visible outcomes that offer demonstrable value for money. Measurables such as the number of trainees achieving a formal qualification can be monitored; intangibles such as network building and dialogue animation create real difficulties for transparent evaluation. The consequence is that too few public servants in Europe have such activities built into their objectives and work programmes.

References

- Andreasen, L.E., Coriat, B. and Kaplinsky, R. (eds) (1995) *Europe's Next Step – Organisational Innovation, Competition and Employment*. London: Frank Cass.
- Asheim, B. (1997) 'The territorial challenge to innovation policy: agglomeration effects and regional innovation systems'. Paper presented to the *European Network on Industrial Policy Conference*, University of Warwick, 11 - 15 December.
- Banke, P. and Holsbo, A. (2002) Institutional support for developing SMEs. In Docherty, P., Horslin, J. and Shani, A.B. (Eds) *Creating Sustainable work systems*. London: Routledge.
- Baptista, R. and Swann, G.M.P. (1998) Do firms in clusters innovate more? *Research Policy*. (5), 527-542.
- Belussi, F. and Garibaldo, F. (1996) Variety of Pattern of the Post-Fordist Economy: Why are the 'old times' still with us and the 'new times' yet to come? *Futures*, 28(2): 153-171.
- Bessant, J. (1995) "Networking as a mechanism for enabling organisational innovations: The case of continuous improvement". In Andreasen, L.E., Coriat, B., den Hertog, J.F. and Kaplinsky, R. (eds) *Europe's next step: Organisational innovation, competition and employment*. Ilford: Frank Cass.
- Business Decisions Ltd. (2000) *Government Support Programmes for New Forms of Work Organisation. A report prepared for DG Employment & Social Affairs of the European Commission*. Brussels: Commission of European Communities.
- Cooke, P. and Morgan, K. (1992) 'Intelligent Regions?' Cardiff: University of Wales.
- European Foundation for the Improvement of Living and Working Conditions (1998) *Can Europe Realise its Potential? (EPOC Study)*. Luxembourg: Office for Official Publications of the European Community.
- European Work and Technology Consortium (1997) *Work Organisation, Competitiveness, Employment: The European Approach Vol.II*. Nottingham: Centre for Work and Technology, The Nottingham Trent University.
- Farrands, C. and Totterdill, P. (1993) *A rationale for an appropriate level of regulation in the European Community* in Sugden, R. (Ed) *Industrial Economic Regulation: A framework and exploration*. London: Routledge.
- Fricke, W. (1997) Evaluation of the German Work and Technology Programme from an action research point of view. In Alasonini, T., Kyllonen, K. and Kasvio, A. (Eds) *Workplace*

innovation: a way of promoting competitiveness, welfare and employment. National Workplace Development.

Fricke, W. and Totterdill, P. (2004) *Action Research in Workplace Innovation and Regional Development*, 2004, Amsterdam: John Benjamins Publishing.

Friedrich, P. and Lantz, A. (1998) Skills development through networking. In Swedish: Lokal kompetensutveckling genom nätverk. Research Report No 2. Innovation MTO, University College of Mälardalen.

Garibaldo, F. and Belussi, F. (1996) 'Variety of pattern of the post-Fordist economy: Why are the 'old times' still with us and the 'new times' yet to come?' *Futures*, 28:2, pp.153-171.

Grandori, A. (1997) An Organisational Assessment of Interfirm Coordination Modes. *Organization Studies*, vol 18. No 6. pp 897 - 925.

Gustavsen, B. (1992) *Dialogue and Development*. Maastricht: Van Gorcum.

Hague, J. (2000) *Work organisation: new wine in old bottles?* Nottingham: The Nottingham Trent University.

Hague, J., den Hertog, F., Huzzard, T. and Totterdill, P. (2003) *Better to be rich and healthy than poor and sick: conditions for the convergence of competitiveness and the quality of working life in Europe*. Innoflex Research Paper. Nottingham: The Nottingham Trent University.

van Klaveren, M. (1994) *Trends en keuzes in het onderzoek naar de kwaliteit van de arbeid*. Amsterdam: SISWO.

Middleton, D. and Totterdill, P. (1992) 'Competitiveness, working life and public intervention: teamworking in the clothing industry'. In Kasvio, A. (Ed) *Industry without blue-collar workers - perspectives of the European clothing industry in the 1990s*. Tampere: Work Research Centre, University of Tampere.

Nordenlöw, L. (1994) Entrepreneurship and industrial networks. In Swedish: *Entreprenörskap i industriella nätverk*. EFI research report, The Economic Research Institute at Stockholm School of Economics.

Savage, Patrick T. (1999) *New Work Organisation in Ireland*. Irish Productivity Centre, Dublin.

Shapiro, G. (1999) *Exploring the impact of changes in work organisation on Employees*. Centre for Research in Innovation Management, University of Brighton.

Sharpe, A. and Totterdill, P. (1999) *An Evaluation of the New Work Organisation in Ireland Programme*. Dublin: Irish Productivity Centre.

Skorstad, E. (1992) *From Taylorism to Toyotism in the Norwegian Textile Industry?* in Kasvio, A. (ed) *Industry without blue-collar workers: perspectives of the European clothing industry in the 1990s*. Work Research paper 36/92, Tampere: University of Tampere, Finland.

Sydow, J. (1996) *Inter-organizational relations*. In Malcolm and Warner (eds) *International encyclopedia of Business and Management*. Vol 3, pp 2360-2373. Routledge, London.

TNO (1999) *Work & Employment*. Study Work in the Information Society. Hoofddorp: TNO.

II.4. Globalization and integrated innovation *by Tor Claussen*

Enterprises, networks and regions are embedded in wider national and international contexts. Market competition, ownership structure, supplier relations, technology and organisational development are closely linked to national and international arenas. Considerations regarding the context of change and innovation taking place have to take into account the overall influences from the national and international arenas affecting the creation of variation. In the current contribution we will relate the discussion to globalisation.

Globalisation covers general development processes taking place internationally (Altvater and Mahnkopf 1999) that is between nations and different national actors on the world market/arena. The term globalisation will be applied interchangeably with internationalisation and covers developments in the world market¹⁰.

Regional local actors have in the context of applied international models and tools promoted change and innovation. International management concepts, such as Business Process Re-engineering, Total Quality Management, Lean Production, Just In Time and many more have had a significant impact on Nordic and Norwegian working life. One important feature that has been focused in the research conducted by IRIS in ED 2000 and VC 2010 has been the challenges facing local and national traditions of work life arrangements when international management concepts have been introduced as models and tools for change and innovation (Claussen 2000a).

The local, regional and national work life arrangements inherent in the national (and Nordic¹¹) tradition can be regarded as a coherent collection of procedures, agreements, rules and regulations guiding and structuring work life in the Nordic countries. This coherent collection, guiding and structuring work life in these countries, operates in many ways as a

¹⁰ To what extent we can talk about something significant that can be conceptualised as globalisation will not be part of our discussion (see Claussen 2006, Stephenson and Williams 2000).

¹¹ Whether or not it is possible to talk about one model covering the diverse practices of work life arrangements in the Nordic countries have been heavily debated among researchers from these countries (Flemming ed. 1998, Kettunen and Rissanen 1995). We will not make a through account of this important debate. Despite great differences between the Nordic countries in this respect we will in the current contribution present what has been phrased as characteristics of a *Nordic model*.

functional system, in the terminology of Luhmann (see previous presentation of what characterises functional systems in the current publication).

The basis of our discussion in this chapter will be the experiences from the introduction of international management concepts in local/regional contexts of work organisation, collaborative practices between social partners, agreements, laws regulations characteristic of local traditions of working life in the context of south west Norway. We will phrase these organisational arrangements, practices, agreements, laws etc as typical aspects of a Nordic (Norwegian) model of working life, prevailing in the context of our research.

The Nordic model is facing challenges from international management concepts that are applied in innovation processes at enterprise and regional level. This is due to changes in ownership structures, penetration of expert knowledge, and imaging of international management theories/practises into Nordic/Norwegian work life. Local, regional and national practises and experiences among the Nordic countries are thereby challenged, changed and merged. In our experience we have several examples of how this melting pot of differences occurs and develops. This development of differences is both a matter of integration, creation of variation and shaping of hybrids. In the case presented below this is a core issue when an international management trend (Total Quality) is faced with local Norwegian traditions of work life practice and participation. A new hybrid of TQ (TQ at Aker, TKA) is produced that changes and incorporates essential aspects from both local traditions and international global trends. Case 13 is intended to demonstrate this.

Case 13. Total Quality faces the Nordic model and local traditions

This case focuses on the implementation of a specific adjustment of Total Quality in a huge super supplier located on the west coast of Norway. Previously a shipyard, this construction site became a major producer of huge productions facilities for the North Sea when the oil industry started booming in the mid-70s. At its peak as many as 5000 employees could be engaged at the construction site located on an island where fishing and farming had been the more traditional economic activity. Aker Stord, the name of the enterprise operating this construction site, was part of the Aker group. This group possessed a long tradition for running different management and organisational development programmes. It was reckoned as a forerunner in the Norwegian context in this respect.

An international trend meets the Norwegian tradition for collaboration; a practical example from TKA at Aker Stord (SIN network).

The case was one among many similar cases accomplished as part of a programme called Total Quality in Aker (TKA). The corporation management decided to implement the TQM concept. Thus, the TQM concept was implemented into a Norwegian industrial plant where collaboration between the labour market parties at all levels had been utilised extensively. The corporation had to take this fact into consideration when implementing TQM in their companies. Collaboration between unions and management dealt with a number of issues, including enterprise development. Thus, the unions participated actively in developing the corporation at all levels in accordance with the intentions expressed in the general agreement at the national level.

The implementation of TQM provided for an adjustment with the collaborative tradition in the enterprises. A *system* of democratic collaborative bodies was devised in order for the unions, management and representatives from the specific department to participate actively. These democratic bodies were the driving force behind the initiation of a multitude of different improvement projects – small and large. Each department had a departmental committee (AU) that initiated projects internally, and projects that involved two or more departments were managed by a business committee (BU). In addition this BU arena monitored the activities executed by the departmental committees. Both of these arenas are structured in the General Agreement and as such part of the system of collaborative arrangements between employers/employees.

Improving the process at the department for prefabrication of pipes

One of the departments at Aker Stord, ‘the prefabrication of pipes’ (PR), revealed through quality control, that a number of pipe spools possessed severe errors even though they were declared ready for delivery. The number of errors was also increasing. The consequences of such errors are severe and pipe parts welded together have to be separated and the work has to be redone. Economically, every error represented a significant additional cost. A task force of employee representatives involved in the prefabrication of pipes consisting of engineers, foremen, skilled workers and planners was put together. The task force was designed in order to encourage that the problem was dealt with in a proper way. All of the participants had their own opinions as to how a number of errors were produced. After a thorough investigation the task force presented a plan of action. One of the outcomes of this plan was that all of the different groups that formed part of the production line had to make small or large adjustments in their procedures. The results of the work of the task force were crucial. The number of errors dropped considerably, and the department’s economic output improved.

The task force at Aker Stord was monitored by an internal consultant (IC). IC also prepared the process for the task force, and acted as a process consultant. Thus in many respects there are similarities between the IC at Aker Stord and LDO in Case 3.

Spreading TKA within SIN

In the ED2000 programme, a training programme for ICs was developed. Cases such as the one at Aker Stord were taken back to the sub-network of ICs in SIN and were presented to the rest of the networking ICs. This facilitated discussions and reflections on: (a) the content of the projects, (b) the set-up of the task force, and (c) techniques used by the IC. In this way, the project that was accomplished at Aker Stord had a

considerable impact on projects in other enterprises, and vice versa.

One of the major achievements in the distribution of knowledge from Aker Stord, was the way participation came to be acknowledged in the SIN network. Both participation by individual employees and representative participation stated in the General Agreement were important aspects of the TQM improvement projects at Aker Stord. Participation was not acknowledged by the enterprises in the SIN network previous to ED 2000, at an early stage in the history of SIN. As a key actor in the network and the local business community, Aker Stord became a model and driving force regarding how improvements could be achieved as well as the ways the member enterprises operated their production and business activities. Participation at different levels, in different arenas and in a multitude of contexts was spread to the other member enterprises, through both pull and push.

TKA is a hybrid, in the sense that it links improvement projects shaped and organised according to the philosophy of TQ with participatory traditions from Norwegian/Nordic work life. In the case above (Case 13) arenas linked to the General Agreement were utilised as legitimate structures in order to implement the over all philosophy of continuous improvement in TQM, as well as structuring the specific improvement projects initiated.

Improvement projects were based on the identification of problems through the Deming circle. Continuous improvement implied permanently organising enterprise development activities utilising the Pareto-optimal principle (Claussen 1999) as well as several other tools. Tools and projects were closely linked to the arenas stated in the national agreement, intended to promote broad individual as well as representative participation. This gave the opportunity to agree upon the projects initiated, so that the intention of securing jobs and work conditions were equal objectives to the improvement of economic and productive performance.

Potential tensions between a Nordic model and more general international management trends may affect the utilisation of hybrids appearing as these trends are implemented in local regional contexts and enterprises. Thus, to exploit particularities regarding the Nordic model appears to be crucial in order to illuminate how this model can contribute (or hamper) the creation of variation, the strategic selections and incorporation of changes and innovations into the organisation of the enterprises and the local regional business context.

2.13 The Nordic model(s)

One question to be raised in relation to the view presented in the previous paragraph is whether or not there is anything worthwhile to describe as a specific Nordic model. We will introduce one presentation of such a model that has received wide acceptance, at least in the

Nordic context. The presentation of such a model is based on the following elements (Kettunen and Rissanen 1995, Kettunen 1998, Claussen 2006 and 1999):

- A high degree of employee organisation, including the public as well as the private sector, with white-collar as well as blue-collar workers, female as well as male employees.
- A high degree of employer organisation.
- The absence or insignificance of organisational divisions within workers' unions.
- Relatively centralised national organisational structures.
- A strong presence of trade union organisation at the workplace level.
- A national hierarchical system of collective bargaining.
- The priority of collective agreements to direct statutory norms in the regulation of work life.
- Tripartite co-operation between trade unions, employers' organisations and government, promoted by the strong position of Social Democracy in the political system as well as in the trade unions (Kettunen 1998). Some similarities can be found in the Triple Helix arrangements (Leydesdorff and Etzkowitz 1997 and 1998).

Basically, this model is a representative model about employee/employer relations. Local representation and power of negotiation is balanced against the common requirement and interests on the national level. There is a balance between local negotiations and centralised negotiated frameworks, in order to prevent specific and monopolist interests from dominating the labour market as well as the overall economy. Such a balance of interest benefits both employers and employees in a long-term perspective. This is all part of the organised union/labour movement and business structure into a representative whole. Responsible and co-operative structures are thereby developed and maintained (Claussen 1999 and 2001).

In short, the basics of this model are strongly linked to industrial and economic democracy (Dahl 1992/1985), both on the enterprise level, as well as on a regional and national level. The democratic aspect is seen as important, in order to secure basic rights, duties and obligations among the social partners. Social aspects are linked to the balance between short term economic objectives of individual actors in the market on the one hand, and more long term social objectives of society on the other hand (Johannesen 1970, 1982 and 1983). This is one of the key elements of the welfare model in social democratic economies (Dahl 1992/1985). It has also been a key element in the collaborative research conducted through IRIS in ED 2000/VC 2010 at the enterprise, network, regional and national levels. This is a structure or system that guides change and innovation in order to become something else: the

incidental happenings among those in temporary power positions to promote specific attention and interest, in order to get support for change and innovation activities.

Faced with perspectives and practices linked to global, liberal and individualised economic/ social life, the rules and regulation present in the *Nordic model of work life* could be viewed as outdated (Reve 1992 and 1995, Reve and Jakobsen 2001). The Nordic model is claimed to be outdated, due to the strong involvement of the social partners and the government in economic life and market relations. This strong involvement is claimed to hamper the functioning of the market. It prevents the supposedly strong adjustment forces of the market functioning as a drive for prosperity in economic development. A properly functioning capitalist market has supposedly made obsolete the strategic role of government, and its regulatory and interventionist behaviour (Porter 1990 a and b). Rather the Nordic model, with its collaborative structures, agreement, laws and practices, is seen as bureaucratic arrangements preventing dynamic market forces unfolding in order to stimulate change and innovation typical of the present globalised world market. Here emphasis is made on one side of the innovation dilemma, where innovations are spontaneous happenings unhampered by (bureaucratic) guiding structures and systems.

One reason why the Nordic model is claimed not to be fit to face the requirements of the present globalised work life, is linked to significant transformations of the 'old' industrial society. Today's society and its work life advances as a:

- *Knowledge society* (Nonaka and Takeuchi 1995, Nowotny, Scott and Gibbons 2001). Skills and competences of the labour force require new arrangements and structures in order to make them applicable in a functional way.
- *Networking society* (Castell 1989). Relations are cutting across traditional structures of co-operation, collaboration and crafts. They are less stable, more fluctuating and virtual. Union and labour movement structures are not fit to function in this virtual economy.
- *A society based on information- and communication technology* (Castell 1989).
- *The demands from globalised and flexible work environment* (Claussen 2006).

Summing up, the industrial democracy of the Nordic model seems to be faced with:

- diffusion of power- and decision making structures
- laws and regulations lose their grip
- employee participatory structures lose their importance
- co-operative structures evaporate.

An important force behind this transformation is globalisation. Globalisation then, demands liberalisation and flexibilisation of the Nordic model, on enterprise level, as well as on the regional and national level. One of the basics of the globalisation forces is the world-wide flexibility of economic life and work conditions.

Collaborative structures are essential in every aspect of social life in modern society. As already pointed out, even Adam Smith, the ‘Godfather of liberalism’, emphasised the importance of a moral code of collaboration (Smith 1977/1776).

This underpinned the whole account in *Wealth of Nations*, but has been disregarded by his subsequent self-declared followers. As a result, much of the last 230 years of industrial capitalism may be seen as based on a corrupted and self-serving interpretation of the enlightened account from Smith. Thus, the division of labour in a modern society requires new collaborative structures in order to prevent anarchy and disasters malfunctions (Durkheim 1964/1893). This is so also regarding change and innovation processes, as has been pointed out on several occasions in the present publication.

In the debate on the preparation for a new work life judicial act in Norway, two positions were fiercely debated. One emphasised the inevitable individualisation due to the evolvement of the knowledge society with its specialisation, its service industries and self-employment. Claims were made that this ‘new society’ requires flexibility through deregulation and local empowerment, as well as downgrading of collaborative structures and the role of social partners (NOU 1999:34).

The opposite opinion, stated from the same preparatory work, emphasised the need for basic collaborative structures. Although individualisation could undermine core aspects of work life, such as workers support for unions, there are several indications of opposite trends (NOU 1999:34);

- *First* of all, professional crafts and differences of interests among educated groups could increase in the future. Differences of group interests, both among professionals and educated groups, as well as general conflicts of interests among all actors in society, are impossible to handle individually. As the number of members with higher education in society grows and education/society becomes more specialised (Piore and Sabel 1984), the need for existing as well as new collective and collaborative structures increases.

- *Second* the individual needs protection of his or her interests and reputation. As the importance of individual reputation grows, the vulnerability against backbiting and negative rumours might foster destructive competition among workers. Management, unions and shop stewards might have an increasingly important role to play in order to prevent such malfunctioning competition, manipulations, strategic, and instrumental behaviour (Habermas 1981 and 1992).
- A *third* point to be made, addresses the need for co-operations between highly educated and specialised producers. New collaborative structures are needed for specialised and individualised producers to manufacture products and services covering more diversified needs. This is so both regarding products, services and maintenance. Product inventions, services and solutions cutting across value chains and customer supplier relations, are signs of this necessity. Emphasis on networking, empowerment and regional innovation system, is another (Sengenberger 1990, Asheim 2000, Claussen 2004). A paradox of the knowledge society seems to be that increased individualisation and specialisation among workers creates greater dependency, among these same workers, on deliveries and services provided by different specialists. Greater individualisation and specialisation creates greater dependency on co-operation. Certain generosity regarding sharing of knowledge and experience among individual workers, and specialists becomes necessary in order to smoothen co-operation and collaboration. Solidarity and collective solutions are necessary in order to create the required generosity.
- A *fourth* point to be made, is that highly educated, individualised and specialised workers might be more vulnerable to the reduction of staff and cuts in the workforce. Collective strategies might be a way to reduce this vulnerability.
- *Fifth*, an individual might have a need to be protected against self-exploitation. Empowerment and individualisation of society might increase the competitive forces facing each actor. This could foster an increase in self-exploitation in order to gain competitive advantages. To prevent the overall destructiveness of such tendencies, collective arrangements and regulation are essential. Collective arrangements and regulations might in the long run give competitive advantages to those markets, work environments and nations that succeed with such arrangements.

To sum up, the demand for empowerment, individualisation and liberalisation of work life and the business environment is criticised for not taking into account the necessity of preserving collaborative structures, and developing new forms of solidarity and co-operative arrangements.

Is there then a possibility of turning the local and regional practises into integrated innovative arrangements? Can there be ways of utilising both the local/regional experiences, together with the practices inherent in international management structure, in order to stimulate change and innovation? Are there features to build upon, in order to created integrated practices where proposedly bureaucratic structures are utilised in order to enhance change and innovative feature of these international concepts prevailing in the global context? Are there ways of making ways of making collaborative arrangements supportive of change and innovation, bringing employees into arenas practicing participatory integrated innovation? What then are our specific experiences that can give new insights into these debates on the Nordic model?

In the specific case presented in this contribution, an ambition has been to illuminate how these questions can be dealt with in an empirical context. Additional support for how these questions can be dealt with is provide in the next sub-chapter,

2.14 The Nordic model and participatory innovation

From the presentation of the Nordic model above, two points will be emphasised. First the representative structure is a systematic way for the major social partners to link all their organisational levels. Second, there is a collaborative philosophy practiced in this model that has been an important feature of Nordic working life. These features have promoted co-operating in addition, and to some extent contrary, to conflict and negotiable practices between antagonistic interests.

Research at IRIS relied heavily on collaboration with the social partner in change and innovation processes. They were the key stakeholder engaged at the national level, regional level and local/enterprise level. Duties, responsibilities and possibilities are shaped through the representative structure to a coherent whole. These arrangements have been possible to utilise in ED 2000 and VC 2010. It has been utilised in a way that has linked the central research initiatives regarding development and innovation to the initiation of such processes on regional/local/enterprise level. The social partners in Norway thus have a representative

structure that corresponds with the different levels and engagement in research activities conducted in ED 2000/VC 2010, and have been extensively utilised for such purposes. As a coherent whole, this structure of work life has a basic feature, making it into a functional system resembling the systems that are covered in the way Luhmann applies the concept.

Here are listed some of the important features utilised in research initiatives created on enterprise/local/regional level;

- There is a strong centralised structure where strategic decisions and initiatives are taken. This makes it possible for social partners to engage actively in shaping the basic preconditions for doing research in the field of work life, development and innovation. It has provided resources and produced other necessary preconditions in order to launch multidisciplinary integrated research.
- Decisions at central level have supported and penetrated into lower levels. Linkages to regional, local and enterprise level have been transmitted and supported through the established conditions on higher-level arenas. Thereby initiatives, strategic decisions and resources have penetrated into contexts where specific development and innovation activities have been launched. The representative structure in itself has contributed to this outcome.
- This representative structure is a key element in what is considered the Nordic model of working life. It has contributed to systemic and structured development and innovation that otherwise would have occurred more incidentally driven by market and globalisation forces. Here is a significant example of the utilisation of the Nordic model in a globalised environment (see case above for more detailed exemplifications).

While utilising these representative structures, considerable emphasis has been placed on broad participation in addition to representative participation. In specific projects and activities, individual employees have been engaged both in competence building activities, as in the Hardanger case, and in utilising competences and tools introduced in specific enterprise development and innovation activities (see Cases 2, 5, 7 and 8 for illustrations). Tools and competences have been developed and inspired by international management concepts like Total Quality (TQM) and Business Process Re-engineering (BPR). These tools, ways of working and associated competences and knowledge have been utilised in development and innovation activities, not directly but through adjustments and modifications. Adjustments

and modifications have been made to local conditions, and in relation to important features in the Nordic model presented above. Arenas for practices in the Nordic model have been utilised for TQ improvement projects and activities performed in close collaboration with research (see Case 13 for example).

The particular feature to consider in this respect is the utilisation of globalisation influences on this particular structure of working life in the Norwegian context. This has been indicated above. Further considerations are given in Case 13, in order to demonstrate this point. It is important here that without the exemplified aspects of the Nordic model, the research conducted in the two programmes would have been hard to fulfil or would not even have been initiated.

As demonstrated in Case 8, the involvement of union and representative structures were important preconditions for the change and innovation processes initiated in VC 2010 and ED 2000. In addition, it has contributed to enhanced knowledge and competences among the involved participants from union and representative structures. It has also contributed to changes, new roles and practices among the involved participants. Examples of such outcomes have been presented in Cases 7 and 8.

2.15 Norwegian experiences

Efforts to utilise participation in change and innovation has been emphasised throughout this publication. Here the previous case presented above will be utilised to shed light on some particular Norwegian experiences.

According to the experiences at IRIS, change is produced through close linkage with the union, as a legitimate representative of the different interests and obligations present in the work force in a specific enterprise. The case above illustrates how an international management concept was integrated into the representative system and local traditions for participation, in order to initiate change processes. Additionally, it illustrated how change activities were incorporated into the existing operative structure of the organisation by linking these activities to the existing representative structure based on the Nordic model of collaboration as well as local traditions for its application.

In another case (Case 3) an effort to create arenas in order to integrate employees in creative processes to promote innovation was encouraged, as presented previously. Suggestions were made to enterprises to create arenas among employees at different levels in order to make

them creative and produce variation to choose from. The basic idea was that such arenas should encourage the shaping of *new* business opportunities in addition to the already established core business of the operating enterprise. Employees should also incorporate new business opportunities into the existing organisation, widening the range of variations and strategically chosen alternatives as part of daily operations. Enterprises should expand their business into new possibilities making them less vulnerable to changes in their core business activity. The idea was that employees should contribute to the expansion of their work place activities as well as new business opportunities for the enterprise, and thereby strengthen the competitive advantage of the whole enterprise. In this last case, lack of necessary structures (procedures, codes, culture, duties and obligations) are assumed to be one important factor behind the inability to create such arenas among employees in order to promote innovation in enterprises (collaborative intrapreneurship). Lack of required structures and system requirements related to these arenas made it impossible even to get the participants to imagine and be conscious of such arrangements as opportunities for participatory change and innovation activities. Systematically creating variations and making strategic selections based on active participation from engaged employees in such arenas thus stayed as fictions among those involved. The lessons to be learned indicate that innovation activities involving participation from employees as intrapreneurs requires structures and systems not yet fully identified and elaborated.

In the case presented above (Case 13), globalisation presented itself through the introduction of an international management concept, Total Quality Management (TQM). A corporate adjustment and identity was created in order to make a strong local linkage with the original concept. This local linkage was strengthened through collaboration with research, when several further developments of this international management concept were performed. The following list indicates some of this developments, local adjustments and linkages performed through collaboration with research.

- a) Broad participation was essential in the original TQM concept. There was no room for union or representative participation in the original design of the concept, but this was changed by giving union representatives an essential role in the way the development activities were initiated and introduced into the organisation.
- b) Arenas designed according to the main agreement, laws and regulation essential in the representative system were utilised to link TQM practices and specific developmental activities to the organisation. This ensured a strong linkage to local traditions for

collaboration between employer/employees. It made the introduction legitimate, adequate to the operative needs, encouraged broad participation by individual employees, etc.

- c) Collaboration with research prevented impressions arising that the TQM process was driven by the self-interests of consultants and management/owners. As researchers had no specific solution to sell, participants were invited to shape the basics of the corporate version of TQM and thereby framing the basic conditions together with research. This was 'real' participation, and contributed to avoid the impression of fake or weak participatory practices and enterprise democracy.
- d) Union representatives locally took an active part and prominent role in different change activities.
- e) The social partners at the central/national level were actively involved in order to back the activities and practises at the local enterprise and network level.
- f) Suppliers, customers and the surrounding local community were seen as part of the whole initiative. A kind of local corporate social responsibility (CSR) was staged by the main enterprise itself.

The bullet points presented above are all closely linked to the Nordic model of work life. Participation, systematic and 'real' involvement, linkages to the representative system and systematic linkage between local and central representatives are all essential in this model. This is an essential aspect of making change and development incorporated into the operation of the organisation. Thus, according to the concept of integrated innovation, this case illustrates the incorporation of change and development into operative practices of an organisation.

Case 13 does not however illustrate specific challenges facing radical change and more innovative practises in an organisation. Not surprisingly, most of the change activities were minor changes in daily operations, with little or no creativity or innovative characteristics, at least according to the conceptualisation and discussion previously in this contribution. There was no systematic creation of variation and no strategic selection to be made between such alternatives. Although strategic selections had to be made between various improvement projects, these improvement projects were identified among existing operations. No creative and innovative activities were conducted based on the systematic creation of variation to choose from in order to create *new* business opportunities. Case 13 thereby does not articulate

the specific possibilities and challenges facing participatory innovative activities in an organisation.

Case 3 illustrates a project that was launched in a network setting, aimed at giving specific individual actors responsibilities in promoting development in enterprises based on a supportive network structures. They were named internal change agents. This was initially intended to be part of a broader project aimed at shaping internal arenas for change and innovation. These arenas were supposed to be based on broad participation, as well as close linkages to already existing participative structures. Additionally they were to be linked to network collaborative structures among enterprises. These network collaborative structures were also intended to be supportive to the internal change and innovation arenas in each enterprise.

The new arenas were intended to face challenges that would emerge when radical change and innovation activities were to be the major focus. Researchers were engaged in the creation and introduction of some basic ideas of how such arenas could operate, that is under what conditions regarding communication, collaboration, engagement and the balancing of individual interest. This was seen as some essential element in *participatory innovation* closely linked to local tradition and practices conceptualised as the Nordic model. One of the arguments made was that these arenas could be ways of utilising local and Nordic work life arrangements and experiences, in facing global change and innovation challenges.

Enterprises and networks presented with these ideas responded with disinterest. One possible reason behind this disinterest could be the lack of elaboration of system and structural requirements such as roles of conduct, codes, norms, duties, responsibilities and possibilities that are required in order to make such innovative and creative change arenas function. Lack of definite resources and financing of such arenas could be another possible explanation for this disinterest. Additionally, researchers could not exemplify specific experiences with such arenas from comparative practices to build upon. In order to gain engagement in such piloting activities, our experience is that enterprises practice risk aversion, specifically when such piloting are linked to 'soft' issues. It could also be that this initiative lacked sufficient involvement of integrated innovation practise in order to encourage systematic ways of conducting radical (and risky) changes.

Although cases in our contributions (as in Case 13), illustrate the possibilities of utilising a Nordic model and local practises of work life systems and structure, in order to promote

change and improvement, this does not account for the potential at a general level to utilise this model for similar purposes. Demonstrating this utilisation in Case 13 shows that such a possibility exists as a model. The existence of such a model and its possibilities provide the opportunity that it can operate as a critical point of reference to be utilised in other contexts, as has been the case in the SIN network (Case 12).

III Innovation, work place, networks and coalitions

This section has seven contributions. They are diverse selections of experiences and discussions based on particular contexts. The point of this section (and the next) is to present a multitude and diversity of issues and experiences that are closely linked in different ways to the core chapter (II.1), as well as the other contributions in the previous section. Thereby the variety of links and discussions, closely related to the main topics in the core issues of integrated innovation previously outlined, is presented.

In presenting the chapters we start with an example of coalitions, then work place and network experiences are touched upon. We end with two chapters. One is giving theoretical and practical experiences of workplace teams (basic and extended) and partnerships as essential features of work organisation and integrated innovation. Another, a theoretical contribution, discusses organisation theory and action research. The two last chapters have wide implications for most of contributions in this section, as well as the overall publication.

Chapter III.1 “A Practical Normative Approach to Development – Some Initial Experiences With VRI Processes in the Agder Region by Roger Normann, James Karlsen, Hans Chr.

Garmann Johnsen and Jens Kristian Fosse is a contribution from a neighbouring region to the one where research at IRIS has been conducted, the Agder region. This region constitutes two counties (the Agder counties), as is the case with the research linked to IRIS. Close collaboration between researchers in these two regions has given several important outcomes. Learning and knowledge acquisition across research communities has been important. Collaboration in the field of action research has been another important outcome of the close links between these research communities. Comparisons between the experiences, reflections and theoretical perspective elaborated in the two research communities have been exchanged. Common knowledge bases have been generated.

The current chapter presents experiences at a coalition level where two counties in Norway (the two Agder counties) participate. Collaborative practices at a coalition level is investigated and critically reflected upon.

In the chapter an account of the context and background for three research programmes (ED 2000/VC 2010/VRI) are given. This context presentation illuminates important aspects of the coalition structure that IRIS has been linked to as well. Institutional and systemic processes

regarding smooth transfer of coalition from VC 2010 to new collaborative challenges in the new research programme (VRI) is addressed as something remarkable. It is characterised as a new and unexpected experience. Comparatively the complexity of evolvement in ED 2000/ VC 2010 is something significant also in the IRIS region (DCHR). In the IRIS region this complexity and the diminishing of cross county collaboration has on the other hand proved to be quite different from the collaborative experiences at this level in the Agder region.

The expansion and increased complexity of VRI seems in some way to be contrary to system complexity reduction as a strategy for system survival addressed by Luhmann (see chapter II.1). On the other hand this could imply that system requirements will be harder to fulfil in the future of VRI. What will be the case is yet to experience.

In the VRI process a shift from static system government to process dynamic governance and the new regionalisation is addressed as an important issue to consider. The contribution of action research and governance is argued as the most important causes behind the ease and fitness of the processes of launching VRI.

Chapter III.2 “Workplace Innovation: Bridging Knowledge and Practice by Rosemary Exton and Peter Totterdill” builds on cases in the National Health Service (NHS) where UKWON has been involved. It focuses on work place innovation involving employees, partnership and the development of social capital. Participatory teamwork is a core principle of the day-to-day working life. A patient-centred case model as sustainable work place innovation in the NHS is outlined. Additionally a model of employee engagement is elaborated where three levels of collaboration are presented; one partnership arena, one internal development coalition and one level engaging employees in communities of practice. Here the considerations on collaborative arenas are somewhat differently applied, than in the context of research at IRIS, which makes some interesting comparative possibilities.

The discussion in the chapter distinguishes between a ‘high road’ of change where long-term innovation seeks a win-win outcome for management, employees and other stakeholders. This is distinguished from ‘low road’ change often chosen by politicians and health service managers governed by short-term cost cutting measures. In the ‘high road’ of change communicative competence becomes important. An approach labelled ‘Forum Theatre’ is presented as a way to increase competence at the work place level among employees.

In lessons learned, the importance of ‘champions’ with entrepreneurial skills is emphasised. Challenges facing the modernising work organisations in Europe for individuals, employers/employees, trade unions/employers organisations and intermediate bodies are listed.

Chapter III.3 “Promoting regional innovation through healthy working centres in South East England by Anne-Marie McEwan and Richard Ennals” presents new ways of working and new work organisations based on the concept and practice of Healthy Work Centres (HWC). The intention is that work should be close to home, with a reduction in commuter travel, and shared premises for employees of different employers, in both public and private sectors. The cases in the previous core chapter (II.1) were based on enterprises located in the private sector. This creates an interesting possibility to compare experiences regarding innovation in work organisation both in the public and private sector. This opportunity has been weakly addressed in the two research programmes that the research at IRIS has been embedded in, ED 2000 and VC 2010.

The discussion in the chapter gives an account also of the experiences and approaches to work organisation in EU. Comparisons with the UK, as well as the Nordic countries, are highlighted. This makes the comparative potentials with the previous experiences and discussion in the core chapter (II.1) even more interesting. Here seems to be an important source for future elaborations.

Chapter III.4 “Reverse Intergenerational Learning: a missed opportunity? by Carol Baily” is addressing issues closely connected to chapter IV.2 (“Virtual Links: intergenerational learning and experience sharing across age divides and distances *by Anne Inga Hilsen and Richard Ennals*” page 343). They both direct attention to age and generation differences. While chapter IV.2 placed in section IV, the current contribution (III.4) is located in section III. The reasons behind the different locations of the two contributions, is linked to the way the current contribution raises important questions regarding networking possibilities utilising ICT. In chapter IV.2 more emphasis is placed on knowledge generation and transfer of knowledge, important issues addressed in debates on the knowledge economy.

The utilisation of ICT presented in the current chapter can have different preconditions regarding variations in competence and experiences between generations. In the current chapter it is argued that the younger generations living in a virtual reality experience are happier working as team members in this ICT born world than the older generations. As each generation brings different preconditions and expectations regarding work, they also possess

different attitudes and capabilities. This can have significant impacts on work conditions, both among employees in the same generation, as well as between generations. Reverse intergenerational learning has implications beyond ICT.

Chapter III.5 ““You should not underestimate the importance of relations...”. Linking science, capital and business in commercialising knowledge *by Lene Foss and Mette T. Solnørdal*” presents experiences regarding how personal relations based on trust and co-operation affect the connection between institutions in linking science, capital and business. Collaborative arrangements are here illustrated at a specific individual and relational level. Based on a narrative presentation, this chapter gives an insight into the ‘real’ world and how things are actually happening. In this case material one gets closer to the individual people interacting in actual processes of networking to facilitate innovation, than in any of the other cases presented. Additionally the science/university, finance and commercial business relations are presented and discussed thoroughly. This chapter gives a different perspective on many of the networking processes illustrated and discussed in chapter II.1, and the case material presented there.

There is an interesting identification and empirical illustration of the independent science focus on the one hand, and the economic commercialisation of science on the other. The discussion narrates how this dilemma is acted out and solutions created in order to cope with these challenges. A similar discussion on dilemmas conducting action research is discussed in chapter IV.5 on the role of universities in regional development and in chapter II.1 on dilemmas conducting action research.

There is an extensive discussion and illustration on how personal relations shape stable institutional relations. Crucial in the empirical example is the interplay between personal relations and institutional stability/linkages. Institutional stability and maturing of relationships lead to systemic processes (developing solid network structures, see chapter II.1) that can insure long time collaboration. This is comparable to the dialogue-interaction and system-structure duality discussed previously (see chapter II.1).

Issues of science and commercialisation presented in this chapter also relate to the innovation dilemma, where too close connections, as well as too much trust, can inhibit innovation. Here is an aspect of the innovation dilemma discussed previously in chapter II.1 that is important to consider and investigate further.

Chapter III.6 “Integrated Innovation in its Organisational Context *by Peter Totterdill*” takes an account of the work organisation as a focus for integrated innovation. Work organisation is to be regarded as a reflective process, not an end state. In connection with this argument, a distinction between a ‘high road’ and ‘low road’ of work organisation as a condition for integrated innovation is presented.

In the “Hi-Res” project, which the chapter refers extensively to, the distinction between high and low road was utilised to analyse and compare hundreds of case studies, in order to analyse concrete experiences of organisations throughout Europe as they struggle towards change. Although an important distinction, it still raises some ambivalence. The same tools and instrumental practices were found to prevail in both approaches. On the other hand, on features such as dialogue and participation, there were significant differences between the high and low road approach.

Slack is regarded as an important aspect of change and innovation (see chapter II.1 for similar discussions and exemplification through case material). Teams, participation and partnership are also discussed and analysed as important issues regarding integrated innovation.

Section III ends with the *Chapter III.7 “Leadership – An Action Research Approach by Nazir Walji”*. This chapter presents important aspects in current theoretical debates on organisations and leadership. As an overall approach social constructivism and post-modernism are presented and critically reflected upon. The critical review takes account of the ontology of critical realism. Reflections are linked to some current debates on leadership and organisational theory.

Integrated into the reflections on leadership/organisational theory is a discussion of action research (AR) and participatory action research (PAR). Emphasis is given to the ‘same’/ ‘other’ distinction. A distinction between rational and reasonable is also presented. Important contributions are added to the discussion made elsewhere in the publication (see above).

A thorough definition of stakeholder is given in the chapter. The notions of stakeholders are important in many different respects throughout this publication. In the current chapter this notion is defined and important references given (see chapter III.6 page 296).

III.1. A Practical Normative Approach to Development – Some Initial Experiences With VRI Processes in the Agder Region *by Roger Normann, James Karlsen, Hans Chr. Garmann Johnsen and Jens Kristian Fosse*¹²

3.16 Introduction

Research and development initiatives, originating in what broadly can be labelled the Scandinavian tradition of work-life research, have a long history in the Agder region. The Industrial Democracy Project, where Fred Emery and Einar Thorsrud, among others, worked to redesign work organisations in several field experiments including Hunsfos Pulp and Paper Mill in Vennessla municipality (Vest-Agder County) in the 1960s, is the first noticeable example (Emery and Thorsrud 1976). It was however not until some decades later that researchers permanently working *in the Agder region* got directly involved in this research tradition. In the mid 1990s researchers from Agder University College together with researchers from Agder Research worked on a new national programme called Enterprise Development 2000 (ED2000). In 2001, this research and development programme was succeeded by the Value Creation 2010 programme (VC2010). Now, in 2007 Agder is facing its third cycle of participation and learning in research and development programmes originating from the Scandinavian tradition of work-life research, through the new VRI programme¹³.

The most novel aspect of the VC2010 programme, compared to its preceding programmes, was its emphasis on regional interaction and co-ordination. One of the central methodological characteristics of the VC2010 programme was to set up regional development coalitions, partnership like structures that were supposed to co-ordinate and oversee development and research activities that involved multiple actors in the region. This was something that represented a new experience both for researchers and regional stakeholders involved in the

¹² This paper was presented at: Action Research Conference: Making the “Practical Turn” Practical: Collaboration across nationalities, professions and varieties of action research Oslo, September 10th - 12th 2007.

¹³ Policy instruments for regional R&D and innovation.

work. In Agder this initiative worked reasonably well for a period of two years, later the project entered into a negative spiral of events that eventually led to a conflict between some of the actors in the development coalitions, as well as the researchers (Johnsen and Normann 2004; Normann 2007a).

Reflecting from our own participation from the search conferences leading up to VRI, it seems that Agder has had a process characterised with much consensus, and a relatively low conflict level, in its journey into the new VRI programme. Many of the issues and challenges that regions that sought to participate in VRI has been met with probably stems from some of the complexity that was created when the three programmes “Kompetansemegling”¹⁴, “Næringsrettet Høgskolesatsing”¹⁵ and VC2010 merged into the new VRI programme. In addition to this the new VRI programme was supposed to be governed by a regional partnership or steering group, whose strategies were to be prioritised and anchored in regional development plans and strategies originating from the counties. This meant that the VRI application process in Norway would represent the start-up of many new collaborative patterns, and revitalisation of some old ones, both within counties and as county crossing projects.

Such a process requires regional role clarification and co-ordination, in order to succeed with the task of producing an application that involves the relevant actors and institutions in a meaningful way. Given the time available between the VRI project description and the application deadline, the role clarification and co-ordination processes had to be done with some speed. The relatively smooth transition from VC2010 to VRI in Agder is on one hand something of a puzzle. The regional development coalition had, during the course of the VC2010 project, been trapped in a large conflict that almost derailed the whole project. Based on these experiences, one could have expected that regional stakeholders would be very hesitant in returning to a similar journey, involving by and large the same group of researchers. This has not been the case, the process has been characterised with much enthusiasm and anticipation. This paper offers some reflections on why this has been the case.

14 Competence broker program with the aim of diffusing R&D knowledge from academia into firms.

15 Enterprise oriented university college programme.

3.17 *Research Question*

This paper discusses the types of institutional and systemic processes that could be relevant for understanding how the VRI process has unfolded in the Agder region. We discuss two different explanations.

The *first* explanation is that the region and its actors and institutions through working with, and reflecting on, experiences from two subsequent Action Research programmes has internalised and familiarised itself a ‘Mode-2’ (Gibbons, Limoges, Nowotny, Schwartzman, Scott, and Trow 1994; Nowotny, Scott, and Gibbons 2001) type of research and development activity, and that the type of learning this represent is a central explanatory factor for understanding the successful establishing of a VRI project in the Agder region. Thus we ask what impact action research has had on the perception of development work, involving both researchers and practitioners in the region. One obvious explanation is that regional development coalition participants become more used to working with researchers in these types of projects, and that researchers are more sensitive to practice, and more experienced in their interaction with practice, and subsequently that new collaborative patterns between research and practice have emerged.

The *second* explanation relates to the systemic characteristics of the region. With regional governance and regionalisation processes, meta-steering of the governance network is important, in order to understand why complex programmes such as VRI can be set up, with consensus from most of the involved parties (Normann 2007a). We ask to what extent informal and formal aspects of the emerging regional governance systems have been able to facilitate and handle challenges that the development of the new VRI programme has represented. This paper therefore reflects on and discusses two different assumptions or explanations to this, which we have labelled:

- (1) The effects of Action Research
- (2) Regional Governance in practice

The ambition of this paper is not to construct an antagonism between these two sets of explanations, but rather to view them as complementary and potentially enriching. Based on this we ask the following:

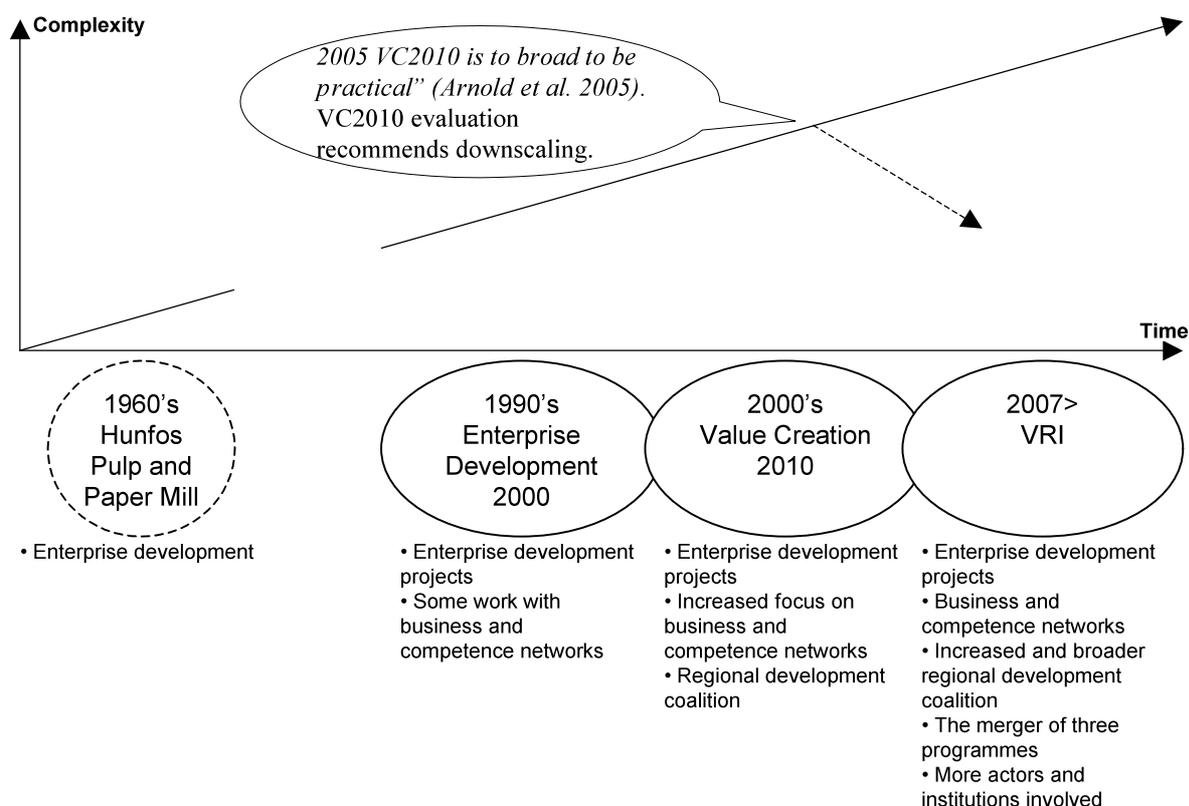
How can the relatively high level of consensus in establishing a VRI project in the Agder region be explained?

There are significant methodological and empirical difficulties involved when we try to construct a discussion that aims of explaining social phenomena that are of such a complex nature as those outlined here. Our approach will refer to reports from researchers, most notably Bjørn Gustavsen, who over the years has followed events and developments in the Agder region closely. In addition to these contributions, both the ED 2000 programme and the VC2010 programme have been evaluated by external evaluators. Also our assessment rests on our own writings relating to the developments in the Agder region.

3.18 Some of the Core Ideas Within the Action Research Programmes

Central to the development and research work done within the framework of the ED 2000 programme was the focus on the normative and instrumental aspects of improvements in the work organisation and business development area. That is to say that both participative and productivity aspects were emphasised (Gustavsen 1998b: 2). Even though business network development and work was an important component in ED 2000, the core activity was enterprise-internal development activities, where researchers and practitioners collaborated in tripartite arrangements in order to realise development aims. The succeeding programme, VC 2010, kept on to this development ambition but also expanded the research focus to adept to the emerging regionalisation paradigm that swept over Norway in the late 1990s, a paradigm that still is an important force in many local and regional processes. VC 2010 in this view, both represented an expansion and an increase in the level of complexity compared to ED 2000, in the sense that more actors become involved and that more ‘types’ of development and research projects became relevant. Many of the modules across Norway, including Agder, struggled to integrate the three levels; business, network and regional strategy, in their work. This was something that probably contributed to Technopolis’ assessment in their national mid-term evaluation of the VC 2010 programme, to argue that VC 2010 is too broad to be practical (Arnold, Muscio, Nählinder, and Reid 2005). The succeeding programme VRI does not represent an implementation of Technopolis recommendation, as the VRI programme involves even more actors, institutions, and project activities than VC 2010 ever did. This is briefly illustrated by the figure below.

Figure 1: Some Action Research programmes present in the Agder region linked to the Scandinavian work-life research tradition



The most novel aspect of the transition from ED 2000 to VC 2010 was the strengthening of the regional focus and the establishment of regional development coalitions, where most members apart from the social partners, represented public institutions and thus had little direct interaction with enterprises in the region. A core research topic in ED 2000 was: “how to organise for innovation”. Research from ED 2000 pointed in the direction of establishing and working with development coalitions as arenas that could facilitate and support local innovation and development processes. In VC 2010 the development coalition became associated with the regional level. Two white papers from two different governments, Stoltenberg I government (St.meld.nr.31 2000-2001), and Bondevik II coalition government (St.meld.nr.19 2001-2002) set the ‘tone’ for increased emphasis on regions and regional partnerships in local policies:

The government emphasises that the actors in the regional partnerships shall have real influence on the arrangement of the strategies in the regional development programme. In a way, that regional development becomes a shared responsibility between the different actors. To strengthen the regional partnerships the government will also consider increasing the allocations to the regional level within the different state

sectors? This is also in accordance with the main principles of the governments modernisation work (St.meld.nr.19 2001-2002)¹⁶.

A second important influence behind the new focus on regions, network, and partnerships stems from policy recommendations implicit in regional development concepts such as clusters, triple-helix, learning regions, regional innovation systems etc (Gustavsen 2002: 5; Normann 2007a).

Such a rationale is more difficult to identify when we explain why VC 2010 naturally transformed into VRI. It is more difficult to identify research from the VC 2010 programme that recommends an expansion of the VC 2010 programme. To our knowledge, research findings from the VC 2010 programme do not indicate a particular need for expanding the programme, in the sense of adding to the existing complexity. Also the recommendations made by the evaluation of the VC 2010 programme (Arnold *et al* 2005) went in the direction of making the programme less rather than more complex.

It therefore seems reasonable to assume that VRI is more a result of pragmatic policies and necessary compromises at the national research policy level, than actually driven or even supported by research done within the framework of the VC 2010 programme. This is not the same as saying that VRI will not succeed or produce valuable knowledge and support local innovation processes. Neither do we say that considerations of local experience have not been made in setting up VRI, for instance a series of dialogue conferences was conducted in all of the counties where local actors were invited to give their input. It does however seem obvious that project complexity has increased with the transition from VC 2010 to VRI. This complexity undoubtedly and significantly challenges both practitioners and researchers involved.

However, the transition does also represent necessary and, from a research perspective, interesting, institutional changes. First, in VRI the counties are more clearly given a role in leading and steering the regional development work, which was an issue that caused much of the conflict in VC 2010 Agder. Second, direct enterprise representation is set as a criterion. Third, the universities and university colleges have become more directly involved. Fourth, changes in research organisation have also been made. In VRI, it has been

¹⁶ Translated from Norwegian.

possible to make two applications, one for activities and one for research. Although the regional partners form a steering committee, this also gives researchers some autonomy.

In this sense VRI represents what could be a very interesting continuation of programmes under the umbrella of the Scandinavian tradition of work-life research and action research.

3.19 Regional Governance

It is difficult to make sense of current regional policy-making, implementation, and development processes within certain policy areas, without a theory and understanding of regional governance. As Eva Sørensen and Jacob Torfing, from the Centre for Democratic Network Governance at Roskilde University, have written, governance-network research aims to fill the gap between the political system's self-description; government and its actual workings; governance (Sørensen and Torfing 2005).

Regional governance network theories are in this sense practically and empirically oriented theories. However, emphasis on governance theory is not the same as saying that governance has taken over government, or that governance is the only relevant method or theory for understanding current regional policies and development processes. Governance and government, as in representative democracy, are two parallel systems that stand in an interactive, reciprocal, and interdependent relationship. As it is perceived, one could argue that representative institutions provide the legitimacy of democratic institution to the overall steering system, and that the governance network system provides the expert knowledge and the technical capability to implement policies and development plans (Normann 2007b). Governance is a phenomenon that comes in many different sizes, shapes, and variations. Representative democracy and governance networks therefore constitute a complex and diffuse institutional landscape that now characterises the politico-economical systems of the region (Normann 2007a: 245). Consequently, looking at this system from only one standpoint, or through one perspective, will limit our understanding of how many regional development policies and processes in practice occur.

Because of this, it is also difficult to precisely define what a governance network is. It is easy to give either a too narrow definition that excludes too much, or give a definition that is too wide and that includes too much. One way of conceptualising governance is the following:

- 1) institutionalised work towards specific development aims; that 2) involves actors originating from more than one institution and sector; and that 3) not formally is a part

of but has an direct relation to public administration either trough funding, participation, or policy (Normann 2007b: 6).

This means, for instance, that a network that involves only private firm participation, that works without any form public support, participation, or funding, towards improving shared business goals, would not qualify as a governance network, but this then would be a business network. The recent and massive growth of different types of regional governance institutions should be seen as part of ongoing regionalisation processes.

Over the last decade what should be understood as regionalisation processes have picked up much momentum in Agder, just as it has in the rest of Norway. Such processes are theoretically often conceptualised as a shift from ‘old’ regionalism to ‘new’ regionalism (Veggeland 2003; Wallis 2003; Note 2005). Simplified ‘new’ regionalism, contrasted to ‘old’ regionalism, builds essentially on the following sets of assumptions and normative ideals:

- 1) A shift in focus from *government*; old regionalism is essentially about government, to *governance*; establishing vision and goals, and setting policy to achieve them through cross-sectoral governing coalitions.
- 2) A shift in focus from *structure*; structural alternatives such as city/county consolidations, creation of urban counties, the formation of special purpose and multi-purpose authorities, to *process*; such as visioning, strategic planning, resolving conflict and building consensus.
- 3) A shift in focus from the *closed*; to clearly demarcate the region in terms of boundaries and jurisdictions for growth, service delivery, job markets, to the *open*; open, fuzzy or elastic boundaries.
- 4) A shift in focus from *co-ordination*; through e.g. a regional authority with powers to determine the allocation of resources to units of government within its boundaries, to *collaboration*; voluntary agreement among equals.

5) A shift in focus from *accountability*; legitimacy of co-ordination secured through procedures of accountability, to *trust*; trust as a binding element in relations among regional interests¹⁷.

6) A shift in focus from *power*; power as a zero-sum game, so the power to govern must come from units of government above and below, to *empowerment*; engaging nonprofits and for-profits in governance decisions that were once treated as the domain of the public sector alone. Rather than assuming a zero-sum game, employing empowerment is based on the assumption that new interests bring new energy, authority, and credibility; in short, it grows power or capacity in order to move a regional agenda (Wallis 2003).

The Agder region deserves attention, as one of the regions where such regionalisation processes are most successful in Norway (Ullern 2005: 16), and as a manifestation of a successful regionalisation process that other Norwegian regions should use as a role model (Selstad 2005). Proponents of the recent ‘new regionalism’ movement have suggested that voluntary local measures and interlocal cooperation can be effective substitutes for centralized control (Note 2005: 2292). Veggeland suggests that new regionalism is based on a historical empirical claim that the “region” has become the “melting pot” which national states political, economical, and cultural development rests on, and furthermore that the normative bias of the “region” should be put in the centre of a sustainable and democratic policy (Veggeland 2003: 134).

In the wake of changes in energy laws and the liberalization of the energy market in the Nordic countries, a long range of municipalities in Norway started a process in the last half of the 1990s that involved both the reorganisation of enterprises owned by the municipalities, (turning them into limited companies), and reorganisation of ownership. In the municipality of Kristiansand such a process happened when KEV (Kristiansand Energiverk) was established in 1997 as a publicly owned limited company. This company merged with two other hydro electrical energy companies, Vest-Agder Energiverk and Aust-Agder

¹⁷ This point need not be confused with the emphasis laid on accountability in New Public Management reforms. The focus of NPM has been mostly on managerial accountability, that is the obligation to provide an account for one’s actions *to* those in superordinate positions of authority, but very scarce attention has been given to political responsibility in NPM. It is argued that NPM often is associated with ambiguity in political responsibility, and that this should be compensated with more effectiveness and efficiency (Christensen & Lægred 2002: 110).

Energiverk, into Agder Energi AS in 2000. The municipality of Kristiansand owned 27.8% of the stocks in this new company, while the rest of the stocks were owned by the other municipalities in the Agder region. In June 2001 the City Council in Kristiansand decided to sell its shares to Statkraft Holding AS (a state owned energy company), NOK 1 440 million of these funds was used to set up the Cultiva foundation. The other municipalities in the Agder region entered into similar arrangements and The Competence Development Fund of Southern Norway (CDFSN)¹⁸ (covers the municipalities in Vest-Agder County) was set up with NOK 595 million and a similar foundation was set up in Aust-Agder County with NOK 270 million. Developments such as these led the former the work- and administration minister Victor D. Norman¹⁹, to describe the public sector in the Agder region as the most innovative in Norway (Sydspissen 2004).

It is however worth noting that although the governance system in the Agder region is given flattering mention by external observers, it is flattering in the sense of being able to realising set goals. The regional governance system in the Agder region is a very effective system of governance. It is however a system that has not performed to its potential when other normative standards are applied, for instance using participative and democracy standards, for a discussion see Normann (2007a).

3.20 Action Research programmes in the Agder Region

The Agder region has captured the interest of those overseeing developments within the ED 2000 and the VC 2010 programmes. Each of the programmes has been evaluated, and each of the programmes has been commented upon in various publications by external and internal project researchers. We here use the following sources to compare the various assessments and comments that have been made relating to the two Action Research programmes relating to the Scandinavian work life research tradition in the Agder region:

Enterprise Development 2000:

- *“Development coalitions in working life: the "Enterprise Development 2000" programme in Norway”*. Research publication edited by Bjørn Gustavsen, Tom Colbjørnsen, and Øyvind Pålshaugen (1998).

18 Sørlandets Kompetansefond.

19 Representing the Norwegian Conservative Party.

- “*Benchmarking of Enterprise Development 2000: an impact evaluation and a comparative analysis of programme design*”. Evaluation report edited by Bo Oscarsson (1999).
- “*Creating connectedness: the role of social research in innovation policy*”. Research publication edited by Bjørn Gustavsen, Håkon Finne, and Bo Oscarsson (2001).

Value Creation 2010:

- “*Mellom tekst og virkelighet: Samarbeid om utvikling mellom bedrifter og forskning*”. Research report edited by Bjørn Gustavsen (2002).
- “*Bedriftsutvikling og regionale partnerskap : Erfaringer fra Verdiskaping 2010*”. Research publication edited by Bjørn Gustavsen (2003).
- “*Mid-Term Evaluation of the VS2010 Programme: A Report to the Research Council of Norway*”. Evaluation report by Erik Arnold, Alessandro Muscio, Johanna Nählinder, and Alasdair Reid (2005).

The common dominator between the different modules, or regional milieus, that have been involved in running the various projects over the years has always been a focus on the relational and learning aspects of development, most often relating to various types of work organisations, but later also in various types of networks and partnership like structures. Apart from this, pluralism both theoretically and practically is probably the most precise description. Given such variety, the different regional modules have described themselves in various ways during the years.

Some of the interpretations of the Agder module over this period are briefly summarised in the table below. The aim of doing this is not only to identify what the core of the Agder modules work is, and has been, but also to provide the background for the question posed in this paper, which is why the VRI processes in the Agder region seemingly worked reasonably well in the initial phase.

Table 1: Discourse excerpts from the development of a module (I)

Programme	Outside views/ Programme descriptions	Self-description/ Module descriptions	Comment
<p>ED2000, from: “Development coalitions in working life : the "Enterprise Development 2000" program in Norway” (Gustavsen et al. 1998).</p>	<p>Agder explores the managerial side of the development issue (Gustavsen 1998a: 146). Agder introduces ‘the globalization issue’, while it focuses on the local capacity for learning and innovation (Gustavsen 1998b: 18).</p>	<p>Emerging local challenges posed by decisions made in settings external to the region is exemplified by the radical downsizing plans made by the Swedish Ericsson concern (Knudsen 1998: 23-4). The major goal was to enact local learning processes countering the global threats. Participation, work-democracy and involvement is crux to realise such ambitions (Knudsen 1998: 33).</p>	<p>Large degree of consensus relating to how the modules practical and theoretical approach is to be understood and interpreted.</p>
<p>ED2000, from: “Benchmarking of Enterprise Development 2000 : an impact evaluation and a comparative analysis of programme design” (Oscarsson 1999).</p>	<p>Agder address the field through process consultancy, action research, practitioner/academic intervention teams. The module focuses on organisational development, mentor leadership, theory building in practice, innovation, participative strategy processes (Oscarsson 1999: 9-10).</p>	<p>“The Agder module considers it has achieved the main goal of the programme; to establish a milieu of competence in the area of organisational development, especially in those companies where there is a deep commitment to the general intentions of ED2000. [...] The activities on individual firm level has been quite successful, while the weakest point seems to be that the group has not been able to initiate networks between enterprises. The module concludes that they are not satisfied with their achievements so far but at the same time committed to go ahead” (Oscarsson 1999: 32).</p>	<p>The evaluation report which is produced some two years before the end and two years after the start of the programme gives a relatively sober-minded assessment of the module. The complexity of this type of work has become clear at the same time as significant progress clearly is made.</p>

Programme	Outside views/ Programme descriptions	Self-description/ Module descriptions	Comment
<p>ED2000, from: “Creating connectedness : the role of social research in innovation policy” (Gustavsen et al. 2001).</p>	<p>In a book, which essentially is an expansion of the formal ED2000 evaluation, with contributions from each of the modules, are the modules asked among other things to reflect on the following topic and/or research agenda: “How may concepts, frameworks for comparison and international co-operation (benchmarking) be developed to facilitate an improved integration between Norwegian enterprises and the front line of international developments within areas like quality, logistics, product development, and the like?” (Finne 2001: 33).</p>	<p>In their response to this question the Agder modules reflection is that in order for the single firm to face the challenges of globalization, the modules network perspective signifies that each enterprise cannot enter the global conversations alone. The enterprises should form larger communities, which should be bottom-up organised, communities of practice or development organisations (Knudsen & Johnsen 2001: 188-9).</p>	<p>In a book that in many ways marked the end of the ED2000 programme is it natural that the editors also looked on how experiences from ED2000 could be used in new programmes. With reference to Agder answer they write this the development coalition is one of the answers to one of the central questions of the ED2000 program; how to organise for innovation (Gustavsen <i>et al.</i> 2001: 266-7).</p>

Table 2: Discourse excerpts from the development of a module (II)

Programme	Outside views/ Programme descriptions	Self-description/ Module descriptions	Comment
<p>VC2010, from: ”Mellom tekst og virkelighet: Samarbeid om utvikling mellom bedrifter og forskning” (Gustavsen 2002).</p>	<p>An account of the enterprise and networks development projects that are reflects those given in module status reports and applications is given. After an recapitulation of Agder’s ED2000 history is it commented on that the Agder module now seems to emphasize the network level. And in particular the work that is done regarding the regional development coalition (Value Creation Alliance). It is stated that, at the time the text is written, this partnership is the most active partnership in Norway, along side the partnership in Nordland County (Gustavsen 2002: 42).</p>	<p>None specific self-description or module description is given in this publication.</p>	<p>Discusses the introduction of the regional development coalition as a result of changing state policies as compatible with the idea that sought after developments in relation to work-life and industry best is achieved if it is organised regionally. And that this is the background for regional development coalitions being a central component of VC2010 (Gustavsen 2002: 4-5).</p>
<p>VC2010, from: “Bedriftsutvikling og regionale partnerskap : Erfaringer fra Verdiskaping 2010” (Gustavsen 2003).</p>	<p>It is concluded in the report that the idea of using regional partnerships as a tool for the realization of regional industrial policies has showed merit through VC2010 (Gustavsen, Kaafjeld, Hansen, & Skulberg 2003: 55).</p>	<p>In Agder self evaluation is it argued that the regional partnerships represents unfinished collaborative structures with unclear rules of the game and that this represents particular problems for VC2010 (Johnsen 2003: 19). The lack of formal institutional anchoring and the non-authoritative way of work which are embedded in the dialogical, means that VC2010 is dependent on the goodwill and behavior that are exerted by the partnership (Johnsen</p>	<p>The experiences with partnerships in the Agder region are not commented specifically in the report, but only at a general level, that not specifically addresses the challenges posed by the contribution made by Agder.</p>

		2003: 22).	
VC2010, from – “Mid-Term Evaluation of the VS2010 Programme: A Report to the Research Council of Norway” (Arnold et al. 2005).	The evaluation report came out critical of the set-up of the VC2010 project. It is for instance written that the programme is over inspired by past traditions and seems to be trying to do too much (Arnold <i>et al.</i> 2005: iii).	Relating to the Agder region is it in the report stated that the one of the problems associated with the running the regional partnership stems from lack of skills in the research team. “It turned out that the skills base of the research team in organisational development did not equip it to deal with the political realities and struggles at the level of the regional coalition. Addressing these would require both political science skills and many more resources (including time) than the project had allocated” (Arnold <i>et al.</i> 2005: 15) ²⁰ .	The Agder module was probably one of the VC2010 projects that worked most with the regional partnership level, it was also the module that to the farthest extent divided its projects resources equally between the three levels; company, network, and coalition (Arnold <i>et al.</i> 2005: 22).

The ‘rationale’ in the transition from ED 2000 to VC 2010 can be read from of the publications cited in Table 1. However, based on the publications cited in Table 2, it is difficult to pin point how the Action Research experience contributed to the start-up of VRI in Agder. However, there are many indications that learning processes must have occurred among the practitioners, partnership participants, and within research team in order to make the VRI programme possible at Agder. For instance the following critical questions were resolved relatively swiftly and without much disagreement: (1) the regional stakeholders (partnership participants) early in the process agreed that Agder Research should be project co-ordinator. (2) Early and quick agreement on who the partnership ‘was’, and who should participate in the steering committee (even though some discussions relating to this has been postponed). (3) Developed early agreement on three priority areas, based on a joint action plan for the two Agder counties. Researchers that had been involved in setting up Action

20 A discussion of actual events relating to the VC2010 project in Agder, can be found in Roger Normann’s PhD work: “Democracy in Development” (2007a), see also Hans Chr Garmann Johnsen and Roger Normann’s: “When Research and Practice Collide: The Role of Action Research When There Is a Conflict of Interest With Stakeholders” (2004).

Research programmes in the Agder region saw that many actors and institutions in the regions understanding of roles and division of labor between institutions had matured. For instance, the counties do not intervene in the 'inner-life' of research organisation, and the researchers do not involve themselves in questions concerning who shall and shall not participate in partnerships etc.

These learning processes would not, and could clearly not, have happened without insights and reflections from VC2010 Agder. The regional partnership has noticeably matured in their understanding of their roles and the developmental possibilities and limitations. However, such learning processes that the phase of VRI Agder can be read as an indication of, do not represent the whole picture. Specific systems characteristics of the Agder region have probably also played a significant role.

3.21 Action Research or Governance?

The background for this paper was to explore into explanations concerning how the relatively the high level of consensus in the initial VRI phase in the Agder region could be explained. Elements relating to two sets of arguments have been explored in relation to this through what we labelled 'the effects of Action Research' and through what we labelled 'Regional Governance in practice'.

The action research argument is that learning in some form has occurred with the stakeholders, involved participants, and researchers. We do not here use the term learning in the sense of formal learning but more as a description of the development of an understandings about the 'what's' and 'how's' relating to research and development work that involves both research based and practical knowledge. We believe it is fair to say that through the research programmes (ED 2000, VC 2010), a social learning process has taken place among the participants, both on an individual and a collective (partnership/coalition) level. In its simple form, learning could be defined as "*...the process whereby knowledge is created through the transformation of experience*" (Kolb 1984).

In organisational theory and action research, this is often referred to as single-loop learning (Argyris and Schön 1996). Single-loop learning refers to the type of instrumental learning that changes strategies of action and behaviour, but proves to be incapable to question the behavioural strategies (or theory of action) that initially brought about the problematic situation. A more fundamental learning process is however possible. A double-loop learning

process refers to the feedback loops that connect the observed effects of action with behavioural strategies and governing values (Argyris & Schön 1996):

“One kind of double-loop learning consists of restructuring values and fundamental assumptions built into an organisation’s theory-in-use, which includes its strategy, values, views of its environment, and understanding of its own competence.” (Argyris and Schön 1996: xxiii).

In the Agder case, both the number of years and the scope of activities in the previous action research programmes have provided all participants with a shared base of experience from collaborative regional development. These shared experiences are the foundation of the learning that has taken place in the region. In addition, a high level of conflict and the conflict solving processes that followed, in particular in the case of VC 2010, resulted in reflections about e.g. roles, climate for co-operation, and communication between parties involved. In line with the double-loop learning process, the regional partnership was re-established on the basis of new knowledge about collaborative regional development.

However a parallel development in the region is the emergence of what has been conceptualised as a regional governance system. The table below briefly summarises the development of the programmes in the region parallel to the regional governance system:

Table 3: Parallel processes

Programme	ED2000	VC2010	VRI
Involved institutions and actors	Agder Research the main initiative taker in close collaboration with Agder University College. Regional actors (the social partners) became more directly involved when the first round of application not succeeded. When in the region actively supported the application it gained funding support at the NRC.	A regional partnership (the Value Creation Alliance) collectively backed the application financially as well as institutionally. Agder Research functioned as secretariat for the work. The application process was complex as it involved a number of people and institutions. The programme was locally seen as a continuation of the work done through ED2000 in Agder.	VRI is the continuation of three different programmes. The application consisted of two parts, a development oriented part that was written by a secretariat with participants from four different institutions, and a research part which was coordinated by Agder University. On paper a more complex structure than ED2000 and VC2010 but with more clear element breakdown and work distribution.
Regional governance system	In the mid 1990s is the <i>regional</i> governance system in the Agder region not yet established as an forceful coordinating and meta-steering body.	By the turn of the millennium the regional governance system in the Agder region is not yet fully institutionalised, the main policy objectives are however fully developed.	By 2007 the regional governance system in the Agder region is starting to mature; find a more fixed institutional shape. Few actors and institutions in the Agder region involved in <i>regional</i> development work are unaware of the discursive boundaries of development in the region.

The VRI programme, with a few exceptions, almost perfectly fits²¹ the current development paradigm, “the governance ideology” in the region as it is described and discussed by Normann (2007a). For instance, the importance of focusing development initiatives towards “the new industries”, ICT and culture has been institutionalised through regional development agendas in the Agder region since the mid-1990s. VRI Agder has prioritised its resources towards (a) ICT (b) culture based industries, and (c) the energy dependent process industries/oil and offshore industries. The importance of regional relevance of the University

21 VRI Agder includes a focus on traditional and energy dependent industries that previously not was emphasised by the regional meta-steering bodies (regional regime).

is an agenda with a solid anchoring in the region (Karlsen 2007), work towards building networks, projects, and partnership structures that shall work towards innovation and entrepreneurial purposes another. VRI do fit very well with all of these existing governance steering ambitions.

The regional support and lack of conflict in the initial phase can therefore be explained by the fact that VRI represent an continuation of what the region, its actors and institutions, have been trying to realise. VRI gives in a sense support to, and strengthens, ongoing regional development processes. In this sense the two explanations presented in the introduction; (1) the effects of Action Research, and (2) regional governance in practice, only reinforce each other, they are complementary. The initial VRI process in Agder was marked by consensus because learning has occurred, and because the programme corresponds to existing regional ambitions and strategies.

3.22 *Summary*

It is still too early to see if experience with participation in programmes such as ED 2000 and VC 2010 has contributed to the development of a new institutional robustness, knowledge that will enable the regional actors to sustain the unforeseen and unexpected hurdles that inevitably also will follow from the new and more complex VRI programme. VRI is certainly more complex than previous programmes, but it has also more clear element breakdown and work distribution between involved participants. The commitment regionally into ensuring that the programme succeeds is undoubtedly present. The relatively smooth initial phase of VRI can be read as showing that learning processes among central stakeholders in the Agder region have occurred. However, there are many potential known and unknown problems. More sensitivity and understanding of power relations is probably still needed among both researchers and practitioners alike. The introduction of many new actors and institutions can both contribute positively, and represent potential challenges, when expected project shares, results and expectations not are fully met. A revitalisation of participation and democracy issues from the ED2000 programme into a VRI context also seems to be a promising entry point for addressing some of the institutional and power related issues that surfaced in the VC2010 programme.

3.23 References

- Argyris, C., and Schön, D. A. (1996). *Organizational Learning II : Theory, Method, and Practice*. Reading, Mass.: Addison-Wesley.
- Arnold, E., Muscio, A., Nählinder, J., & Reid, A. (2005). *Mid-Term Evaluation of the Vs2010 Programme: A Report to the Research Council of Norway* Technopolis.
- Christensen, T., and Lægheid, P. (2002). "New Public Management - Undermining Political Control?" In T. Christensen & P. Lægheid (Eds.), *New Public Management : The Transformation of Ideas and Practice* (pp. 93-119). Aldershot: Ashgate Publishing Ltd.
- Emery, F., and Thorsrud, E. (1976). *Democracy at Work the Report of the Norwegian Industrial Democracy Program*. Leiden: Martinus Nijhoff Social Sciences Division.
- Finne, H. (2001). "Initiation and Early History". In B. Gustavsen, H. Finne & B. Oscarsson (Eds.), *Creating Connectedness : The Role of Social Research in Innovation Policy* (pp. 21-38). Amsterdam: John Benjamins Publ. Co.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., and Trow, M. (1994). *The New Production of Knowledge. The Dynamics of Science and Research in Contemporary Societies*. London: Sage.
- Gustavsen, B. (1998a). "Concluding Remarks". In B. Gustavsen, T. Colbjørnsen & Ø. Pålshaugen (Eds.), *Development Coalitions in Working Life : The "Enterprise Development 2000" Program in Norway* (pp. 145-50). Amsterdam: John Benjamins Publ. Co.
- Gustavsen, B. (1998b). "Enterprise Development 2000 : A Program for Distributive and Interactive Learning". In B. Gustavsen, T. Colbjørnsen & Ø. Pålshaugen (Eds.), *Development Coalitions in Working Life : The "Enterprise Development 2000" Program in Norway* (pp. 1-22). Amsterdam: John Benjamins Publ. Co.
- Gustavsen, B. (2002). *Mellom Tekst Og Virkelighet: Samarbeid Om Utvikling Mellom Bedrifter Og Forskning*. Oslo: Norges forskningsråd.
- Gustavsen, B. (Ed.). (2003). *Bedriftsutvikling Og Regionale Partnerskap : Erfaringer Fra Verdiskaping 2010*. Oslo: Norges Forskningsråd.
- Gustavsen, B., Colbjørnsen, T., & Pålshaugen, Ø. (Eds.). (1998). *Development Coalitions in Working Life : The "Enterprise Development 2000" Program in Norway*. Amsterdam: John Benjamins Publ. Co.
- Gustavsen, B., Finne, H., and Oscarsson, B. (Eds.). (2001). *Creating Connectedness : The Role of Social Research in Innovation Policy*. Amsterdam: John Benjamins Publ. Co.

- Gustavsen, B., Kaafjeld, E., Hansen, P. L., and Skulberg, A. M. (2003). "Konklusjoner Og Diskusjon". In B. Gustavsen (Ed.), *Bedriftsutvikling Og Regionale Partnerskap : Erfaringer Fra Verdiskaping 2010* (pp. 55-67). Oslo: Norges Forskningsråd.
- Johnsen, H. C. G. (2003). "Agderfylkene". In B. Gustavsen (Ed.), *Bedriftsutvikling Og Regionale Partnerskap : Erfaringer Fra Verdiskaping 2010* (pp. 19-23). Oslo: Norges Forskningsråd.
- Johnsen, H. C. G., and Normann, R. (2004). "When Research and Practice Collide: The Role of Action Research When There Is a Conflict of Interest with Stakeholders". *Systemic Practice and Action Research*, 17(3), 207-35.
- Karlsen, J. (2007). *Why Is It Important to Develop a Contextualised Knowledge Creation Process between a University and Its Host Region? A Case Study of Knowledge Construction Processes between Agder University and Actors in the Agder Region* (Vol. PhD). Theses at NTNU, 91. Trondheim: Norwegian University of Science and Technology. http://www.diva-portal.org/diva/getDocument?urn_nbn_no_ntnu_diva-1505-1_fulltext.pdf
- Knudsen, H. (1998). "Mentor Leadership and Theory Building in Practice". In B. Gustavsen, T. Colbjørnsen & Ø. Pålshaugen (Eds), *Development Coalitions in Working Life : The "Enterprise Development 2000" Program in Norway* (pp. 23-35). Amsterdam: John Benjamins Publ. Co.
- Knudsen, H., and Johnsen, H. C. G. (2001) "The Agder Module". In B. Gustavsen, H. Finne & B. Oscarsson (Eds.), *Creating Connectedness : The Role of Social Research in Innovation Policy* (pp. 173-89). Amsterdam: John Benjamins Publ. Co.
- Kolb, D. A. (1984). *Experiential Learning : Experience as the Source of Learning and Development*. Englewood Cliffs, N.J.: Prentice-Hall.
- Normann, R. (2007a). *Democracy in Development – a Critical View on Regional Governance*. Theses at NTNU, 88. Trondheim: Norwegian University of Science and Technology. http://www.diva-portal.org/diva/getDocument?urn_nbn_no_ntnu_diva-1573-1_fulltext.pdf
- Normann, R. (2007b). Phd Trial Lecture: How Can One Strengthen the Role of Representative Democracy in Relation to Regional Development Work with Governance Features? (pp. 19): Norwegian University of Science and Technology.
- Note. (2005). "Old Regionalism, New Regionalism, and Envision Utah: Making Regionalism Work". *Harvard Law Review*, 118(7), 2291-313.
- Nowotny, H., Scott, P., & Gibbons, M. (2001). *Rethinking Science: Knowledge Production and the Public in an Age of Uncertainty*. Oxford: Polity Press.

- Oscarsson, B. (1999). *Benchmarking of Enterprise Development 2000 : An Impact Evaluation and a Comparative Analysis of Programme Design*. Oslo: The Research Council of Norway, Division of Industry and Energy.
- Selstad, T. (2005, April 13). Look to Sørlandet! *Fædrelandsvennen*.
- St.meld.nr.19. (2001-2002). *Nye Oppgaver for Lokaldemokratiet - Regionalt Og Lokalt Nivå*. K.-o. regionaldepartementet Oslo: Statens forvaltningstjeneste - Informasjonsforvaltning.
- St.meld.nr.31. (2000-2001). *Kommune, Fylke, Stat – En Bedre Oppgavefordeling*. K.-o. regionaldepartementet Oslo: Statens forvaltningstjeneste - Informasjonsforvaltning.
- Sydspissen. (2004). *Sørlandet I Tet*. Retrieved May 2006, from www.sydspissen.no/vedlegg/sydspissen2004.ppt
- Sørensen, E., and Torfing, J. (2005). *Netverksstyring: Fra Government Til Governance*. Fredriksberg: Roskilde Universitetsforlag.
- Ullern, O. (2005). "Sterke, Folkestyrte Regioner - Svar På Viktige Samfunnsutfordringer". In J. P. Knudsen (Ed.), *Sterke Regioner - Forskning Og Reform* (pp. 11-22). Bergen: Fagbokforlaget.
- Veggeland, N. (2003). *Det Nye Demokratiet : Et Politisk Laboratorium for Partnerskap*. Kristiansand: Høyskoleforl.
- Wallis, A. (2003). *The New Regionalism*. Retrieved November 15th, 2006, from http://www.munimall.net/eos/2002/wallis_regionalism.pdf

III.2. Workplace Innovation: Bridging Knowledge and Practice *by Rosemary Exton and Peter Totterdill*

3.24 *Abstract*

The article draws on a decade of work in the UK by the UK Work Organisation Network, and recommends a systematic approach. Taking cases in the National Health Service, the focus is on employee involvement, partnership and the development of social capital. High and low road approaches are compared, in an evaluation of the Improving Working Lives programme.

Keywords: dialogue, entrepreneurship, health, networking, participation, partnership, productivity, quality of working life, social partners, work organisation,

3.25 *Introduction*

This article draws on research and dialogue led by UKWON (www.ukwon.net), established in 1998 as a consortium of social partners, business support organisations and universities. UKWON addresses a key European dilemma: how to change the organisation of work in ways which both improve performance and productivity, and enhance quality of working life. It has two principal objectives: (i) to explore the future of work and organisations; (ii) to address the substantial gap between leading-edge practice and common practice in the organisation of work within enterprises. These two themes are both central to the focus of this paper.

The article outlines the need for a systemic approach which recognises the interdependence of work organisation at three levels: partnership with employees and trade unions at the strategic level, the active involvement of employees in innovation and change, and participative teamwork as a core principle of day-to-day working life. This represents the ‘high road’ approach to work organisation, one capable of achieving sustainable competitiveness through employee engagement in ways which can lead to more fulfilling and healthier work. It also argues that this approach faces substantial obstacles to wider dissemination which need to be addressed through dialogue, networking and collaborative action.

Evidence from the *Improving Working Lives* programme in the UK National Health Service (NHS) is used to explain the approach in practice. IWL was specifically designed to create attractive and rewarding workplaces as a means of motivating, recruiting and retaining skilled employees. Through a process combining self assessment with external validation, focus groups and interviews involving all grades, professions and functional groups provided evidence on the extent of the even and effective realisation of HR policy, healthy working, equality, staff involvement and workforce development targets.

3.26 Work organisation: an underused resource for achieving shared goals?

It is sometimes argued that the design of work organisation is principally an internal issue for enterprises, one in which external bodies have very little legitimate interest. Yet it is becoming clear that work organisation is tightly knit within the wider economic and social fabric.

On the one hand, the way in which work is organised has a direct impact on the achievement of wider social and economic goals including competitiveness, better jobs, employment growth and social inclusion. Policy makers, social partners and others concerned with the public good have an interest in promoting types of workplace organisation which enable all employees to use their talent and creative potential to the full. For business this can create conditions for innovation and enhanced productivity through workforce commitment, motivation, retention and innovation. For employees the results can enhance self esteem, health and satisfaction at work. From this perspective, quality of working life becomes simultaneously a competitive advantage and a social good, addressing Europe's concerns with the retention of older employees in the workforce, the reduction of long-term sickness and lifelong learning as key elements in achieving a sustainable knowledge-based economy.

At the same time the way in which work is organised does not come solely from within the resources of the company. Rather it draws extensively on the opportunities for knowledge creation, learning and dialogue created by social capital. This includes research by public bodies, business services provided by intermediate organisations, formal or informal networking, education and training provision and the system of industrial relations. Public policy makers, social partners, universities, regions and other stakeholders have key roles in creating an environment abundant in opportunities for organisational learning and innovation.

3.27 *The future of work and organisations*

The past is an increasingly unreliable guide to the future. Changes in technology, markets, regulation, global politics, the environment, demographics, and the expectations of customers and employees place adaptability at a premium. Survival increasingly depends on the ability to reinvent products or services on a continuous basis, in ways that cannot easily be imitated by competitors, by drawing on the skills, tacit knowledge and creativity of the entire workforce. The resulting problem is twofold. First, old styles of managing and organising work cannot deliver this level of adaptability and innovation. Second, despite the claims of consultants and bookstall gurus, there are no blueprints or easy paths to sustainable organisational innovation. Indeed most change initiatives fail, arguably because they are focused too much on the quick fix. Sustainable change is messy and uncertain, involving the painstaking engagement of all stakeholders in a process of gradual learning, dialogue, experimentation, and trial and error. ‘High road’ change is based on long-term innovation rather than the ‘low road’ of short-term cost cutting measures, and seeks win-win outcomes for management, employees and other stakeholders.

Above all, our analysis of emerging practice in workplaces across Europe demonstrates the importance of redesigning work. Skills and technology are not enough. There needs to be:

“... a clear concentration on *those factors in the work environment which determine the extent to which employees can develop and use their competencies and creative potential to the fullest extent, thereby enhancing the company’s capacity for innovation and competitiveness while enhancing quality of working life.*” (Totterdill, Dhondt and Milsome, 2002)

3.28 *Work organisation: an under-used resource in a changing NHS?*

Developments in medicine, new patterns of treatment, new technologies, more rigorous approaches to clinical governance, changing expectations of patients, difficulties in recruiting staff and increasing financial stringency pose serious challenges to traditional hospital structures and practices. Traditional ways of organising workplaces and traditional styles of management cannot achieve the level of innovation, agility and adaptability required in an increasingly volatile healthcare environment.

New approaches to governance have become the foremost driver of innovation and change within the British National Health Service, reflecting government priorities such as risk

management, clinical effectiveness, patient involvement and enhanced professional competence. Its practice is largely defined by the controls with which government requires hospitals to regulate their activities. Hospital Boards have to account to external, government-appointed auditors for performance against a wide range of indicators including mortality rates, bed occupancy and the quality of patient food. These targets play a powerful role in directing the focus of managers' attention. Arguably they induce reactive management cultures, stifling innovation and preventing the ability to build sustainable change. The fulfilment of short-term targets has become almost the sole preoccupation of politicians and health service managers with worrying consequences for the reflexive and innovative capacity of the NHS. Over-emphasis on targets may offer quality assurance but will not secure sustainable quality improvement.

Whilst the regulation of hospital activity reflects aspirations and standards widely accepted amongst NHS employees, it is not sufficient to ensure the reflexivity and organisational innovation required for effective hospitals capable of delivering safe, patient focussed care. Governance must be based on a more strategic vision, laying the foundations for long-term learning and adaptation in an increasingly unpredictable and turbulent environment. There is a need for a significant shift in management focus, one in which the delivery of targets is achieved as the by-product of wider and sustained improvements in service quality (NHS Confederation, 2002). Such a shift, from short-term target chasing to building the organisational competencies associated with adaptive, innovative organisations, would represent a radical transformation of the NHS.

An approach to governance in which health service organisations do indeed achieve external targets as a 'by-product' of their inherent organisational competence and values might be characterised as the 'high road'. The defining characteristics of the high road lie in the creation of organisational spaces and the liberation of the tacit knowledge, experience and talent of the entire workforce in ways which achieve a dynamic balance between service and process innovations (Moss and Totterdill, 2003). Crucially the high road seeks to reunite job satisfaction and patient satisfaction showing that care can be made more effective, safer, faster, patient-friendly, efficient and professionally satisfying.

Sustainable improvement involves a heavy emphasis on teamworking, the deliberate erosion of professional demarcations, widespread staff involvement in risk management and service innovation, and a strategic partnership between senior management, trade unions and

employees. Figure 1 portrays this as a dynamic balance between external demands and targets on the one hand, and four key components of internal innovation on the other:

- New methods, skills and techniques, building the knowledge, skills and competencies required by the workforce to deliver multidisciplinary, patient centred care.
- New processes and systems to introduce more cost efficient ways of working, integrating new service patterns with a new generation of clinical information technologies.
- Increased involvement of, and accountability to, the service user - reshaping how care is delivered in ways which reflect patient needs and desires more closely.
- Partnership structures and team working as vehicles to engage staff and trade union representatives at all levels in workplace innovation and service delivery.

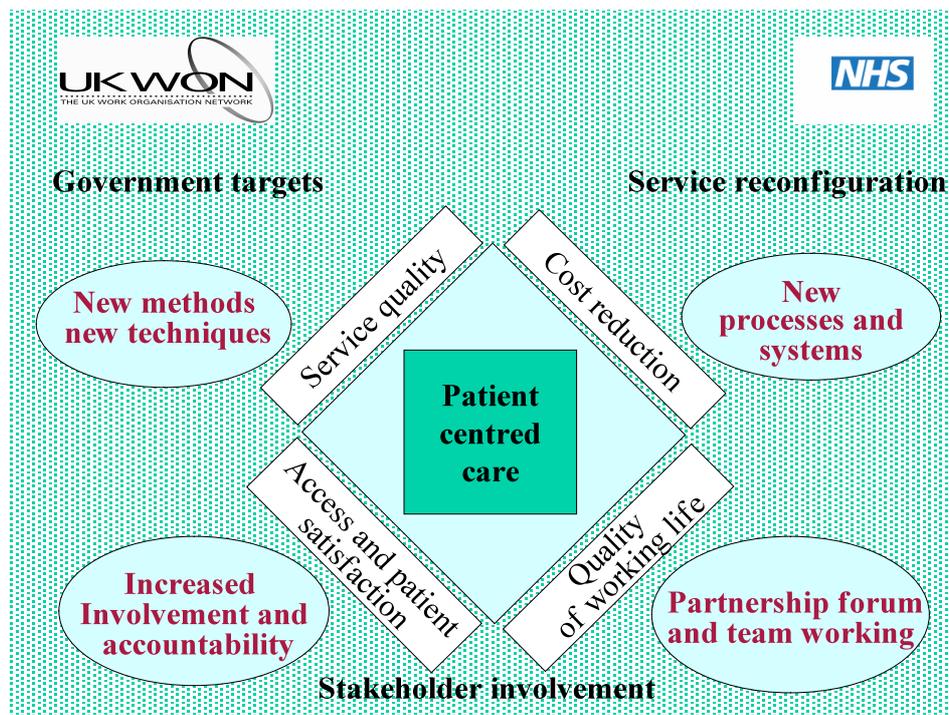


Figure 1: Patient-Centred Care as Sustainable Workplace Innovation in the NHS

In contrast the ‘low road’ – arguably the dominant mode of governance for the NHS in the present environment - is driven by cost, performance measurement, punishment and reward. For NHS staff it frequently results in deterioration in quality of working life (Meadows, Levenson and Baeza, 2000) which purely remedial HR initiatives cannot redress. Apart from increasing problems with recruitment and retention, the failure to involve staff at all levels of

service development and provision represents a lost opportunity for innovation and improvement.

3.29 *Partners at work?*

UKWON and its European partners undertook a study of new forms of work organisation in 120 organisations across the EU (Totterdill, Dhondt, and Milsome, 2002). This has led us to see work organisation as a series of balances, involving a search for mutually reinforcing practices which bridge the strategic and the day-to-day levels:

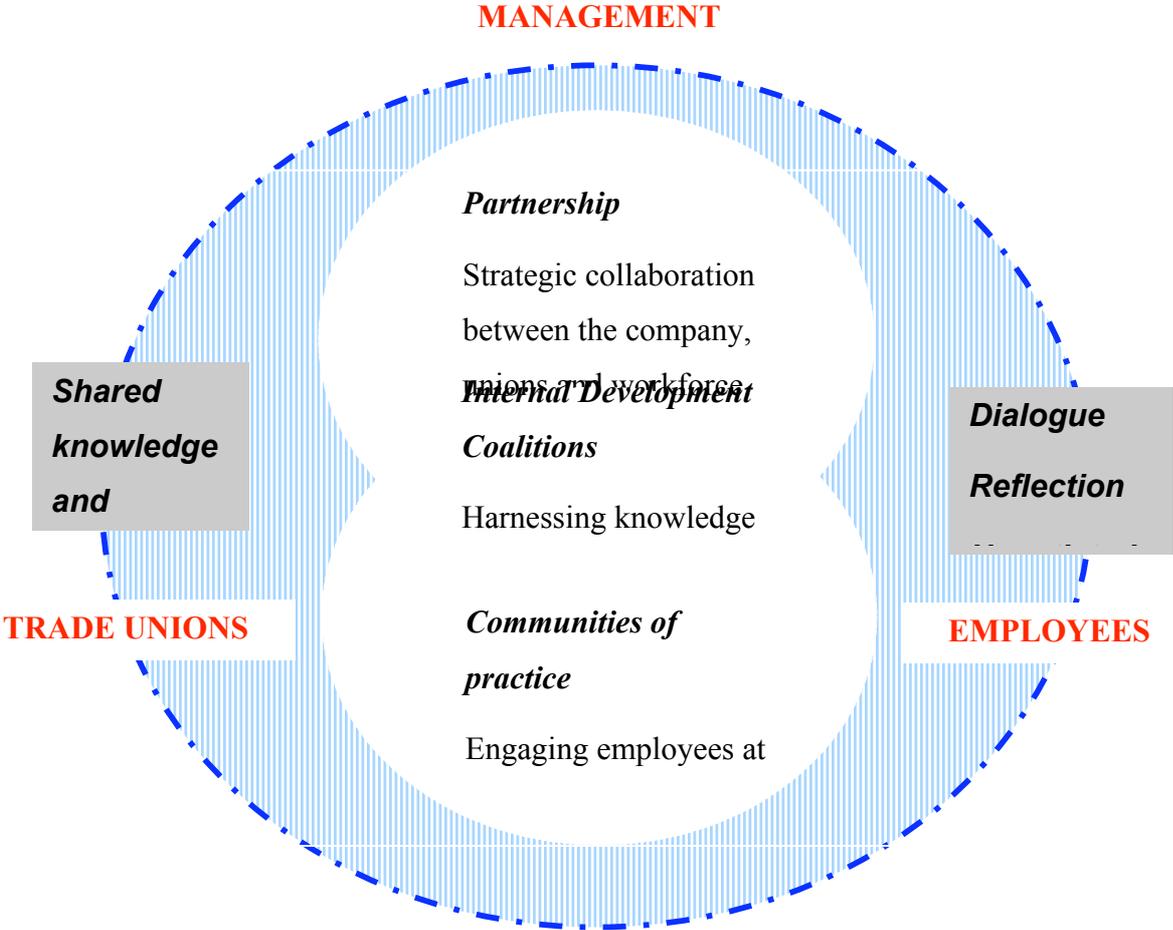


Figure 2: a systemic model of employee engagement and working life

In this schema, **Partnership** is characterised by representative forms of employee engagement, perhaps involving a forum in which management and trade union or directly elected representatives discuss strategic issues openly with an explicit commitment to seeking win-win outcomes. Partnership working is becoming an increasingly common phenomenon, not just as a means of improving industrial relations but as part of a recognition that

workforce motivation, engagement and thinking play a key role in strategic adaptation and change. **Internal Development Coalitions** grow from an assurance of the active engagement of all employees in major change management initiatives and in regular planning, capturing tacit knowledge and understanding, enhancing motivation and offering a stake in securing successful innovation and improvement. **Communities of practice** concern the day-to-day organisation of work, designing jobs and building teams in ways which lead to the willingness of people to work across boundaries, assume shared ownership of work scheduling, problem solving and continuous improvement, involving high levels of empowerment and trust.

The interdependence of these three arenas of change cannot be overstressed. Partnership at the strategic level, which does not give frontline employees more control over their working lives, is likely eventually to lead to disillusionment. Likewise, for example, measures to introduce empowered teamworking, which do not build a wider culture of partnership and involvement across the organisation, are unlikely to be sustainable.

3.30 Organisational Innovation, Partnership and Teamworking in the NHS

As a government-led initiative, IWL attempted a systemic view of HR practice and working life across the 1.3 million staff employed in the NHS. It recognised that the adoption of enlightened policies was, on its own, insufficient. Factors such as staff involvement, equality, flexible working and fairness needed to move out of the HR arena and become deeply embedded in all aspects of organisational culture and management practice.

IWL relied heavily on self-assessment supported by external validation to determine whether individual healthcare organisations had achieved prescribed standards. Most organisations were, with some degree of effort, able to achieve compliance with these standards at the validation stage. Yet as we have suggested above, compliance is not the same as integration within practice. Our research interest focuses on those NHS organisations which used IWL to embed and sustain practices capable of enhancing both quality of working life and performance, rather than seeing validation as an end in itself.

Reflecting the model outlined in the previous section, moving beyond simple compliance into tangible and sustainable change suggests the need for significant and simultaneous organisational innovation at the levels of strategic decision-making, day-to-day working practice and service innovation.

3.31 *Towards Partnership in NHS Organisations?*

In some NHS organisations, IWL acted as a significant driver for real innovation, creating both the conditions and the incentive for new strategic partnerships between management, trade unions and staff. Using opportunities for dialogue created by IWL, a workplace steward in one hospital initiated the design and negotiation of a systemic framework, which not only secured trade union participation in strategic decision making but also sought to guarantee direct staff involvement in the management and delivery of patient-centred care. This is a rare example in two senses, firstly of ‘bottom-up’ organisational innovation in which a coalition of union stewards and front line staff played an entrepreneurial role in designing and driving the development of workplace partnership; secondly of trade union championship of direct staff involvement. The framework encompassed the following challenges:

- Changing the traditional industrial relations focus of management/trade union dialogue through the creation of a Partnership Forum, designed to ensure the effective engagement of stewards in the design and implementation of strategy, major policy innovation, organisational change and service redesign. Critically this Forum was distinct from existing bargaining structures within the organisation, and was characterised by a less adversarial and more open style of discourse. Huzzard et al (2005) describe this type of partnership innovation in management/trade union relations as drawing a distinction between ‘boxing’ and ‘dancing’.
- Addressing the absence of trade union involvement in change management and service redesign through a new Partnership Agreement in which staff and union involvement in decisions affecting service-level planning, organisational change and continuous improvement was both guaranteed and monitored carefully by the Partnership Forum. Involvement was to take place at the earliest stages of decision-making, not after key decisions had already been taken by management.
- Capturing the tacit knowledge and experience of frontline staff and trade union stewards in designing and implementing change through thematic workstreams (staff involvement, equality, flexible working, HR strategy) involving staff from a cross section of functions and grades.

3.32 *Towards teamworking in the NHS?*

Multidisciplinary team-based approaches to health care delivery provide a forum for sharing specialist knowledge and joint clinical decision making in ways which seek to improve the patient care pathway, providing ‘joined up’ care and minimising hospital visits.

Multidisciplinary teamworking can ensure that specialists work effectively together so that decisions regarding every aspect of an individual patient’s care are based on shared knowledge and competence. However such teams must be based on a carefully negotiated ‘modus operandi’, which seeks genuine convergence between the contributions of the different professional groups. Multidisciplinary teams can provide employees at all levels with a voice in policy, practice and change, a key dimension in building an inclusive, integrated organisation. Providing opportunities for employees to utilise the full range of their professional knowledge, competence and experience facilitates continuous improvement and innovation in patient care, and enhances the experience of all service users.

However teamworking appears only to be sustainable within a wider organisational context in which dialogue, openness and participation are highly valued. Experience from the IWL programme suggests that NHS management-trade union-employee partnership at the strategic level of an organisation can help to nurture and sustain multidisciplinary team approaches at the front line of care delivery. Equally, the absence of such partnerships at corporate level can quickly undermine local, bottom-up initiatives which seek to empower staff.

3.33 *If it works . . . why isn’t everyone doing it?*

Although demonstrable benefits can be achieved through the modernisation of work organisation, the process of change is hard to achieve. Research (see for example Business Decisions Ltd., 2002; European Foundation, 1997) suggests that the spread of successful organisational innovation in these arenas remains weak throughout Europe. All organisations face very real obstacles in designing, implementing and sustaining change:

- low levels of awareness of innovative practice and its benefits amongst managers, social partners and business support organisations;
- poor access to evidence-based methods and resources capable of supporting organisational learning and innovation;

- partial change, failing to recognise factors in the wider organisation which can undermine sustainable improvement;
- countervailing trends in the design and application of new technologies;
- limited distribution of the competencies associated with new forms of work organisation within the workforce.

3.34 Obstacles to participative workplace innovation in the NHS

Traditional culture and practice is deep-seated in the NHS. Even the requirement for staff involvement and partnership with trade unions in mandatory programmes such as IWL met with serious and sometimes fatal obstacles during the implementation process.

In many NHS organisations the strength of Board-level commitment to partnership and the goals of the IWL initiative was dissipated as it passed down the hierarchical management structure. Middle managers frequently perceived IWL simply as a distraction from their core clinical or service targets. There were several reported instances in which management and doctors alike openly resisted greater staff involvement as a threat to their traditional authority. Moreover by limiting the extent to which individual employees could take time out from clinical and service duties, management effectively controlled the level of staff and union involvement and participation.

3.35 Making change happen . . . and making change stick

We have stressed the unavoidable messiness of sustainable change and the fallacy of assuming that it can be managed in simple linear, incremental steps. Examples of successful change appear to have at least two things in common: an inclusive approach to involving people and a willingness to learn from a wide variety of different sources.

3.36 Work processes must be multi-voiced

A simple test of the extent to which an organisation is providing employees with the opportunity to use their knowledge, competencies and creative potential to the full lies in whether they feel as free to discuss work-related problems, risks and opportunities *in the workplace* as they do with their mates in the pub or at home with their partners. If not, the organisation may be neglecting a valuable resource and employees may be feeling

undervalued and under stress. Innovative approaches are often required to identify and overcome organisational resistance to employee engagement. UKWON's *OIL* (Organising, Involving Learning) method compares and contrasts the stories of actual experience, which people at different levels tell during Group Recall (collective remembering) sessions about working life in an organisation.

UKWON has developed several techniques to assess and enhance the 'communicative competence' of organisations. Audits of organisational, involvement and learning practices often focus on the convergence or otherwise of corporate intentions with the concrete experiences of working life for employees at different levels. Forum theatre, in which 'fictional' dilemmas are used to explore situations in participants' own workplaces, is a particularly powerful tool for stimulating reflection and action.



UKWON's Partners@Work Theatre Company performing *At the Sharps End* for a staff involvement initiative at Nottingham City Hospital.

3.37 Learning from many places

Organisations should not be fooled into thinking that they need to engage in a frantic race to 'catch up with best practice': rather the aim is to build hybrid approaches which draw freely from elsewhere in ways which reflect the specific circumstances of each organisation through sustained dialogue and learning. UKWON's experience, including that of the NHS *Improving Working Lives* initiative, also demonstrates the benefits of network-based inter-organisational

learning, providing opportunities for sharing knowledge, peer review and psychological support.

Intervention and Resourcing

Intervention and resourcing of change involving co-operation between enterprise networks, policy makers, social partners, business support organisations, universities and many other actors is of proven value in overcoming obstacles to workplace innovation through, for example:

- (g) the provision of knowledge-based services and other public forms of support as a means of raising awareness and informing change;
- (h) the creation of opportunities for networking and peer exchange between companies as a means of learning through shared experience;
- (i) the capture and dissemination of knowledge and experience from workplaces across Europe to help understand emerging trends and to inform learning and dialogue;
- (j) the widespread provision of support for action research to pilot innovative approaches to change, especially in new contexts;
- (k) the creation of development coalitions at regional, national and transnational levels to close the gaps between key actors and stakeholders with an interest in work organisation;
- (l) the provision of access to training capable of building the competencies associated with new forms of work organisation.

In recent years a number of exemplary initiatives have been developed to address these issues in some member states; the Norwegian *Value Creation 2010* Programme²² and the *Finnish Workplace Development Programme*²³ are amongst several frequently quoted examples²⁴.

Typically these programmes combine several of the elements listed above, involving close co-operation between public policy makers and social partners in both their design and delivery. An increasing body of evidence demonstrates the effectiveness of such targeted intervention,

²²<http://www.forskningsradet.no/servlet/ContentServer?cid=1096558006777&pagename=ProgNett%2FPage%2FHovedSideEng&pageid=1096558006777&siteid=1096557992773>

²³ http://europa.eu.int/comm/employment_social/soc-dial/workorg/ewon/pres_ta_together.pdf

²⁴ See also http://europa.eu.int/comm/employment_social/soc-dial/workorg/ewon/survey_final.pdf

not only in supporting change in the individual workplace but in raising awareness and disseminating knowledge more widely.

However such policy initiatives remain scarce amongst the 25 member states of the EU. Even where they exist, the scale of funding rarely matches the scale of the problem. Policy makers and social partners in many European countries have yet to recognise work organisation as a significant factor in the achievement of the EU’s economic and social objectives.

3.38 Improving Working Lives as a model of policy intervention

While IWL represented a significant innovation, the really hard task lies not in designing policy measures but in securing their implementation evenly and sustainably. Evidence from several NHS organisations demonstrates that IWL was capable of generating sustainable change, but that it did not do so evenly or inclusively. Moreover the volatility of Government policy, which led to the virtual disappearance of working life as a policy goal by the end of the IWL programme, undoubtedly diminished its impact as an instrument for large-scale transformation.

Experience of implementing IWL across several NHS organisations points to significant variation in the quality and sustainability of outcomes; even though all achieved accreditation within a uniform regulatory process.

For example:

Organisation A	Organisation B
<i>At the IWL Accreditation stage</i>	
<p>From the outset of the IWL process there was clear organisational commitment by management, staff and trade union stewards to work in partnership, with evidence of a supportive culture and willingness to embed change throughout the organisation. The IWL lead was enthusiastic and entrepreneurial, actively participating in the IWL Regional network. There were demonstrable improvements in the quality of working lives of staff and services delivered throughout the organisation.</p>	<p>Organisation B’s approach was characterised by compliance with IWL regulation - a tick box exercise with little Board commitment. The IWL Leader’s role was unsupported internally and the organisation displayed a general reluctance to access regional support or networking opportunities. Ineffective Board and management support throughout the IWL process resulted in minimal staff engagement with little evidence of trade union partnership. Accreditation was marginally achieved but without real improvement to the working lives of staff.</p>

<i>After 6 months</i>	
Evidence that principles of IWL were becoming embedded within mainstream practice including partnership working at corporate level ongoing self assessment.	IWL was discontinued as a formal process leaving few identifiable results in practice.

3.39 Lessons

Our evaluation of the IWL initiative is not yet completed but some tentative conclusions can be drawn. These focus on the distinction between organisations that only pursue short term compliance and those that use the platform of regulatory mechanisms to instigate and sustain real organisational innovation.

To date this research has demonstrated that the extent of a Board’s support or failure to support the IWL initiative seriously affects the performance and capacity of the IWL Leader and consequently the chances of sustainable improvement. Equally it demonstrated the importance of ‘champions’ with entrepreneurial skills - including the ability to harness new resources, challenge traditional protocols and management structures, and enlist suitable people to drive innovation and improvement across the organisation. New tools and methods are required to foster such policy entrepreneurship within organisations, including innovative means of activating and supporting dialogue, reflection and learning from a wide range of sources.

3.40 Conclusions

Modernising work organisation in Europe is central to Europe’s agenda but it cannot be achieved by a few simple policy measures. Rather it poses far-reaching challenges for individuals and institutions alike:

- 1. For the individual** – seeking opportunities for acquiring and developing the technical and non-technical skills associated with new forms of work organisation.

2. **For employers and employees** – accepting that change is inevitable, messy and uncertain, and that it requires considerable learning and experimentation. However it also offers real scope for ‘win-win’ outcomes.
3. **For trade unions and employers organisations** – broadening their roles as proactive, knowledge-rich sources of animation and support for the modernisation of work organisation.
4. **For intermediate bodies** – such as universities, regional development agencies and business support organisations – creating capacity and expertise in the field of work organisation and playing a proactive role in sharing knowledge, establishing new resources and building networks and relationships between researchers, practitioners and policy makers.

3.41 References

Business Decisions Ltd., 2002, *New Forms of Work Organisation: The Obstacles to Wider Diffusion*. DG Employment and Social Affairs, KE-47-02-115-EN-C. Brussels: European Commission.

European Foundation for the Improvement of Living and Working Conditions, 1997, *Can Europe Realise its Potential? (EPOC Study)*. Luxembourg: Office for Official Publications of the European Community.

Huzzard, T., Gregory, D., and Scott, R., 2005, *Strategic Unionism and Partnership: Boxing or Dancing?* Oxford: OUP.

Meadows, S., Levenson, R., Baeza, J., 2000, *The Last Straw: Explaining the NHS nursing shortage*. King’s Fund, London.

Moss, E. and Totterdill, P “Building an Organisational Framework for Effective Clinical Governance” in M. Tavakoli and H. Davies, 2003, *Healthcare Policy, Performance and Finance*. Ashgate Publishing.

NHS Confederation, 2002, *Update* August.

Totterdill, P., Dhondt, S., Milsome, S., 2002, *Partners at Work? A Report to Europe’s Policy Makers and Social Partners*. The Work Institute, Nottingham. (Available at www.hires.org.uk).

III.3. Promoting regional innovation through healthy working centres in South East England *by Anne-Marie McEwan and Richard Ennals*

3.42 Introduction

By comparison with other European Union member states, regional policy has been slow to develop in the UK, and especially in the prosperous South East of England, an administratively defined region which does not include London.

The South East of England Economic Development Agency (SEEDA) commissioned Kingston University to conduct a nine-month feasibility study into the concept and practice of 'Healthy Working Centres'. The study, co-financed with the European Social Fund, investigated new forms of work organisation, which could have a key impact on the productivity of individuals and companies, contributing to improved work/life balance, smarter working practices and reduced commuting times. Healthy Working Centres, if financially feasible, could benefit employers and employees alike. Offering such centres to employees could reduce the costs and pressures associated with commuting, and help employers to attract and retain skilled personnel. SEEDA define Healthy Working Centres as 'buildings in rural, suburban and urban areas where employed people can work remotely from various organisations in their home location'.

This investigation of Healthy Working Centres was conducted in the context of research into new forms of work organisation. These can be within enterprises, or can take the form of collaborative engagement in new working practices between enterprises. We describe new ways of working, including comparisons with work organisation in other EU countries. What would differentiate such centres from other existing facilities in the region, such as telecentres? Is practical realisation of the concept in the region feasible?

3.43 New ways of working

UK businesses are responding to the changing world of work, within the context of rapid social, technological and economic change, affecting the workplace (White *et al*, 2004). New ways of working encompass 'new' management practices, new forms of work organisation,

designing organisational structures, systems and jobs to generate 'high road' innovation, and build organisational competence; and new employment relationships.

'New' management practices

The 1998 UK Workplace Employee Relations Survey (WERS), covering 128,000 workplaces, employing 25 employees or more, identified sixteen 'new' management practices and employee involvement schemes (Cully *et al*, 1998). These included team working, team briefing, performance appraisal, staff attitude surveys, single status between management and non-managerial employees, training, and profit-sharing remuneration schemes. Many of these practices are not new, and can be traced back to the 'human relations' school in the 1930s. What may be new is the clustering of these practices, in combination with employee involvement, to secure employee commitment to promote high performance. Cully *et al* note that these practices used in combination, 'might be construed as a model of direct employee participation in decision-making'. Detailed case studies and research in a number of sectors in the US produce 'impressive evidence' in support of the belief that clusters of HRM practices constitute a 'high performance work system' (White *et al*, 2004). Although clusters of new types of management practices are linked with increased productivity and innovation, the uptake of the high performance work system is limited in the UK (Cully *et al*, 1998; White *et al*, 2004).

New forms of work organisation

New forms of work organisation address how work is designed, including who has responsibilities, what the work entails, how the work is to be performed, and when (Ennals and Gustavsen, 1999). A review within 50 innovative European organisations indicates that jobs are designed to include employee responsibilities for autonomous decision making, and high degrees of collaboration and interactive problem solving (UKWON, 1999).

Organisational structures are designed, in the case studies, to maximise human interaction. Teams of people with differing perspectives, from different functions or departments, are jointly responsible for problem-solving. Another example would be collaboration between customers and suppliers, or among different parts of a supply chain. Significant attention is paid to deploying people, in a way that recognises and uses their ideas, provides opportunity for creativity to be developed, and encourages the exchange of tacit and explicit knowledge.

New employment relationships

New employment relationships are emerging, such as part-time working and work outsourced to self-employed freelance workers. These arrangements, which were previously atypical, are increasingly becoming the norm (Baruch and Smith, 2002).

EU approach to work organisation

The Nordic countries have been particularly active in addressing work organisation and quality of working life in a range of programmes involving national bodies, employers and unions.

- In Sweden, the ‘Work Life 2000: Quality in Work’ programme involved a collaboration of Swedish national bodies, including the National Institute for Working Life (Wennberg, 2000; Skiold, 2000; Ennals, 1999, 2000, 2001). The Swedish SALTSA Programme (Joint Programme for Working Life Research in Europe), involves collaborations with European researchers and institutions.
- In Norway, ‘Enterprise Development 2000’ was a research programme initiated by the ‘labour market parties’ (unions and employers), which aimed to link networks of enterprises to research centres, and to generate collaborative exchange of knowledge and experience (Gustavsen *et al*, 2001). ‘Value Creation 2010’ is the follow on programme, building on the collaborative relationships between organisations and researchers in Enterprise Development 2000 programme (Levin, 2002).
- In Finland, there is a well-established programme at the Finnish Ministry of Labour and the Institute of Occupational Health, and evaluations of the Finnish Workplace Development Programme report success in participative organisational renewal (Arnkil, 2004).
- Denmark has placed less focus on national programmes, but boasts high levels of innovation.

Nordic countries have not found a complete solution, through employee involvement and dialogue, to the conflicts inherent in workplace relationships. Financial investment in workplace development in Finland is small in comparison to support for high-tech technologies, although it compares well to other European countries. According to Arnkil (2004), “merely technology and research-based innovations have commonly been considered

‘real innovations’”. This is also the case in the UK (Innovation Report, 2003). Context is critical. Models of workplace development emerge from specific traditions of workplace engagement (Norway), or as a result of economic recession (Finland). Highly contingent factors mean that there is no one single model that can be rolled out and copied (Arnkil, 2004). Working relationships among potentially adversarial parties have built up over years among employers, unions and researchers, and networks of researchers with action research experience now have significant expertise in pragmatic research interventions within enterprises.

Comparison with the UK

The Swedish, Norwegian and Finnish programmes are based on a social model, and engagement among employer representatives, employees and unions, indicative of a concerted focus on work life issues that is absent in the UK. Work life research in the UK continues to be promoted through numerous individual institutions. The lack of a government-supported, national institution to promote work life issues means that the research is fragmented (Ennals *et al*, 2001).

In principle, Regional Development Agencies have a key role in realising national innovation and skills policies at regional level, in partnership with the TUC, the CBI, the Learning and Skills Council, the Sector Skills Council, and the Small Business Service (DTI Innovation Report, 2003). SEEDA, as the RDA in the South East, has an opportunity to provide the lead in disseminating work organisation research and practice through these partners in regional development. The need for regional policy direction is emphasised by Keep and Payne (2002), with an account of the formidable social, political, and institutional barriers that have ensured the continuation of poor work organisation and job design in the UK. Their analysis of poor work organisation in the UK identifies the predominance of low autonomy, low skill work as a particular problem.

3.44 Healthy Working Centres

SEEDA chose to investigate a practical approach, using a definition of a Healthy Working Centre focused on buildings. There are issues of sustainability, and lifecycles of centres. The research identified different models of Healthy Working Centres, and mapped characteristics of healthy working practices against sub-regional requirements. Centres could have a range of

structures, norms, communication conventions and support requirements, arising from specific contexts, cultures and purposes. This was evident from engagement with sub-regional networks.

Healthy working

For the European Network for Workplace Health Promotion ⁽²⁵⁾, workplace health promotion involves providing employees with appropriate information, having comprehensive communication strategies, and involving employees in decision-making processes. In a survey of businesses in the region, one-person businesses were regarded as proxies for the employee perspective. We asked what they regarded as beneficial about working for themselves, and what was problematic. Overwhelmingly, having control over all aspects of working life was identified as the main benefit of working independently. This includes choosing how work is done, when, and with which clients. Not having to submit to unreasonable deadlines, decided by someone else, was cited as a benefit of working independently. Freedom, autonomy and choice were mentioned by the majority of respondents, especially in relation to making business decisions without reference to anyone else, and being able to enjoy the sense of achievement for business success. Flexibility is a key benefit, with the ability to arrange time to suit the needs of clients, family and social needs. Not having to submit to inflexible working practices is given as a benefit of working independently. Control matters to people in general. Lack of control over working conditions is associated with poor health. Evidence from the US, Europe and the UK indicates that the pace of work is intensifying (Green, 2004), and management control methods are being deployed, particularly computerised monitoring systems, in response to complexities generated by competitive pressures (White *et al*, 2004).

Healthy remote working

Remote working is performed away from a normal workplace, using computer and telecommunications to deliver work. Healthy Working Centres could provide facilities for remote workers whose home circumstances prevented them from working remotely from home, or to provide social opportunities for people who do not like working alone. The loss of control involved in the imposition of unreasonable deadlines, and the intensifying pace of

(25) See www.enwhp.org

work, may be exacerbated by the possible detrimental effect of social isolation experienced by some remote workers.

Huws *et al* (1990) advise caution about making generalisations on how people experience remote working. Some remote workers feel in control of their lives, others feel powerless. Some experience isolation, but this may not be adversely experienced. Huws *et al* say that the same contrasts could be drawn along any other dimension of working experience. In our survey, one person micro-businesses were asked about how their hours of work had changed in the past two years. 44 % said they had stayed the same, 33% said their hours had increased, and 23% reported decreased hours worked. Where hours worked had increased, 72 % said it had no effect on their health, 21% experienced negative health effects, and 7% reported positive health effects with the increase in hours worked.

Between 75% and 94% of respondents to SUSTEL surveys of remote workers (2004) reported a good, or very good, quality of working life. Reasons include increased job satisfaction, reduced stress, better work performance, and beneficial psychological effects from feeling a greater sense of control over personal time. This was despite the fact that a large number of respondents, especially from BT in the UK, believed that their working hours had increased over the last two years. The perception of control over how and when work is performed, enabled through remote working, is clearly consistent with a reported sense of wellbeing.

Problems associated with working independently included the lack of peers with whom to share ideas, concepts, and business problems. Businesses supporting the concept of the Healthy Working Centre (as defined by SEEDA) identified human interaction, networking, cross-fertilisation of ideas and business opportunities, and the reduction of isolation, as being major perceived benefits. This was subject to reservations about cost, security, data protection, client privacy and the quality of shared facilities. Centres could be beneficial for marketing, to create awareness of individual businesses through increased opportunity of scale, increasing market presence through a 'collective' approach. This could be attractive for small businesses. The possibility of collaborative learning emerged as a benefit.

Centre facilities in the South East

There are examples of telecentres to promote employment creation in rural settings, and to provide training and access to technology, but none that are consistent with SEEDA's

definition of a Healthy Working Centre being ‘where employed people can work remotely from various organisations in their home location’. There are many examples in the region where businesses and people work together, for example hubs, innovation centres and managed office facilities. Hot-desking services are increasingly available to provide users with a base in a central business location, and companies offering managed office facilities are growing in response to office outsourcing ⁽²⁶⁾.

Healthy work involves social learning, employee involvement in autonomous decision-making, and mutual social support. The facilities may exhibit aspects of healthy work. Oxford Innovation Ltd manages eleven innovation centres around Oxfordshire, and a visit was made to the Upper Heyford facility in the course of the research. Each of the Innovation Centres, occupied by start-up businesses in small offices on a month-by-month agreement, is different in character. The provision of consistent service to the businesses is key to the on-going success of the centre; managers must be interested in what businesses are doing. The centre managers are highly networked in their own areas of expertise, have extensive knowledge of a range of businesses, and of practical business support (funding opportunities, government-funded knowledge transfer initiatives). They add more to the businesses in the centre, through their knowledge and networks, than just facilities. Communities develop. Tolerance has to be developed among the businesses in the centres. Regular coffee mornings are arranged to facilitate social relationships.

Although facilities like innovation centres, hubs and office services facilities may lead to incidental social learning and mutual support, this is not their purpose. The core characteristic of Healthy Working Centres is the coming together of partner companies who want to work and learn together: complementary skills and assets can add mutual value to their businesses. The majority of survey respondents, employers and micro-businesses, viewed centres solely in terms of facilities. Those who saw the value of the centres identified strongly with the research team’s view of healthy work.

⁽²⁶⁾ www.flexibility.co.uk/issues/transport

Sub-regional networks

Participative action research with sub-regional networks of remote workers helped to develop the social capital base for Healthy Working Centres, and to capture the dynamics and processes of healthy remote working. Healthy Working Centres would have a range of structures, processes, norms and conventions. Observation from the sub-regional networks illustrate this, in particular the experiences of the Ashford Network, built on existing links.

Ashford network

Ashford in Kent is the focus for major development, with targets of 31,000 new homes and 28,000 new jobs. SEEDA is a partner in developing local and regional strategy. The Ashford network, led from the Citizens Advice Bureau, brought together local stakeholders, to ensure a future that includes healthy work. Recently the demographic balance has been distorted by the departure of residents at the age of 18, seeking better-paid employment elsewhere. The current facilities in Ashford need to be improved for current residents, as well as building to attract newcomers. The need is for local engagement in the development, and the idea of Healthy Working Centres has found support. A financial feasibility study explored two contrasting premises, which could constitute the basis of a strategy. In one case, SEEDA is already the landlord, and the agent responsible for the premises is a member of the Ashford network. The potential exists to create social capital to support new employment: it will be essential to involve new businesses. Ashford has a history of development being externally determined, with decisions made by remote planners. Healthy Working Centres offer the prospect of engaging the involvement of people where they are, in the town and surrounding villages. They could be part of a major growth programme, to which government and SEEDA are already committed.

Assessment of Healthy Working Centres

SEEDA conceived the Healthy Working Centre concept to address pressures arising from commuting, and to promote the uptake of remote working within organisations, to address work-life balance issues, and to increase productivity. The feasibility of Healthy Working Centres varies according to the rationale for their establishment.

Travel congestion can be reduced by remote working from home, and the research on the long-term environmental impact of remote working from centres is equivocal (Dodgson *et al*,

2000) (27). There are a number of reasons why establishing additional centres to reduce commuting would not be feasible:

- a) In businesses where remote working is practiced, there is a strong preference for remote working from home;
- b) Since much remote working is informal and ad-hoc, as employees alternate between home and office, the case for centres to fulfil social and isolation needs is doubtful;
- c) There are alternatives to Healthy Working Centres with local facilities reducing the need to commute becoming increasingly available, such as serviced office spaces, and hot-desking facilities for temporary use. The flexible managed office market (FMO) has grown rapidly in the UK in recent years, following a period of adverse criticism of the sector: key characteristics are the provision of short-term, flexible office space, actively managed through the presence of an on-site management team. The improvement of delivery and business models, coupled with innovation and increased demand for FMO services, provides opportunity for the sector (DTZ Research, November 2004).

Could the creation of Healthy Working Centres promote remote working within organisations, increasing productivity and addressing work-life balance? Remote working is one component of new working practices, and forms of work organisation within individual businesses. Although there is agreement that remote working is set to increase (Hotopp, 2002; White *et al*, 2004), much remote working is ad-hoc and informal, and there is a preference for remote working from home. Where remote working was practiced, there was support, from the majority of employers and one-person micro-businesses in the Healthy Working Centre survey, for working from home. The advantages of a centre, over working from home, were unclear. Organisations such as BT report an average increase in productivity for home workers of 20% compared to office-based colleagues. Productivity gains are realised through remote working, and can be carried out from home. There is a separate issue of persuading businesses of the benefits of remote working: changing organisational cultures, policies, processes and procedures to support remote working, unconnected with the use of a centre. Trust is required between employers and employees.

(27) See also www.flexibility.co.uk

In the companies we have encountered staff working from home are volunteers. We assume that those whose home environment is unsuitable for remote working would not volunteer. The need for centres may become more urgent in future, if remote working becomes more widely established; for the moment the creation of Healthy Working Centres would not promote the uptake of remote working within organisations, particularly where there are alternative managed service premises.

The concept of Healthy Working Centres, intended to bring together partner companies who want to work together, is a different matter. SEEDA required recommendations on effective mechanisms to increase the uptake of new forms of work organisation. These could be within individual enterprises, or among a number of enterprises that collaborate for mutual advantage, with a foundation of trust. If remote working employees from various organisations come together for the express purpose of social learning and inter-organisational collaboration for mutual gain, then Healthy Working Centres constitute a potentially powerful new form of work organisation that would develop social capital, develop relationships and alliances among organisations, and in time create innovations systems and regional developmental coalitions. In our view, the concept is innovative and sound. There is much to be learned from the experience of the Nordic countries, where they have extended existing models of innovation to include inter-company collaboration, for example in Odda, Raufoss, and Gnösjo. Although the majority of businesses did not support the concept of Healthy Working Centres, supporters were enthusiastic, perceiving the benefits as social learning and networking for social gain.

3.45 Conclusions

There are structural weaknesses in the UK, preventing widespread dissemination of new working practices and new forms of work organisation. RDAs have a key role in realising national innovation and skills policies at regional level. They have an opportunity to lead in disseminating work organisation, through support for a pilot Healthy Working Centre. The core characteristics are the coming together of partner companies to work and learn together, believing that complementary skills and assets can add mutual benefit to their businesses. Despite the individualistic nature of business in the region, the Healthy Working Centre concept has support from some innovative businesses, who perceive potential benefits as being associated with social learning, social support and networking, to build business advantage through social capital development and networking.

Experience from telecentre case studies highlights issues of centre management and financial feasibility, and observations from sub-regional networks show that centre structures, procedures and communication conventions would have to meet the social and cultural needs of specific centre users. This would include policies and procedures consistent with healthy work, such as the provision of appropriate information, communication strategies, employee involvement in job design (including the negotiation of deadlines, outputs, how work is to be performed, when and with whom), decision-making latitude, and social support.

The Healthy Working Centre concept is sound in principle, and provides a potential mechanism for the creation of social capital, and eventually possible regional development. There are numerous existing informal sub-regional groups in the region that could form the basis for a pilot Healthy Working Centre. However, to date, South East England, without London, has not shown itself to be a credible region. Diversity is such that there is no single 'region of meaning'. There are numerous networking opportunities, but no coherent strategy which engages the necessary partners, enabling them to progress beyond individualism, to learning together for local innovation in a learning region. Thus, although there is growing interest in remote working and mobile technologies, there is no discernible strategy.

3.46 Bibliography

Arnkil, R. The Finnish workplace development programme – a small giant? *Concepts and Transformation*, 2004, Vol. 9, No 3, p. 249-278.

Baruch, Y.; Smith, I. The legal aspects of teleworking. *Human Resource Management Journal*, 2002, Vol. 12, No 3.

Cully et al. *The 1998 workplace employee relations survey: first finding*, 1998. Available from Internet: <http://www.dti.gov.uk/files/file11678.pdf?pubpdfload=98%2F934> (cited 21.6.2006).

Denbigh, A. *Unpublished interview with the Chairman of the Telework Association*, 2004.

Dodgson, J.; Pacey, J.; Begg, M. *Motors and modems re-visited: the role of technology in reducing travel demands and traffic congestion*. London: NERA (National Economic Research Associates), 2000.

DTI Innovation Report. *Competing in the global economy: the innovation challenge*, 2003. Available from Internet: <http://www.dti.gov.uk/files/file12093.pdf> (cited 21.6.2006).

- DTZ Research. *The flexible managed office market*, 2004. Available from Internet: http://www.bcanetwork.co.uk/medialibrary/bca_dtz_flexible_managed_offices.pdf (cited 21.6.2006)
- Ennals, R. *Work Life 2000 Yearbook 1, 2, 3*. London: Springer Verlag, 1999, 2000, 2001.
- Ennals, R. *The existing policy framework to promote modernisation of work: its weaknesses*. European Commission, Brussels, 2002.
- Ennals, R.; Gustavsen, B. *Work organisation and Europe as a development coalition*. Amsterdam: John Benjamins, 1999.
- Ennals, R.; Totterdill, P.; Ford, C. The Work Research Foundation: a national coalition for working life and organisational competence. *Concepts and Transformation*, 2001, Vol. 6, No 3, p. 259-274.
- Green, F. Why has work become more intensive?' *Industrial Relations*, 2004, Vol. 43, No 4, p. 709-741.
- Gustavsen, B.; Finne, H.; Oscarsson, B. (eds.) *Creating connectedness: the role of social research in innovation policy*. Amsterdam: John Benjamins, 2001.
- Hotopp, U. Teleworking in the UK. *Labour Market Trends*, June 2002.
- Huws, U.; Korte, V.; Robinson, S. *Telework: towards the elusive*. Chichester: John Wiley and Sons, 1990.
- Keep, E.; Payne, J. What can we learn from the Norwegian and Finnish experience of attempts at work re-organisation?' *SKOPE Research Paper No 41*, University of Warwick, Spring 2002.
- Levin, M. (ed.). *Researching enterprise development: action research on the cooperation between management and labour in Norway*. Amsterdam: John Benjamins, 2002.
- Skiöld, L. (ed.). *A look into modern working life*. Stockholm: Swedish National Institute for Working Life, 2000.
- SUSTEL. *Is Telework sustainable? an analysis of its economic, environmental and social impacts*, 2004.
- http://www.sustel.org/documents/march%2004%20deliverables/Policy%20Implications%205_2004.rtf

UKWON. *UK Work Organisation Network, unpublished analysis*, 1999. Available from Internet: ukwon.ntu.ac.uk/change-intro.html (cited 21.6.2006).

Wennberg, A. (ed.). *Work Life 2000: scientific reports from the workshops*. Stockholm: Swedish National Institute for Working Life, 2000.

White, M.; Hill, S.; Mills, C.; Smeaton, D. *Managing to change? British workplaces and the future of work*. London: Palgrave Macmillan, 2004.

III.4. Reverse Intergenerational Learning: a missed opportunity? *by Carol Baily*

Abstract

Traditional teaching pedagogy has the young learning from the old. To improve learning in a business environment, generational differences have been identified as being potential barriers between people. There is a growing realisation that technology can be used to bridge the gap between young and old using reverse mentoring. Moving beyond the confines of using reverse intergenerational learning as a tool for only learning new IT has not yet gained general acceptance in the wider business environment. Surely this represents a missed opportunity.

Keywords: Organisational learning; mentoring; reverse mentoring; generational differences; intergenerational learning; barriers to learning

Open Forum

Traditional teaching (and learning) pedagogy has the younger person learning from the older. (Cozzi, 1998). This is seen all the way through the social practices of humans from the family, to schools, through the social activities of clubs and societies and into the workplace. (Tempest, 2003). In order to improve the process of learning in a business environment, generational differences have been identified as being potential barriers (or advantages) between people. Sociological and psychological research into behaviour has highlighted the difficulties that people who are generationally close to each other have in overcoming barriers to communication and learning. (Raines, 2002; Tempest, 2003)

For social research purposes, the current working population has been split into four generational groups: Traditionalists; Baby Boomers; Generation X and Generation Y (also known as Millennials, Y2Ks, Echo Boomers, the Internet generation, Nexters). (Eisner, 2005; Hansen, 2004). “These generational differences can cause friction, mistrust, communication breakdowns; prevent effective teamwork and collaboration; and impact job satisfaction, retention and productivity.” (Ruch, 2005) Generation X, born between 1965 and 1980, provide the current level of middle management. Generation Y are the new entrants, born

between 1981 and 1999. Generation X are independent and entrepreneurial, they are used to challenging their environment and love work. Generation Y are an ideas generation, living in virtual realities, who enjoy working as team members. “Each [generation] brings unique attitudes and expectations to work” (Ruch, op cit). It is also important to point out that generation X are the parents of Generation Y, and that there is an associated parental authority inherent subconsciously in any interactions between the two generations (Eisner, 2005). “We need to understand other generations so that we can build relationships that lead to co-operation and job satisfaction.”(Ruch, op cit)

In Scandinavia, the difficulties experienced during interaction between generation X and generation Y has been recognised. A solution in the education system has been to encourage the role of grandparents – jumping a generation. Grandparents inhabit the Traditionalist (1900-1945) and Baby Boomer (1946-1964) generations. The parental authority problem is overcome and communication between them and Millennials is easier. This is a solution that applies the traditional pedagogy of the old teaching the young and is proving to be a success.

Information coming out of business practice supports the growing realisation that technology can be used to bridge the gap between new entrants into an organisation and their line managers. Reverse mentoring is a process where a young person is asked to use their knowledge of technology to coach a more senior colleague in its uses (Coles and Gardner, 2001; Coles, 2001; Pyle, 2005; Stone, 2004; Chang, 2004; Greengard, 2002; Zielinski, 2000; Gerstner, 2000; Smith, 2000; Hoare, 2000; Solomon, 2001). The process is considered to be mutually beneficial as the young person is able to learn general business strategy and knowledge from their more experienced colleague in return. But “it [is] widely apparent that technology [is] not the sole panacea to global issues and challenges”(Craig, 2001).

Pearl Assurance, (Hoare, 2000), and Proctor and Gamble Co, (Zielinski, 2000), have been cited as leading the field in this area of reverse intergenerational learning, by adopting a ‘best practice’ approach of linking senior management with junior employees. The approach was not limited to IT, but also included the areas of diversity and biotechnology (Solomon, 2001). Senior management have not only learnt about how to use the new technology, but the technique has also enabled sensitisation to issues such as ‘women in the workplace’ and resource management (Zielinski, 2000).

This approach to move beyond the confines of using reverse intergenerational learning as a tool for only learning new IT is a practice which has not yet gained general acceptance in the

wider business environment. Surely this represents a missed opportunity. Many young people are now entering the full-time workplace with up to five years of at least part-time work (Many students have to begin some serious part-time work at the age of 16 or 17). With the financial pressures facing students in the UK, this experience can sometimes be the equivalent of up to 20-30 hours per week. Some of them have already experienced junior management positions (particularly in retail situations). MBA graduates have been taught by Baby Boomers and Generation Xer's the latest business theory and techniques. They approach their new jobs with IT expertise, theoretical knowledge, and a little practical experience on which to assess that knowledge. Using this resource in a very narrow way – as a means of learning how to access the latest IT- is missing a valuable pool of knowledge. "It is said that youth are the future, but in today's rapidly changing world, youth really are the present." (Pyle, 2005).

Business is concerned with efficiency and profits. People are an increasingly valuable resource which management are becoming more concerned to manage effectively. "Attaining effective knowledge management integration is an important challenge facing both general management and project managers" (Enberg *et al*, 2006). For senior managers, therefore, "the main problem lies in assuring the most effective integration on individuals' specialised knowledge at the lowest attainable cost" (Grandori, 2001).

If this is the case, why is reverse intergenerational learning not more widespread? Why does it seem to be limited to IT learning or sensitisation issues? "Generational diversity also brings creative synergy to problem-solving. It can generate new opportunities." (Legault, 2003)

What are the barriers which might prevent middle or senior management from being open to learning from their younger colleagues? Are there barriers or assumptions that might prevent the younger generation from becoming effective teachers to their older colleagues?

These questions could be looked at from two different perspectives: an organisational perspective; and an individual perspective.

Dan Tapscott argues that in order to benefit fully from this reverse of approach, "organisations have to fundamentally rethink everything about themselves and their future" (Gerstener, 1999, p19). Tapscott proposes creating "organisations and societies that can actually learn" (Gerstener, 1999, p20). His main argument is that organisational culture is a precondition for success – if the culture is one of openness and a positive attitude to change and learning, then reverse intergenerational learning can begin to take place on all levels. Organisational culture and adaptability to change is an enormous field of study in itself. "A

culture that accepts and values each person can make a positive difference for everyone involved. Incorporating multi-generational workforce management into business goals is one effective way to develop an accepting culture” (Ruch, op cit). According to Roth, 1998, “The real difference [to effective closing of the generation gap] lies in the organisational learning patterns.”

It is important at this point to acknowledge the “fundamental difference between training and learning” (Craig, 2001). Training tends to focus on skills acquisition, but learning has a wider connection and link into the development of knowledge, and also a link towards an attitude of mind on the part of the organisation and also individuals within the organisation. “With effective training, all four generations can learn to work better together – and to communicate more effectively with each other” (White, 2006).

From an individual’s perspective, there are two approaches to take: the senior manager’s barriers and the new employee’s barriers.

From a senior manager perspective, some of the reluctance to learn from the younger generation comes from the parental connection with the younger colleague – it can be very difficult to acknowledge needing to learn from ‘your child’. There may also be scepticism as to whether there is anything that the junior colleague can teach. Age and experience are often equated with knowledge and wisdom – which are surely not available to a younger colleague? Professor David Birchall says, “It reflects the fact that UK managers are less open [than American colleagues] about their development needs. Also, managers would question what on earth they could learn from someone with little business experience.” (Coles and Gardner, 2001). There may also be a power concern, linked to a traditional perspective of hierarchy and roles. The more senior manager may feel that their position is threatened if there is an admission of lack of knowledge – “they generally don’t like to admit their ignorance to others in the organisation, particularly those well down the hierarchy” (Coles, 2001). The fear that their job may be lost to a younger person may prevent reverse intergenerational learning from taking place. Some of these issues can be resolved through organisational, cultural change, but some will involve individual mind change. It may be that an acceptance to learn about the latest technology from a younger person is not perceived to be job threatening, and so is more acceptable.

A young person entering the workplace can often feel uncertain and intimidated by the confidence and self-assurance of the people around them – people who have been in the

organisation for some time and have therefore established themselves. There is also the likelihood that the young person is not able to communicate effectively with their older colleagues – “they may lack the self-confidence needed to teach senior executives” (Stone, 2004). This is a generation which has been “socialised in a digital world” (Eisner, 2005) [But] their strong technical skills are not matched by strong soft skills such as, listening, communicating” (Pekala, 2001). It is possible that teaching skills are not developed, which would lead to difficulties in coaching anyone, let alone someone who has the (perceived and perhaps real) ability to fire you. There is an acknowledgement of the need to train both sides in how to relate to each other. Selection of the correct candidates is also important – as not all young people are suitable as mentors (Coles, 2001).

If these problems can be overcome, then the benefits to the organisation can be substantial. Internally, “Whether organised on a formal or casual basis, reverse mentoring can offer businesses an opportunity to improve internal communications processes” (Coles and Gardner, 2001) Externally, “The diverse knowledge base that junior employees can offer is an advantage that can be capitalised on” (Smith, 2000).

Research into this area of reverse intergenerational learning is just beginning. Craig (2001), Tempest (2003) and Eisner (2005) are leading the way in beginning to identify the barriers and solutions, but there is still scope for more work. If organisations can learn to embrace all four generations, then the benefits will start to be seen both socially and financially.

3.47 References

Chang, J. and Hampton, A., Jan. 2004. Backward learning. Let your younger workers take the mentoring lead. *Sales and Marketing Management*, **156**(1), pp. 24.

Coles, M., Jan 8, 2001. Listen to the voice of youth. Reverse mentoring is a new business concept whereby young recruits advise their elders and better with a youthful take on the world. *Evening Standard*, **General**, pp. 7.

Cozzi G., Apr 1998. Culture as a Bubble. *The Journal of Political Economy*, **106**(2), pp. 376.

Craid, C.J., 2001. A Collaborative View of Knowledge in a Knowledge Society: An International Perspective. *International Journal of Value-Based Management*, **14**(1), pp. 27.

Eisner, S.P., Autumn 2005. Managing Generation Y. *S.A.M. Advanced Management Journal*, **70**(4), pp. 4.

- Endberg, C., Lindkvist, L. and Tell, F., 2006. Exploring the Dynamics of Knowledge Integration: Acting and interacting in project teams. *Management Learning*, **37**, pp. 143.
- Grandori, A., 2001. Neither hierarchy nor identity: Knowledge-governance mechanisms and the Theory of the Firm. *Journal of Management and Governance*, **5**(3), pp. 381-399.
- Greengard S., Mar. 2002. Moving forward with reverse mentoring. *Workforce*, **81**(3), pp. 15.
- Hansen, T., Sep 2004. Don't Understand Them? *The Practical Accountant*, **37**(9), pp. 56.
- Hoare, S., Nov 16, 2000. E-possums relish reversal of roles. *The Times*, , pp. 17.
- Legault, M., Dec 1, 2003. Caution: Mixed Generations at work. *Canadian HR Reporter*, **16**(21), pp. 23.
- Pekala, N., November/December 2001. Conquering the generational divide. *Journal of Property Management*, **66**(6), pp. 30-38.
- Pyle, K., May 2005. Youth are the present. *Telephony*, , pp. 40.
- Raines, C., 16 January 2007, 2002-last update, managing millennials. Available: <http://generationsatwork.com/articles/millennials.htm> [01/16, 2007].
- Roth, M., Winter 1998. Closing Generational and Learning Gaps. *Marketing Management*, **6**(4), pp. 26.
- Ruch, W., Dec 2005. Full Engagement: Manage multiple generations. *Leadership Excellence*, **22**(12), pp. 11.
- Smith, M., Jul 17, 2000. Teaching the "old dogs" new tricks: Reverse mentoring. *Canadian HR Reporter*, **13**(13), pp. 7.
- Solomon M., Jan 29, 2001. Coaching the boss. *Computerworld*, **35**(5), pp. 42.
- Stone, F., Feb. 2004. Leadership Coach. Mentor your emerging leaders. *Executive Excellence*, **21**(2), pp. 5.
- Tapscott, D., Dec. 1999/Jan. 2000. Digital Dad. *Communication World*, **17**(1), pp. 18.
- Tempest, S., Jun 2003. Intergenerational learning: A Reciprocal Knowledge Development Process that Challenges the Language of Learning. *Management Learning*, **34**(2), pp. 181-200.
- White, R., Nov 2006. Four generations learning to work better together. *Public Management*, **88**(10), pp. 35.
- Zielinski D., Oct. 2000. Mentoring up. *Training*, **37**(10), pp. 136.

Zollo, M. and Winter, S.G., 2002. Deliberate Learning and the Evolution of Dynamic Capabilities. *Organisation Science*, **13**(3), pp. 339-351.

III.5. “You should not underestimate the importance of relations...”. Linking science, capital and business in commercialising knowledge *by Lene Foss and Mette T. Solnørdal*

3.48 Introduction

Today's knowledge-based economy challenges relations between university and industry. Universities are expected to serve a 'third task' and play a role in regional innovation (Brulin 2001; Nilsson, 2006). One way of doing this is to commercialise academic knowledge (cf Lockett, Vohora and Wright 2003; Meyer 2003; Shane, 2004). Commercialisation can be defined as the process of transforming theoretical knowledge, 'residing' in an academic institution, into some kind of commercial activity (Chiesa and Piccaluga 1998). The importance of science produced by the universities in commercialising knowledge is demonstrated in a number of empirical studies (Bania *et al* 1993; Audretsch, Lehmann *et al* 2006; Chapple, Lockett *et al* 2005; Thursby and Kemp 2002). However, the precise link between the sources of knowledge and the resulting innovative output remains invisible and unknown (Audretsch and Stephan 1999). As academic spin-offs involve links between different institutions such as academia, investors and industry, the crucial question is of how these institutions relate to one another. The focus in this study is therefore on how science, capital and business are brought together in order to commercialise knowledge.

Biotechnology is an industry with a large demand for scientific knowledge and with a strong co-evolution of science and finance (Audretsch and Lehmann 2005; Powell *et al* 2002). This makes biotechnology an interesting empirical setting for this study. It has been argued that excellent science, experienced management, and sufficient access to risk capital are essential resources in commercialising biotechnological research (Marvik 2005). This chapter is a case study of the process that takes place; from the time the idea to commercialise academic knowledge is conceived, to the start up of a research foundation, and the emergence of a commercial enterprise. It involves relations between actors with different institutional 'home' bases; university (science), commercial banking (capital) and business (management). As these institutions have different goals (ie producing science, profits and successful

enterprises), links between them are necessary in supplementing each other in commercialising academic knowledge. A basic assumption here is that relations between players representing these institutions can be viewed as the key element in providing the resources needed. This ties in with a fundamental assumption in the social sciences; that trust and co-operation are closely intertwined (Axelrod, 1984) and that the ‘supply’ of trust increases with its use (Putnam 1993). When key actors recognise their common interests, co-operative relations are more likely to ensue (cf Powell and Smith-Doerr 1994). We therefore ask: *How do personal relations affect the connection between institutions in linking science, capital and business?*

Given that topics such as the dynamics of relations, culture, agency and process are not well understood (cf Emirbayer and Goodwin, 1994; Powell and Smith-Doerr, 1994; Mizruchi, 1994), we will explore the development of relations over time. Following recent calls for studying micro-level processes (Oliver and Montgomery, 2000), characteristic events in the process of commercialising and the dynamics of links in handling these events are described. We give each of three key players, the ‘Scientist’, the ‘Prof’ and ‘The Banker’ a narrative voice to illustrate the collaboration between the research institution, the university, the finance institution, and the commercialised company. In doing so, their agency, their rationale for networking and reflections over the unfolding processes become unveiled.

The empirical setting is the University of Tromsø. It was established in 1972, as the fourth University in Norway, after strong political pressure to provide higher education for students of the region, and to contribute to regional development in public administration and industry. As the young and often radical academics of the 60-70s took up faculty positions in the new university, it was soon labelled the ‘red university’. The small size of the town, the lack of a more traditional and conservative academic elite, and the informal and down-to-earth behaviour of the northerners, shaped a context where university academics wanted to prove themselves as original and different. Thirty years on Tromsø is still different, in that hierarchical relations are less prevalent, and where people of different professions mingle and relate to each other easily.

This chapter starts by describing events related to the access to science, capital and commercialisation, from the idea of a research institute ‘Bio-Competence’ to the emergence of a commercialisation company ‘Bio-Business’ (Section 2). Thereafter follows a description of how relations linking the involving institutions developed (Section 3). The chapter ends

with a discussion of some principal theoretical issues raised by the case (Section 4). The paper concludes with suggestions for further research (Section 5).

3.49 From Bio-Competence to Bio-Business

1998: Creation of the idea – concerns about Bio-safety

In 1998 five professors at the University of Tromsø discovered some potential and unfortunate effects of the development and use of modern biotechnology. Genetic engineering (GE) opened up several potential advantages, with regard to health, environment and food production. The professors claimed that there were also risks associated with the use of genetically modified organisms. Biological and ecological processes may contribute to the dissemination and unexpected functioning of genetically modified materials in certain situations, with potentially damaging, long-term consequences. These risks conflict with the globally agreed intention of securing a sustainable development and exploitation of natural resources. In order to investigate these issues, the professors established an independent research institution, here called Bio-Competence. The objective of this institution was to reveal environmental, as well as human, domestic animal and wildlife health-relevant, side-effects of the use of genetically modified organisms (GMO). Their goal was to build up a base of experimental models, knowledge and experience in order to conduct such evaluations in a scientifically credible manner.

In order to fulfil their goal, the scientists needed financial support, covering the initial costs. They received the needed capital in addition to some start-up capital from a local savings bank, here called ‘the Bank’. The Bank’s regulations and ownership structure gives it a particular corporate social responsibility. Because of this the Bank supported the emergence of a new research institution, as well as regionally-based science in general.

Even though the research institution was to be independent, it was still strongly connected to the university. The five professors continued to work, full or part time in the university, which made it easier to organise joint research projects and gain access to university facilities.

One of the professors, here called ‘the Scientist’, had a particularly important role in the establishment of Bio-Competence, as he was the only one of the five to become employed in the new research institution. Another professor, here called ‘the Prof’, became chair of the board for the first five years.

It was important for Bio-Competence to gain and maintain scientific integrity and trustworthiness; it therefore followed strict ethical norms in its research and work. Its independence was achieved through a non-profit activity, in addition to avoiding collaboration with purely commercial enterprises. The operating revenues were mainly grants from non-commercial actors such as Ministries, governmental agencies, and the Norwegian Research Council.

To maintain its integrity and independence, the foundation 'format' was chosen as the adequate organisational form. The Prof consulted another university professor who was considered an expert on establishing foundations. It became important to secure that Bio-Competence should not "*be brought off in a coup*". The University board was given the right to appoint the board of Bio-Competence, but not the power of proposal, which was given to the general assembly.

How the Scientist and the Prof divided the work between them is illustrated by the quote below.

"Bio- Competence would never have occurred if it had not been for the Scientist. He is a genuine innovative academic. He has been able to define a new area of critical science. He is extremely skilled in convincing potential stakeholders and has used much of his time travelling abroad to "sell" the relevance of the research. We have been complementary to each other in this process. Whereas he has published the necessary documentation, I have assisted in making agenda, structure, and systems."
(The Prof)

2002: Presentation for the Bank

In 2002, four years after the start-up, Bio-Competence held a presentation for the Bank to show the usefulness and social importance of the contribution the Bank had given. This was the second formal contact between the research institution and the Bank.

The banker, here called 'Banker III' remembered well the first time he met Bio-Competence.

"Our board of directors was invited to the University. This was natural since our chairman was the director at the university. During this visit we were introduced to Bio-Competence, the Scientist and the Prof. We were told about their activity. The focus was on the use, dispersion and effects of GMO in the ecosystem. The presentation was very interesting. The bank got a very good impression of the institution... This was a branch within science that could be interesting for life

science, animal food especially within aquaculture and other marine resources. This knowledge opens up new perspectives and new opportunities. The bank is concerned about spin-offs... The meeting did not lead to a concrete agreement, but we received knowledge about Bio-Competence and were reminded about our status as a founder of a interesting research institution.” (The Banker III)

During the last four years the number of employees and the portfolio of research projects had increased. Increasing global awareness about bio- and food-safety, in addition to international trade, saw staff members of Bio-Competence receiving invitations to lecture and provide information at a large number of national and international gatherings, conferences and courses. The institution had also become an advisory organ for organisations and agencies dealing with bio-safety and sustainable exploitation of nature and natural resources. The key competences of Bio-Competence were related to the detection of GMO and evaluation of its effects on ecosystems and mammalian organisms.

2004: C-operation with United Nations’ environmental programme – more capital needed.

In 2004 Bio-Competence started to co-operate with the United Nations’ environmental program (UNEP). At this time the research institution had a staff of 14 people. Bio-Competence needed to increase its funding in order to conduct research projects related to, among other things, the environmental programme of the United Nations. The Prof explains the need for “patient investors willing to take a risk” in the following way.

“In this context you might say that capital is more than money. You have smart-capital, patient capital and intelligent capital. Within biotechnology long-term capital is needed as the biotechnological product takes long time to develop. Much can go wrong: patents may not go through, biology tests may not be correct. You need to invest one time, two times, three times before one reaches the goal.” (The Prof)

Bio-Competence received a donation from the Bank; the background for this donation is explained by Banker III:

“Bio-Competence received a donation after a formal application. They needed to increase their funding capital. I handled this case. Bio-Competence was close to deficit because of increased activity. In this period they had been working very hard to increase their sponsor incomes, this type of activities demand resources. It was natural that they applied to the bank, since we were the founders of Bio-Competence.” (The Banker III)

2005-2006: New presentation and establishing of Bio-Business

Bio-Competence developed rapidly. In 2005 the institution employed 23 people, conducting 13 man-years of research. Over the years Bio-Competence had developed a good relationship to the Norwegian Agency for Development Cooperation. In 2005 they signed a long-term contract which authorised Bio-Competence to run a GMO biosafety education programme (Biosafety Capacity Building Program) for high-ranking scientists, governmental biosafety regulators and civil society leaders from third-world countries. These activities increased the integrity of Bio-Competence, assured the activity, and enlarged its international network. The institution had reached international acknowledgement, and had a broad international network of collaborative partners. This network provided Bio-Competence with information and projects. Some requests came from commercial bodies. Afraid of losing its integrity and trustworthiness, Bio-Competence did not want to work with commercial actors; the importance of scientific trustworthiness is commented on by the Scientist:

“I’m the only full-time senior scientist that has been engaged in Bio-Competence. It was clear to me that if we weren’t in front scientifically there wouldn’t be any product to commercialise; I was therefore dependent on others running this (commercialisation) process. I could only apply for engagement and capital and then we could enter a collaboration process where other actors took care of the commercialisation aspects.” (The Scientist)

Some of the professors who initiated the start-up of Bio-Competence intended the foundation to be a source of knowledge and research that could be used in commercial activity, and hence contribute to the development of a new industry in the region. This was a controversial topic because in order to commercialise the knowledge generated in Bio-Competence it was crucial that the institution maintained independence, in other words did not participate directly in the commercialisation process. In 2005 Bio-Competence presented its competence and activity to the board of directors of the Bank. Bio-Competence also informed the board about the difficulties related to maintaining independence. The meeting resulted in the Bank deciding to support a commercialisation initiative. However, Bio-Competence had to find a solution that did not jeopardise its independence. The following quote illustrates how the Scientist experienced this event:

“The whole commercialisation idea was brought back to life after the board meeting with the Bank last September (2005) in the science park. I remember an enormous

enthusiasm. When we were done with the presentation, we had a coffee break. The chairman came over to me and said – “we are happy to have academics like you”. Then I realised that this was something that could be used, immediately they started to talk about a donation from their donation fund. They were already then so interested that they advertised their support of this activity on the basis of academic as well as commercial interests.” (The Scientist)

Commercialisation of knowledge is considered essential to maintain and develop a competitive industry. As indicated by this quote from Banker III, the bank was quite interested in this type of activity:

“Commercialisation of knowledge has an enormous potential. If the knowledge is unique, then I’m sure that the price is unique as well. We had the impression that they scientifically had reached a high level, and that named customers were interested in buying their knowledge. This was a trigger for us to establish the commercialisation company.” (Banker III)

Internal conflict within Bio-Competence regarding its involvement in commercial activity is reflected in the time spent by the board of Bio-Competence in reaching an agreement. Some wanted Bio-Competence to be a commercial institution, while others thought that it was impossible to commercialise the competence of the institution without losing its most precious asset – its independence. Finally, the board of Bio-Competence and the administration came up with a business model that they found satisfying. The result was the start-up of a new private company, Bio-Business, in 2006.

2006: Establishing Bio-Business

The business model of Bio-Business, established early in 2006, was based on co-operation between the Bank and Bio-Competence. Bio-Business was registered as an independent limited (ltd) company. The Bank contributed with the initial capital and stood as the only owner. The collaboration between Bio-Competence and Bio-Business would be project-based and contractual, depending on what ideas Bio-Competence found interesting to develop in a commercial contest. The administration of Bio-Business was rather small with only two members working part-time. The administration was meant to have a co-ordinating role, and not conduct any research on its own. In the start-up of Bio-Business, the Bank contributed

with the capital needed to keep the administration going for some time, evaluating whether this was a good business-model and attractive for further investments.

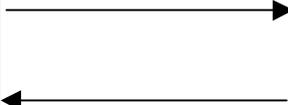
The objective of Bio-Business was to commercialise biotechnological knowledge and competence, and contribute to increased spin-offs from local research institutions, and hence serve as a private commercialisation facilitator. The activity of Bio-Business was firstly to find an industrial market for the research produced by Bio-Competence. This also included wrapping academic knowledge into commercially interesting products, and identifying new innovative areas for putting research results to proper (ie commercial) use. Second, after having built national and international networks, and achieving competence in commercialisation and industrial markets, Bio-Business would assist other research institutions in doing likewise.

The academic milieu around the university has matured over the last 30 years, and become nationally acknowledged. However, this academic environment has not yet become a substantial contributor to local and regional development as intended. The commercial link to the industry was still missing. The bank, aware of its social responsibility, saw the need for a company bridging academia and industry to commercialise research. This bridging cannot be seen as the main responsibility of a finance institution, neither is it evident that academia is interested in collaboration with industry. The following quote illustrates the ‘aversion’ the Scientist experienced in dealing with commercial activities:

“The idea is that Bio-Competence shall never conduct commercialisation activities itself. The commercialisation shall be done by Bio-Business, but without a minimum of input factors, the project is doomed. I’m without knowledge and totally indifferent about financial issues. In addition, due to my political point of view, I don’t feel like blending with “money people”. That is how narrow-minded I have been.” (The Scientist)

Bio-Competence wanted to keep its focus on science, and realised that a partner was needed in order to commercialise research results. Because of this, The Bank financed the start-up of Bio-Competence, and its collaboration and financial involvement in the start-up of Bio-Business was much appreciated.

The events that unfolded, from when the idea of Bio-Competence was first conceived to the actual establishment of Bio-Business, are summarised in Table 1. Arrows indicate formal institutional initiatives.

Year	Science (Bio-Competence)	Commercialisation initiatives (Bio-Business)	Capital (The Bank)	External events (Market and driving forces)
1998	Five professors initiated the establishment of an independent bio-safety research institution No of employees: 0,2 Operating revenues: 500 000 NOK		The Bank founded Bio-Competence with the initial capital.	Development of science within technology and biology permitted study of DNA and transgenic techniques. Increased commercial use of gene modified organisms. Young, experimental, and highly competent scientists at the University of Tromso
2002	Bio-Comp. presents its activity to the board of the Bank. No of employees: 9 Operating revenues: 4 millions NOK			
2004	No of employees: 14 Operating revenues: 11,5 millions NOK		The Bank gives a donation to Bio-Competence.	The Cartagena-protocol regulates international trade of GMO. Bio-Competence starts co-operating with the United Nations. Bio-safety is a hot political issue.
2005	Bio-Competence presents its activity to the board of the Bank. No of employees: 13,2 Operating revenues: 15,1 millions NOK			Bio-Competence is asked by commercial actors to conduct research projects. This is in conflict with the regulation of Bio-Competence.

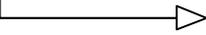
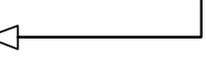
<p>Spring 2006</p>	 <p>No of employees: 16,5 Operating revenues: 15,5 mill NOK</p>	<p>Bio-Business</p> <p>The Bank is the founder and owner, while Bio-Competence is the provider of knowledge. Objective: commercialise knowledge of Bio-Competence.</p>		<p>The government has the intention of making Bio-Competence a national centre of competence.</p>
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Table 1: Events in the emergence of Bio-Business

3.50 *Relations significant in developing Bio-Business*

This section reveals the personal relations between key actors, from the creation of Bio-Competence in 1998 to the founding of Bio-Business in 2006. The development of relations between key players in the process, the Prof, the Scientist, the Banker, are organised around the different events following the year of the critical events (Table 1). Quotes from the key players illustrate their reflections on the evolving relations.

1998: “One player – multiple roles”

The first formal contact between Bio-Competence and the Bank took place when Bio-Competence applied for a grant covering the initial costs of setting up the institution. Existing personal relations provided a link between the research institution and the Bank. The following quote illustrate how Banker III reflects over the importance of relations:

“One should not underestimate the importance of relations. When looking for interesting activities and events in the university sphere you are influenced by your network. In this case both our chairman and previous employee had been appointed to the board of Bio-Competence. Bio-Competence is the only foundation we have established, it is very unique. It was the result of few active people within this field of science. The director of the university was a member of

several boards and committees. I think he had a strong influence on the founding of Bio-Competence.”(The Banker III)

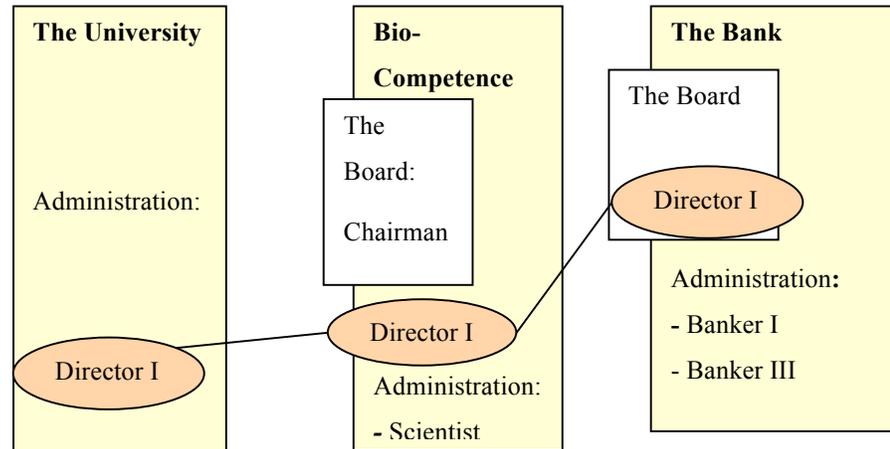


Figure 1: Year 1998 – “One player – multiple roles”

Figure 1 illustrates how the university Director I held three board memberships. When Bio-Competence started-up the university Director I had a position in the Board of directors in the Bank; he also became a member of the board of Bio-Competence²⁸. The involvement of the director helped Bio-Competence to get support from the University, and contributed to the contact between Bio-Competence and the Bank.

However, the university Director I was not the only person linking these institutions. As the following quotes illustrate, there were several links between the Bank and Bio-Competence.

“I knew some of the people²⁹ in the Bank from before starting Bio-Competence; in particular the Director of the university, he was a member of the board of The Bank. I have known The Banker II during the last 7-8 years. I got to know him better from a firm where he was the managing director and I was a member of the

28 It was required by the laws of the Company that the University director was a board member.

29 In this context the people referred to are individuals who have the authority to decide or the possibility to influence the process of awarding grants.

corporate assembly. It was, however after he resigned that we and our wives developed a personal relationship.” (The Prof)

”I knew the Prof from various occasions, but I only knew the Scientist from Bio-Competence...I knew the Prof because his network reached within the Bank. He was active within the capital market, and is a person with many “irons in the fire” making our roads crossing at occasions.” (The Banker III)

”My relation to the bank started in 1997-1998 when Bio-Competence got the initial capital from The Bank. We had several meetings with various key-persons in The Bank. The university Director was a board member and served as chairman in Bio-Competence... However, the formal contact and the trigger of the grant were thanks to the involvement of the Prof. Not many are capable, skilled scientists, while at the same time having such a large network in commercial and financial circles. I have never seen anybody in academia being as successful as him.” (The Scientist)

”In a small town like ours, where “boy’s clubs” dictate most of the activity, one is lucky if managing to capture their interest. If so things can happen very quickly, even quicker than other places. On the other hand, if they don’t respond, then things can go slower than being in a metropolis; where the commercial, financial and intellectual milieus are more impersonal and objective. I believe that a person’s appearance or acquaintance is more important in a small town than in larger, more impersonal context.” (The Scientist)

The first three quotes indicate the smallness of the town, and how individual paths tend to cross relatively easily. Over the years key players have come to know each other in several settings. The fourth quote especially confirms this observation, and pinpoints that smallness can be a double-edged sword.

2002: “Durable institutional relations in spite of personal withdrawal”

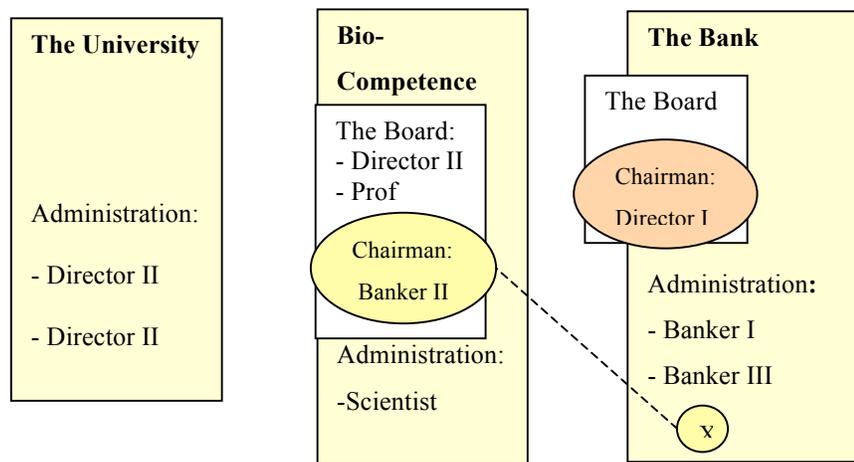


Figure 2: Year 2002 – “Durable institutional relations in spite of personal withdrawing”

In 2002, the university Director I was chairman of the Bank, but had resigned from his position at the University. Bio-Competence wanted to have the Director of the university as a member of the board, and the new director accepted. With the resignation of the university Director I the links between the institutions based on personal relations weakened.

However, institutional stability was maintained by the decision of the new university director to join the board of Bio-Competence. In addition, formal links between the Bank and Bio-Competence had strengthened over the years. Banker II had, for many years, a central position in the Bank. Some years before the emergence of Bio-Competence he took a new job and moved to another town. However, his new job kept him in contact with friends and former colleagues in the Bank. The relation between Bio-Competence and the Bank was strengthened with the involvement of Banker II in the board of Bio-Competence.

“I knew Banker II, but he had nothing to do with Bio-Competence. It was first when I ended my chairmanship in Bio-Competence that Banker II was appointed as a board member.” (The Prof)

In 1998 one person, the university Director I, had multiple roles in linking the three institutions. In 2002 this changed, when he resigned as university Director. From now on the relation between the university and Bio-Competence became more institutionalised. A formal contact between the Bank and Bio-Competence was enhanced by the involvement of Banker II in the board of Bio-Competence. However, not surprisingly there was a personal link between the Prof and Banker II.

2004: “Institutional stability – maturing of relations”

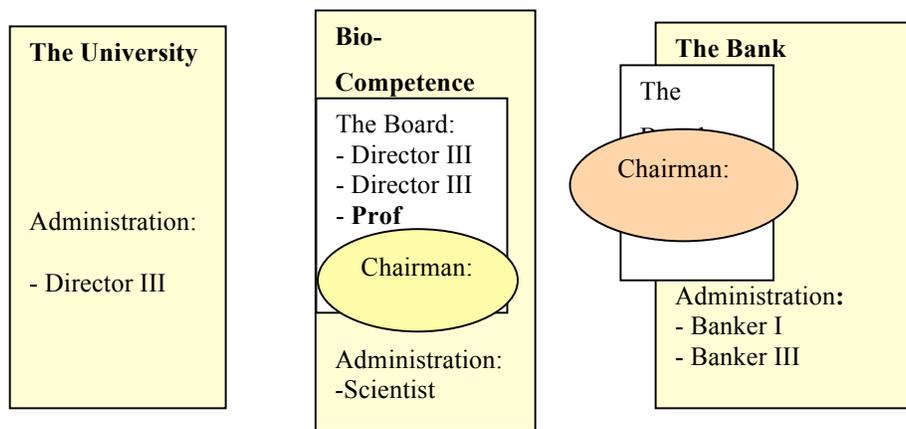


Figure 3: Year 2004 – “Institutional stability – maturing of relations”

In 2004, The Bank gave Bio-Competence another financial donation. Once more there was a new director at the university, and – in sticking to traditions - he too became member of the board of Bio-Competence. The university Director I was still the chairman of the Bank’s board of directors, while the Banker II still worked closely with the Bank and maintained his personal relationship to the Prof and the Banker I.

The formal links between these key persons became weaker over the years, as they resigned from some of their formal positions. In spite of this there were still relational ties between the two institutions. This is illustrated through a quote from Banker III:

“When the application was treated there was not much formal contact between the bank and Bio-Competence. We had a good relationship and supported their activity. The contact was very sporadic, and only updated through the annual

report. I did not have any deep knowledge about Bio-Competence until the last 2-3 years. Since we were the founders we were informed about their development. I think the good atmosphere that was created during the start-up had maintained".
(The Banker III)

As the years went by, Bio-Competence grew stronger as an institution. This was largely due to the work and commitment of the Scientist. He was a strongly committed scientist, employed full-time and collaborating well with the local university, national politicians, and national and international organisations. As mentioned earlier - in a quote at page 234- the Scientist wanted to commit the institution to science, and avoid any involvement in commercial and financial issues. However, the following quote illustrates how his feelings towards the bank evolved:

*"The experiences I have had directly and indirectly with the bank, have been positive, without any exceptions. They have convinced me that when talking loud about contributing to the knowledge-based industry in Northern Norway, they really mean it. It is not some kind of slogan they use to achieve advantages in other areas...The fact that I personally know the communication advisor of a relatively large bank is not evident when working at a university."**(The Scientist)*

This quote indicates that trust is something you earn over time. Here trust seems to reduce scepticism between the different spheres of academy and finance.

2005: “Institutionalized relations maintained in spite of key actors withdrawing from formal roles”

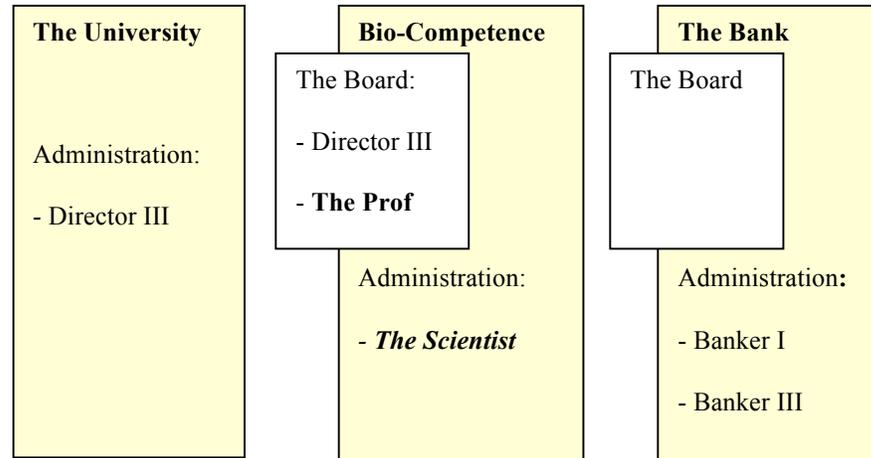


Figure 4: Year 2005 – “Institutionalized relations maintained in spite of key actors withdrawn from formal roles”

In 2005 the key persons linking the University, The Bank and Bio-Competence had departed from their positions. The first university Director I was no longer chairman of the Bank, and Banker II had resigned as board member of Bio-Competence. When Bio-Competence gave a presentation to the Board of the Bank in 2005, this took place before a new audience. Bio-Competence presented its scientific achievements, political involvement and the commercial prospects of its activity. The Board of the Bank found the presentation interesting. It was immediately decided that the Bank should participate financially in establishing a commercialisation unit for Bio-Competence. Bio-Competence was invited to design the activity and organise the commercialisation unit. As the following quote indicates, such a decision is unique.

“We knew that their activity was related to the development of knowledge, in addition as knowledge provider at larger conferences...They contribute in a larger network, we had no reason to doubt them...To commercialise knowledge is far beyond the core activity of the bank. Our competence within biotechnology or

bio-business is marginal, and we had to trust the scientists who knew what they were talking about.” (The Banker III)

There are good reasons to believe that this decision was based on the long-term relationship and the mutual trust that existed between Bio-Competence and the Bank.

2006: “*The start-up of Bio-Business*”

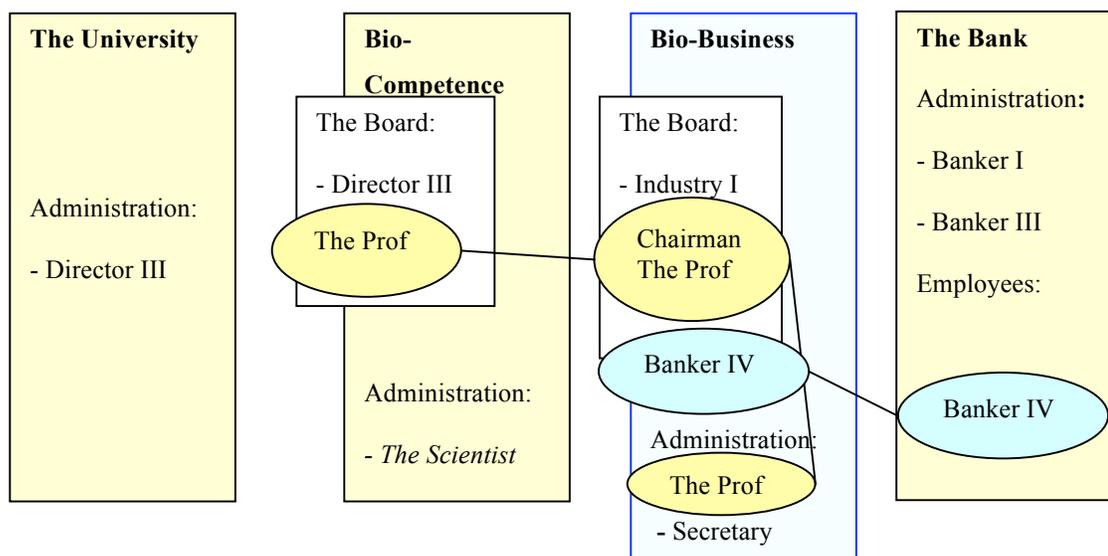


Figure 5: Spring 2006 – “The start-up of Bio-Business”

Bio-Business was established in 2006. The board of Bio-Business was composed of The Prof, The Banker IV and The Industry I. The Prof was also employed part time in Bio-Business. He also worked as a professor in the University and was a member of the Board of Bio-Competence. His presence in Bio-Business assured an efficient information flow between Bio-Competence and Bio-Business. The Banker IV representing the Bank brought financial knowledge and experience to Bio-Business and secured the information flow between the Bank and Bio-Business. The Industry I was a representative of the local biotechnology industry. After finishing his Master of Fishery Science he had started innovative firms within biotechnology. The Prof tells why he considered the board an important source of resources:

“We could not afford a large administration and needed a competent Board. Then it became important to get board members who together could make a good business plan. Therefore we tried to fill up the positions with the C’s: competence, capital and commercialisation. I played in Industry I to the board.” (Prof)

He further evaluated the board of Bio-Business and Bio-Competence in the following way:

“In Bio-Business; Industry I has an extremely good network in Nordic and international biotechnology who nobody else has. Banker IV, as a company advisor, has a very good network within business structures in Tromsø and in Northern Norway in general. In Bio-Competence, the scientist has a unique international network in terms of his extreme engagement with gene ecology. The administrator has an established network within Norad, UNEP, who has made a success of financing this institution. The chair of the board has a political network worth gold. Everybody have further relations, which can make this commercialisation possible. “

When Bio-Competence was started in 1998 it was supported by the University and the Bank. This support was formalised through board memberships. In 2006 when Bio-Business was set up, the same mechanism is at work, through the involvement of board members.

3.51 Discussion

The case illustrates how personal relations affect the links between the University, Bio-Competence, the Bank and the later Bio- Business. In the first instance the emergence of Bio-Competence was a product of a commitment to science, personal relations and individuals in key positions in the University and in the Bank. These relationships helped Bio-Competence getting access to the resources needed for its development. The relationship established between Bio-Competence and the Bank facilitated the set-up of a commercial company. Science became business due to personal relations connecting science and capital. The actors involved were familiar with each step in the process,

because they knew each other and were related to each other in the capacity of their institutional roles. The bank was very concerned about maintaining the good relationship towards Bio-Competence and was careful not to ‘overrun’ the research institution, jeopardising their independence and integrity in the process. As a financial institution, however, the Bank naturally had commercial interests and viewed its contribution as a commercial investment.

The cumbersome and slow process from research (Bio-Competence) to commercialisation (Bio-Business) reflects the difficulties of generating spin-offs within the field of gene ecology. As one of the informants put it: “*It is impossible to know how the market will react and how good the sale would be for products that are not yet developed*”. The institutions had different competences and the key players needed to link these together. The boards of Bio-Competence and later of Bio-Business became the strategic tools in this process. By carefully selecting board members with complementary networks and qualifications in science, finance and business, the boards became the workhorses of the process.

The main conclusion – or finding - of this case study is that the successful commercialisation of academic knowledge is a result of *personal relations and institutional stability*. The institutional links made it possible for key players to move more easily between formal positions through board membership in these institutions. The flexibility and personal links between board members thus created, seems to be the clue in this case. Such structures and processes raise some theoretical issues discussed below.

The initial relations between the university, Bio-Competence and the Bank can be characterised as a form of *brokerage* (Lin 2001). The director of the University bridged the institutions through his board memberships in all three of them. The Prof had a network inside the Bank, through different board memberships in local and regional businesses. The Prof, as a skilled scientist with commercial talents, was a recognised actor in local industry and the Bank when trading in the capital market. Hence, the advantage created by the location of Bio-Competence in a bridging structure of ‘social

attainment' relationships constitutes a form of social capital that gave Bio-Competence a head start. Bridging clusters of networks facilitate the smooth flow of information and resources. In our case, bridging between academic, financial and business circles created a better understanding of how to transform science into business.

This initial brokering between the institutions developed into relations that over time created *trust*. The key players appreciated each others' *competence*, ie the ability to act according to agreements and mutual expectations (cf the presentation for the Bank). They also trusted each other's intentions, ie the *will* to act properly (attention, commitment, lack of opportunism, absence of cheating) (Nooteboom, 2002). The Prof and the Scientist had the role of *go-betweens* (mediators) (Nooteboom 2002) in managing the relations between the institutions as they created arenas and acted so that mutual respect, learning became possible. The logic of collaboration between the institutions was based on the fact that they needed each other's resources and knowledge in order to reach a common goal of establishing a commercial enterprise. The case illustrates how the go-betweens in the different institutions used each other as means to reach that goal. Being strongly dependent on each other makes trust a crucial factor. The number of participants is limited, and those involved are individuals who - due to their close relationships - are trusted with membership on the board. The result is a kind of 'relational economics' on an institutional level. Institutional stability becomes a 'safety net' in the creation of a new business. Hence this is a story of how *personal relations shape stable institutional relations*.

The development of relations between the University, Bio-Competence and the Bank also illustrates the mechanism of *closure* (Burt 2005). The mechanism here is called 'third party', known from balance theory in psychology (Heider, 1958). When a professor and a banker both are positively related to a university director (the same third party), they are likely to develop a positive relation to one another. Hence, closure in a network facilitates trust. The interesting aspect is that the story of Bio-Competence and Bio-Business in fact deals with several 'third parties' issues. The actors representing different institutions have the same *references*. References again deal with *reputation*, which is a kind of adaptive mechanism of control of behaviour when people monitor and

discuss other people. As the quotations illustrate, the key actors knew one another from the very beginning, as they had the same references. Reputation and credibility became a real issue when the Scientist presented the plans for the Bank. Burt (2005:109) argues that it is the reputation mechanism by which closure lowers risk that would otherwise inhibit trust. Where that trust is an advantage, closure is social capital. Hence, this case illustrates how both brokerage and closure-shape generate social capital.

Since the story of Bio-Competence and Bio-Business draws attention to the significance of connectivity and cohesiveness, one should also ask whether too close connections may inhibit innovation. Research shows rather that intense connectivity homogenises the pool of resources and information available to a group, and high cohesiveness may lead to sharing of common, rather than new information (Uzzi and Spiro, 2005). Strong ties are beneficial in the exchange of fine grained-information, tacit knowledge, trust-based governance and resource co-optation (Krackhardt 1992; Starr and Mac Millan, 1990; Rowley *et al* 2000). This was conducive in carrying out the plan from research to commercialisation, as the boards were vigorous. The strength in this case is the ability of the participants to complete the mission. But trust also has its limits, as too much of it can lead to rigidity and lack of innovation (Nooteboom 2006). Bio-Competence, as a radical innovation, needed to obtain legitimacy to overcome the 'liability of newness', a more innovative organisation depends more on organising institutional support and legitimacy (Baum, 2000). The scientist mobilised his network to obtain this legitimacy (cf Aldrich and Fiol 1994). Weak ties to the political, governmental and academic spheres are for accessing novel information (cf Granovetter 1973; Burt 1992). The last quote from the Prof (page 246) illustrates how the board members network reaching industrial, academic, business and political spheres are likely weak ties bridging Bio-Competence and Bio-Business to new information and resources.

Although the strength of ties is not measured in this study, the quotations seem to indicate that the processes from Bio-Competence to Bio-Business both contained elements of strong and weak ties. More precisely it seems that the establishment of (the board in) Bio-Competence had more elements of cohesiveness and strong ties, while weak ties were important to gain socio-political legitimacy. The establishment of Bio-Business was

made possible after a long time of networking for preparing the commercialisation of the research. Trust between the involved parties made it possible, but the weak tie elements were used more strategically when establishing the board. This fairly anecdotal evidence supports prior research of radical spin-offs (Elfring and Hulsink 2003; Elfring and Hulsink 2007).

Two issues concerning the context of networking are also present in the case.

The informants' expressed beliefs that "this would not have happened elsewhere" make the metaphor of "*small is beautiful*" come to mind. Their reflection and evaluation of who they have a nodding acquaintance with, who they know in other institutions (typically business versus academia) seems to be based on an awareness of Tromsø as a small place where people mingle easily. The interesting aspect pertaining to the conditions for commercialising academic knowledge is the interweaving of relations between the academy and the business community. As the banker put it: "We often mix social relations with knowledge relations". The case seems to illustrate a contextual advantage for networking in that the town is relatively small and that there are no 'iron walls' between academia and business. A transparent milieu creates meeting points, where information can be exchanged and knowledge about others can be acquired.

Starting Bio-Competence is also a story of the challenges and advantages facing *academic entrepreneurs* when engaging in activities *far away from the academic Fatherhouse*. The challenges relate to not being a member of an academic milieu and having immediate collaboration partners. Not being a mature, acknowledged academic department, is also a problem. The need to collaborate with individuals and institutions outside the university may, in this case, be an advantage. By searching for partners, one can avoid prejudice. Being 1000 miles north of Oslo, international collaboration becomes just as interesting and convenient as contact with the academic milieu in the capital. The story of Bio-Competence and the emergence of Bio-Business show how actors choose their collaborators on the basis of their own interest, and on their common ambitions and goals.

3.52 Conclusion

This case study points to the significance of relational processes and structures at the micro-level for commercialisation academic knowledge. It reveals a double-edged sword in making people from institutions representing science, capital and business work together. Personal relations affect the connection between the institutions, through the creation of trust. Trust seems to smoothed out the cultural differences between academia, finance and business. The academic knowledge would very likely not have been commercialised, if it had not been for the creation of trust between the key players. The closely-knit network was effective in mobilising and linking the necessary resources to reach a common goal: give birth to a commercialisation company. In addition to this, collaboration also makes it possible for each institution to reach their individual goal (ie produce science, profits and manage successful enterprises). The other side of the coin may show up in the further development of the commercialisation company. In developing external business and market relations, nationally and internationally, risk is involved and other governing mechanisms are likely needed to secure access to resources. More research is therefore needed on the issues and consequences of trust and risk and the mix of strong and weak ties for acquiring the resources needed for the successful commercialisation of science. The case also invites further research on the role of boards as strategic tools in commercialising academic knowledge.

3.53 References

Aldrich J.E. and Fiol C.M. (1994) Fools rush in? The institutional context of industry creation, *Academy of Management Review*, 19, 4, 645-670

Audretsch, D. B. and E. Lehmann (2006). "Entrepreneurial access and absorption of knowledge spillovers: Strategic board and managerial composition for competitive advantage." *Journal of Small Business Management* 44 (2): 155-166.

Audretsch, D. B. and E. E. Lehmann (2005). "Does the knowledge spillover theory of entrepreneurship hold for regions?" *Research Policy* 34 (8): 1191-1202.

Audretsch, D. B. and P. E. Stephan (1999). "Knowledge spillovers in biotechnology: sources and incentives." *Journal of Evolutionary Economics* 9(1): 97-107.

Axelrod R.1984. *The Evolution of Cooperation*. Basic Books, New York

Bania, N., R. W. Eberts and M. S. Fogarty (1993). "Universities and the Startup of New Companies - Can We Generalize from Route-128 and Silicon Valley." *Review of Economics and Statistics* 75 (4): 761-766.

Baum, J. A. C., T. Calabrese, et al. (2000). "Don't go it alone. Alliance network composition and startups' performance in Canadian biotechnology." *Strategic Management Journal* 21(3): 267-294.

Brulin, G. (2001) *The Third Task of Universities or How to Get Universities to Serve their Communities*. London: Sage

Burt, R. S (2005) *Brokerage & Closure. An Introduction to Social Capital*.Oxford University Press.

Chiesa, V. and A. Piccaluga (1998). Transforming rather than transferring scientific and technological knowledge - the contribution of academic 'spin out' companies: the Italian way. In R. Oakey and W. Daring (eds.). *New technology-based firms in the 1990s*. Volume V. Paul Chapman: 15-31.

Chapple, W., A. Lockett, D. Siegel and M. Wright (2005). "Assessing the relative performance of UK university technology transfer offices: parametric and non-parametric evidence." *Research Policy* 34 (3): 369-384.

Elfring, T. and W. Hulsink (2003) "Networking in Entrepreneurship. The Case of High-technology firms", *Small Business Economics*, 21:409-422.

Elfring, T. and W. Hulsink (2007) "Networking by Entrepreneurs: Patterns of Tie-Formation in Emerging Organizations" *Organization Studies*, 28 (12):1849-1872.

Emirbayer, M. and J. Goodwin (1994). " Network Analysis, Culture, and the Problem of Agency." *American Journal of Sociology* 99 (6): 1411-1454.

Granovetter, M. S. (1973). "Strength of Weak Ties." *American Journal of Sociology* 78(6): 1360-1380.

Heider, F. (1958) *The Psychology of Interpersonal Relations*. New York: John Wiley.

Krackhardt, D. (1992) "The strength of strong ties. The importance of *philos* in organizations. In *Networks and organizations: Structure, form and action*. N. Nohria and R.G. Eccles (eds.) Boston: Harvard Business School Press.

Lin, N. (2001) *Social Capital. A theory of Social structure and Action*. Structural Analysis in the Social Sciences, 19. Cambridge University Press.

Lockett, A., A. Vohora and M. Wright (2003). Universities as incubators without walls. *The International Journal of Entrepreneurship and Innovation* 3 (4):245-256.

Marvik, O. J. (2005). Norwegian life science industry. Overview and status, *Innovation Norway*: 20.

Meyer, M. (2003). Academic entrepreneurs or entrepreneurial academics? Research-based ventures and public support mechanisms. *R&D Management* 33(2):107-115.

Mitzruhi, M.S. (1994) "Social Network Analysis: Recent Achievements and Current Controversies". *Acta Sociologica*, 37:329-343.

Ndonzuau, F.N., F. Pirnay and B. Surlemont (2002). A stage model of academic spin-off creation. *Technovation* 22:281-289.

Nilsson, J.E. (2006) (Ed) *The Role of Universities in REgional Innovation Systems - A Nordic Perspective*. København: Copenhagen /Business School Press

Nooteboom, B. (2006) *Trust. Forms, Foundations, Functions, Failures and Figures*. Edward Elgar.

Oliver, A.L. and Montgomery, K. (2000) "Creating a hybrid organizational form from parental blueprints: The emergence and evolution of knowledge firms", *Human Relations*, Vol.53 (I): 33-56.

- Powell, W. W. and L. Smith-Doerr (1994). Networks and Economic Life. In *The Handbook of Economic sociology*. N. J. Smelser and R. Swedberg (editor). New York, Princeton University Press: 825.
- Powell, W. W., K. W. Koput, et al. (2002). "The spatial clustering of science and capital. Accounting for biotech firm-venture capital relationships." *Regional Studies* **36**(3): 291-305.
- Putnam, R. D. (1993) *Making Democracy Work: Civic Traditions in modern Italy*. Princeton N.J.; Princeton University Press.
- Rowley, T. D. Behrens and D. Krackhardt (2000) "Redundant governance structures: An analysis of structural and relational embeddedness in the steel and semiconductor industry." *Strategic Management Journal*, 21/3:427-449.
- Shane, S. (2004). Encouraging university entrepreneurship? The effect of the Bayh-Dole Act on university patenting in the United States. *Journal of Business Venturing* **19**: 127-151.
- Starr, J. S. and I. C. MacMillan (1990) "Resource cooptation via social contracting: Resource acquisition strategies for new resources." *Strategic Management Journal*, 11/1:79-92.
- Thursby, J. G. and S. Kemp (2002). "Growth and productive efficiency of university intellectual property licensing." *Research Policy* 31 (1): 109-124.
- Uzzi, B. and J. Spiro (2005). "Collaboration and creativity. The small world problem." *American Journal of Sociology* **111**(2): 447-504.

III.6. Integrated Innovation in its Organisational Context *by* *Peter Totterdill*

This chapter attempts to redress the overwhelming product focus of much innovation policy debate at EU and national levels in Europe. Such traditional perspectives place considerable emphasis on the need to support the specific components (venture capital, research infrastructure, regulatory frameworks, marketing support etc) while ignoring the workplace conditions which create the context for innovation. Integrated innovation, in contrast, takes a systemic perspective, one in which work organisation, inter-organisational relationships and innovation in products and services are inextricably intertwined as part of a dynamic and continuous process - a triple helix, though one with a much greater focus on dialogue process than the triple helix model of institutional collaboration presented elsewhere in current literature. Work organisation changes in response to the continuous redefinition of challenges and opportunities; workplace innovation and product/service innovation become mutually interdependent.

The 'high road' of work organisation as a condition for integrated innovation

What should we expect work to be like in the 21st century? Diversity is clearly part of the answer. Differences in work are marked between, for example, the famous small firm clusters of Northern Italy, the paradigmatic team-based organisations of Scandinavia, the re-engineered corporations influenced by US or Japanese management theory, and the persistent rump of traditional Fordist organisations. The emerging concept of a 'high road' has, in recent years, tried to give meaning and shape to this evolving diversity. The evidence base for the high road can be found in the experiences of hundreds of companies during a period of forty years (see for example Trist et al, 1963; Emery and Thorsrud, 1969), all of which changed their thinking about human and organisational factors. It has no prescriptive form but the high road does distinguish between

organisational strategies based on sustained innovation and those based on short-term cost-driven factors.

Above all the idea of a high road suggests the possibility of convergence between values and objectives previously seen as being in opposition to each other. Can Europe achieve sustainable competitiveness and high levels of employment through the enrichment of working life? In short can we unite customer satisfaction and job satisfaction? In many ways this discussion is inseparable from a broader one about the nature of European competitiveness itself. Short-termism driven by shareholder expectations of rapid and continuous returns certainly reduces the likelihood of such convergence; but equally it undermines the prospects for long-term business growth in global markets where Europe's competitive advantage lies in innovation (Andreasen *et al*, 1995; see also Blackaby, 1979, for a classic discussion of short-termism and the competitiveness of the UK economy). In contrast the high road proposes a model of European competitiveness based on sustainable capacity for innovation, both inside the firm and in its wider environment.

The journey to the high road is very problematic and there is no evidence to indicate the existence of a mass movement in this direction - indeed rather the opposite (European Foundation, 1998). Yet evidence is there to suggest that the potential for such convergence is more than utopian fantasy. The Hi-Res project³⁰, an analysis undertaken on behalf of the European Commission in 2002 sought to piece together these fragments of evidence in ways that show what the full picture might look like - in much the same ways as an archaeologist tries to reconstruct the shape of a mosaic from just a fraction of the original pieces. Hi-Res provides some evidence based on an overview of the current literature, and an analysis of more than a hundred case studies. In particular the project aimed to provide a better understanding of the high road by analysing the concrete

³⁰ The Hi-Res Project (*Defining the **H**igh Road of Work Organisation as a **R**esource for Policy Makers and Social Partners*) undertaken for the European Commission by a consortium of partners from 6 Member States led by The Work Institute at Nottingham Trent University/UKWON. See Totterdill, Dhondt and Milsome, 2002 or www.ukwon.net.

experiences of organisations throughout Europe as they struggle towards change. Crucially this is not just about the dynamics of change inside each organisation, but the extent to which workplace innovation is supported or impeded by the wider environment in which the organisation exists.

This importance of the 'high road' approach is that it seeks to identify the potential for 'win-win' outcomes - the scope for convergence between organisational performance, employment and quality of working life. This stands in stark contrast to 'low road' approaches driven by short-term contingency and/or cost considerations. However the 'high road - low road' distinction reveals a significant degree of ambivalence. At an instrumental level the language and tools used by practitioners of the high and low roads demonstrate remarkable similarity. Concepts of teamworking and autonomy, for example, play a central role in both cases yet there are marked differences both in the processes that characterise the introduction of such innovations and in their effects.

The danger for the high road lies in the seductive nature of the 'quick fix' for managers under continuous pressure from customers and shareholders. Management consultants and organisational gurus continually stress the 'bottom line' benefits of change, emphasising immediate and tangible returns in terms of cost reduction and customer satisfaction. In practice such returns are rarely achieved without costs to employees and, arguably, to longer term competitiveness. Not only is the empowerment and participation of employees defined within strict parameters in this low road approach, but it can also lead to job intensification rather than job enrichment (for example Skorstad, 1992; Turnbull, 1988). Apparent autonomy can be granted to employees with the implicit understanding that, individually and collectively, they will internalise business imperatives thereby removing the need for direct supervision (Peters, 2001). This places employees in contradictory and typically stressful situations, compelled to achieve externally driven targets in ways which can often only be realised through self-exploitation. There is no doubt that such experiences of change in work organisation are common, leading to widespread scepticism and resistance to further workplace innovation. Apart from their adverse effects on workplace health and wellbeing, the job-intensifying aspects of low road innovations damage ability to create a workplace

environment in which employees make full use of their competencies and creative potential to make improvements and innovations in products and processes. In other words short-term productivity gains may be traded off against the innovative capacity required for sustainable competitiveness. Job intensification may also produce further instability in the form of increased employee absence and turnover.

While the high road and low road share common organisational characteristics, they are distinguished by the nature of the discourse around which change is constructed. Low road changes, typically driven by narrow measures of productivity and cost-control, are legitimised by narratives about ‘best practice’ and business need. In contrast high road approaches are defined by the common ownership of workplace innovation, grounded in organisational structures and practices that enable continual dialogue between management and employees, maintaining the possibility of achieving mutually advantageous outcomes. This dialogue is based on recognition by both sides that short-term gains in profitability or working conditions may need to be sacrificed to achieve more sustainable goals.

The high road focuses on improving organisational performance and competitiveness through continuous innovation in products, services and processes. The enlargement and enrichment of jobs is integral, allowing employees more control over their working environment and greater opportunities for innovation thereby enhancing learning, workplace health and quality of working life. Benefits identified from case study evidence include enhanced rates of innovation, greater responsiveness to customers, improved productivity, better quality, cost reduction and lower staff turnover. Increased competences resulting from such jobs enhance the employability of individual workers in increasingly insecure labour markets. At the macro level higher rates of innovation in products and services, combined with greater functional flexibility in labour market skills, lead to faster economic growth and new job creation.

The high road can be readily understood and agreed as a ‘headline’ concept, but it is much harder to define as a set of principles acceptable within the context of different research disciplines and contrasting national experiences. Indeed it would be

inappropriate to portray the high road as an internally consistent model equally applicable throughout Europe. The whole sphere of work organisation is, rather, a contested terrain on which different forces and interests interact continuously. This interaction creates a process of evolution in which hybrid outcomes reflect both the organisation's economic and social context, the nature of the dialogue within the organisation and the unique process of learning and experimentation it has experienced.

What distinguishes the high road from other approaches is that this process is grounded in the optimal resolution of contested stakes through inclusive and open dialogue involving both internal and external stakeholders. The question, however, remains: how do companies climb towards the high road of work organisation? How do they develop and capture the talents of a motivated and self-disciplined workforce?

Arenas of organisational change

We have briefly shown what the 'high road' is and why it is central to the future of competitiveness and employment in Europe. From this analysis however it is clear that it will not be easy to get there. The 'road to the high road' cannot be travelled through slavish adherence to a list of best practices or by attempting to follow a rational step-by-step process. Rather the 'high road' is essentially a process of continual learning, experimentation, adaptation and innovation.

While the logic of 'best practice' is pervasive, the supposition that there are definitive ways of organising - even for different types of enterprise - remains problematic. It is also inconsistent with the many findings that innovation and creativity are the key to sustainable competitive advantage, since 'best practice' largely relies on mimicking the innovative practices of others. We stress that workplace innovation cannot be defined in terms of the adoption and implementation of a series of blueprints to change discrete aspects of an organisation.

Although the traditional way to accomplish change is through the application of generalised concepts to specific problems according to a predetermined set of rules, it is now increasingly argued (see for example Fricke, 1997; Gustavsen, 1992) that this

approach has emerged as a roadblock rather than a motor for change in organisations. It is important, rather, to understand the complex learning paths which characterise change in real situations. Pettigrew (1987) for example is very critical of a-contextual approaches and argues for greater focus on the internal and external contexts which drive, inform and constrain change. Such commentators criticise the common perception within management texts that change is rational, incremental and thereby conducive to the use of normative change models. They argue instead that change is a dynamic and uncertain process that emerges through the interplay of many factors (Hague, 2001). In this analysis, the high road is a struggle to achieve a virtuous circle in which reflexive practices inside the organisation capture employee knowledge and experience while simultaneously stimulating the absorption of knowledge and experience from external sources. This creates a dynamic interaction between product or service innovation and organisational change.

Case study data provide useful rich description, but translation into 'key lessons' has been notoriously difficult. Part of the reason for this lies in a replication of the 'one best way' logic whereby analysts have attempted to make universal generalisations which simply cannot be supported empirically. Even those checklists or 'key learning points' which make no claim to universality have often failed to offer much more than a list of organisational truisms - useful, but failing to go beyond managerial commonsense (see for example Buchanan, 1999; Collins, 1998; Dawson, 1994). Another difficulty of the checklist approach is that many of the issues appear discrete when there is evidently considerable overlap between points of advice. It is difficult to tackle issues like 'partnership', 'teamworking' and 'culture' separately because the boundaries between them are obviously blurred.

Finally, many change recipes suggest that transformation occurs through a rational and incremental process. Lewin's analysis that organisational transformation occurs through linear 'freezing-unfreezing-refreezing' processes has provided the theoretical basis for many contemporary change agendas (Burnes, 1996). However a growing number of academics stress that the actual practice of change is far from tidy; rapidly changing markets, technologies and labour market expectations have rendered the logic of rational-

incremental change redundant - even assuming their practical relevance in the first place (Pettigrew, 1987).

An analysis is therefore required which:

- avoids prescription
- allows for change processes to be explored in ways which recognise the complex and untidy path which change may take
- moves beyond a list of 'key learning points' and offers opportunities for deeper analysis and exploration of the dilemmas and choices posed during the change process
- facilitates a more integrated analysis of overlapping themes and issues
- allows for the inclusion of external influences upon change processes.

External factors such as the market environment and the industrial relations context may well influence strategic choices made at the local level, but the approach challenges the suggestion that any single factor will explicitly determine the way in which an organisation will respond. The core of our interpretative model lies in understanding the complexity of the relationship between internal and external factors. Participation of employees from all levels of the organisation can be shown to improve the effectiveness and sustainability of change by utilising their detailed knowledge of work practices and increasing their sense of ownership of the outcomes. However the organisation should not be viewed as impermeable - multi-lateral interchanges of ideas and experiences with other organisations or intermediaries certainly enrich the quality of the innovation process. Similarly innovation processes within organisations may influence others in their sector, supply chain or region. Renewed research attention on sectors, company networks or clusters of interrelated activity may reveal how firms both learn from and contribute to the cognitive arenas in which they associate (Child and Smith, 1987). Likewise external knowledge, ideas and experience may initiate a process of learning and experimentation within individual enterprises, but it is unlikely that there will be indiscriminate adoption of external solutions without some form of adaptation and shaping by local stakeholders.

Organisational boundaries are also becoming blurred in operational terms, with the increasing dispersal of production and innovation vertically through supply chains and horizontally through sectoral and knowledge clusters. As the concept of integrated

innovation suggests, the network will arguably become the dominant organisational form of the 21st century. This possibility is considerably enhanced by advances in ICTs and the consequent emergence of the ‘virtual organisation’.

Our analysis starts with the high road’s emphasis on competitiveness through the continual reinvention of products and services, which places a considerable premium on the ability of an organisation to harness the tacit knowledge and creative potential of employees. It is central to the argument that this involves much more than the ability simply to recruit and retain employees with the necessary aptitudes and competencies. It requires a work environment which fully engages all levels of employees in planning, quality assurance, problem solving and innovation (Cook and Seely Brown, 1996). Building this work environment involves a complex and contextualised process of dialogue, learning and organisational innovation based on interdependent processes in which workplace partnership and employee involvement, job design and teamworking, and the creation and distribution of knowledge, are the principal organisational components. As we argue above, work organisation has to be seen as a reflexive process, not an end state.

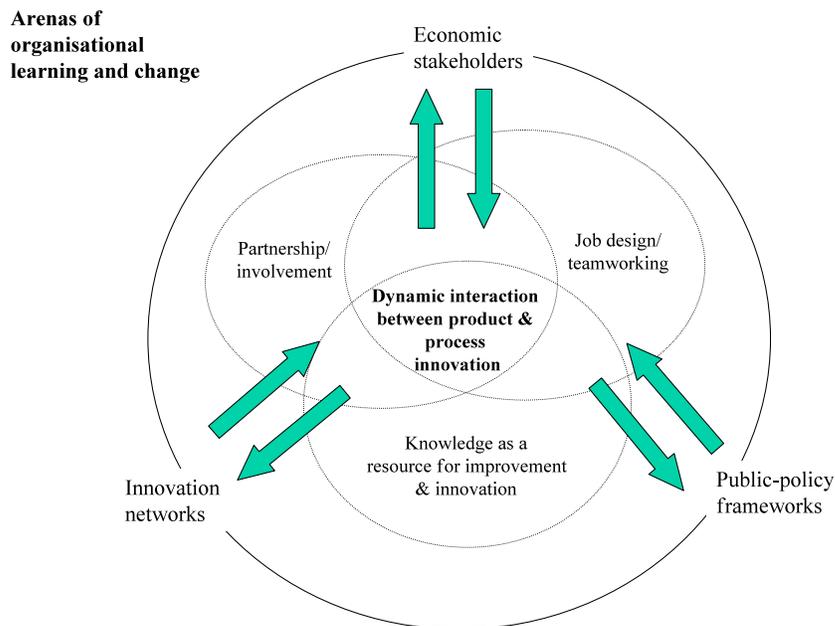


Figure 1: Arenas of organisational learning and change

Figure 1 identifies three organisational arenas of the high road characterised by a dynamic interaction between process and organisational design:

- knowledge, innovation and creativity are both valued and placed close to the heart of the work process at all levels of the organisation
- partnership and dialogue establish the preconditions for a workplace environment in which the instigation and ownership of innovation are widely distributed
- teamworking becomes a defining characteristic of all aspects of work, both routine and developmental. In this sense, it emerges less as a formulaic model than as an approach to work organisation which broadens job design and challenges both hierarchical and horizontal demarcations in order to optimise levels of agility and innovation. It also provides the day-to-day context for enhancing the quality of working life.

Between these organisational spaces lie a number of more intangible and interpretive ‘cultural’ practices, which both determine and are determined by the structure of work organisation. Communication, commitment and trust lie at the heart of sustainable change processes, and can be seen to lubricate or impede the process of organisational and service innovation.

These key organisational components interact with other dynamic contextual factors, notably new technologies. New technologies can broaden job profiles, increase the delegation of responsibilities to individuals and teams, widen the distribution of information, and increase the speed of product or service innovation. Technological change becomes integral to the process of organisational development, facilitating adaptation and adjustment in ways of working and learning. The challenge is to secure maximum coherence between technological possibilities and organisational needs rather than simply optimising the relationship between the machine and its operator.

As the model depicts, many issues for organisations are overlapping. For example, to support innovation through partnership and involvement, organisations may need to create ‘design space’ (Bessant, 1983) or organisational ‘slack’ (Boer, 1991). Engaging

employees in partnership practices may occur independently of their work tasks, but wider participation in decision-making also may directly impact their task environment. The intersections between the change arenas, therefore, provide the opportunity to discuss the interconnectedness of change activities. The activities highlighted in these areas are tentative, and there may be other issues which could be explored in these areas. In summary, the model is not intended to be prescriptive, but aims to be a framework in which change processes can be explored and in which the strategic choices of organisations can be visualised and deliberated.

In summary we have tried to develop a perspective in which organisational renewal is inspired and resourced by both external and internal factors; it portrays change as the dynamic interplay between people, structures, technology, cultures, histories, resources and the wider environment. Using the three conceptual arenas outlined in Figure 1 - organisational knowledge, partnership and teamworking - the analysis seeks to identify the common challenges, choices and design principles characteristic of high road organisations, aiming to avoid the prescriptions of some change management recipes and checklists. The approach stresses the interconnectedness of development strategies in these arenas, seeking to avoid the problems associated with reductionist accounts of change which focus on single factor effects and linear causalities. Organisational innovation is not a rational, incremental process and any attempt to capture its complexity will have major failings. However it is hoped that the approach developed here facilitates a more dynamic portrait of the characteristics of the high road.

Case examples, denoted by company names in italics, are drawn from the Hi-Res study cited above. The case studies can be found at www.ukwon.net.

Knowledge, innovation and creativity

As we have argued, knowledge, innovation and creativity are seen as the driving forces for the company of the future. It is increasingly the intellectual capital of an organisation - not the physical capital - which creates value and growth. Innovative potential is seriously constrained by Tayloristic models of work organisation that separate the

conception and planning of work on the one hand from its execution on the other. This separation fundamentally challenges the ability of employees to exercise control and autonomy in their working lives (Hague, 2000); equally it denies organisations access to the tacit knowledge and experience gained by employees, and limits the scope for product/service innovation and functional flexibility.

In practice it is difficult to define the characteristics of effective knowledge-centred organisations. Constantly changing customer and market opportunities ensure that there can be no universal formula for organisational design and practice, though it may be possible to identify the strategic dimensions. Steven Goldman et al (1995) summarise the types of agile behaviour crucial to smart organisations in terms of:

- customer focus
- commitment to intra- and inter-organisational collaboration
- organising to master change and uncertainty
- maximising the impact of people (entrepreneurial culture) and knowledge (intellectual capital).

In the innovative organisation, employees at all levels require an overview and insight into information across all aspects of production and service delivery: only then can they work creatively on new solutions. At BorgWarner, for example, all employees are entitled to see all the company's financial records, and twice a year the two plant managers address the entire workforce on the state of the business. East Midlands Electricity also adopted an open book policy, sharing business and market data with the workforce in a previously unprecedented manner.

Fricke (1983) places considerable emphasis on democratic participation in the workplace as a precondition for mobilising the innovative competencies of employees, stressing the need for involvement in formulating the aims of innovation as well as in the process of implementation. Amplifying this message, Kreienbaum (2001) provides a first-person account of building democratic participation as a means of harnessing employee ideas and knowledge for process improvement. This perspective is missing from much of the literature on the knowledge-based organisation, though reinforces the Hi-Res model's insistence on the interdependence of the three arenas of organisational learning and

change summarised in Figure 1. Harnessing the knowledge and creativity of the workforce cannot be considered a discrete management objective, detached from wider concerns with involvement and participation at both strategic and workplace levels.

Employee knowledge coupled to intelligent use of technology is increasingly the most valuable asset for an organisation in improving its capacity for innovation. French and Bell (1990) define an organisation's problem solving and renewal processes in terms of its ability to:

- constantly generate new ideas
- translate these new ideas into products or services
- ensure the widespread distribution of knowledge to employees throughout the organisation.

When Cap Gemini merged with Ernst & Young Management Consulting, the new organisation set out to offer its customers integrated solutions in the fields of both strategy and IT consulting, in other words a new synergy between technical and business skills. To support the new approach an inventory was made of good practice at global and national level in both enterprises; most of the IT consulting practices came from Cap Gemini and most of the management and strategy practices came from Ernst & Young. A comprehensive portfolio of working methods was thus made available to all employees in the new organisation. As part of its organisational change initiative a construction company, Skanska Sweden, sought to reduce production times, improve quality, cut costs and increase motivation. The company recorded the new working routines across its portfolio of projects that were then put on a company intranet for all to access.

Unfortunately the aspects of work that this project sought to change were mostly undertaken by white-collar workers; blue-collar workers were in any case excluded from the sharing of information and knowledge because they lacked access to computers.

Current experience suggests that the practice of knowledge management is not as successful in achieving the vision as it should be. Practice is predominantly technology oriented, with the primary emphasis on databases capable of capturing and centralising employee knowledge and experience. Little attention is directed to the limited use of knowledge management systems in actual practice (Damodaran and Olphert, 2000), to

the limited integration of such systems into the achievement of company goals (Strikwerda, 2000) or to democratic workplace organisation as a precondition for widespread knowledge creation and distribution (Fricke, 1983). Much of the literature only demonstrates the technological possibilities of databases, ignoring the social and organisational practices that facilitate the accumulation and utilisation of knowledge in workplaces. Indeed it often implicitly treats employees' intellectual property as a commodity to be expropriated, rather than recognising it as the basis for establishing participative forms of work organisation.

Stimulating and guiding the knowledge and innovation process is clearly crucial. Drawing on the results of an action-research project in Germany, Fricke (1983) emphasises the need to liberate employees', often suppressed, potential for innovation through learner-managed processes combining education and action within the workplace itself. Moreover knowledge needs to be continually refreshed by embedding complex patterns of internal and external interactions within working life.

An important distinction has to be made in this context between two important concepts: the learning organisation and learning within organisations (Shapiro, 1998). The distinction between the two is that the former represents more than the sum of the people within the organisation: organisational structures, cultures and practices can bring about learning and adaptation within their own right. Thus Garvin (1993) refers to the learning organisation as:

“an organisation skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights.”

At the most basic level, learning in this context can emanate from repeated tasks and activities, which result in progressive adaptation and greater efficiency. At a higher level however the learning organisation progressively modifies its structures, technologies, practices and cultures to maximise and utilise the learning capabilities of its people (Shapiro, 1998; Stalk *et al*, 1992).

Critically:

“Although organisational learning occurs through individuals, it would be a mistake to conclude that organisational learning is nothing but the cumulative result of their members’ learning. Organisations do not have brains, but they have cognitive systems and memories.” (Hedberg, 1981).

Organisational structures, technologies, practices and cultures either help or hinder organisational learning and innovation. This re-emphasises the importance of the distinction between individual and organisational learning. Argyris (1979) distinguishes between single-loop learning (in which the need for improvement is identified by individuals but where the objectives and policies of the organisation remain essentially unchanged) and double loop learning in which the organisation has the capacity to reflect on itself and to develop appropriately adaptive behaviour (Shapiro, 1998). In this context double-loop learning can clearly be identified as an essential precondition for the reflexivity characteristic of the high road, echoing the emphasis on dynamic balance between organisational innovation and product/service innovation. However there is also widespread agreement that organisational learning is dependent, at least in part, on learning by individuals within those organisations (Shapiro, 1998). The need therefore is for a better understanding of the nature of knowledge and how it is manifested within organisations.

Most definitions of knowledge follow Polanyi (1966) in distinguishing between tacit and explicit knowledge. Tacit knowledge is typically learnt by doing and not articulated. Explicit knowledge can be learned in a number of ways – from books, courses or group interaction for example. Nonaka (1994) focuses on the way in which knowledge is created in organisations through conversion:

- from tacit to tacit knowledge, for example in team-based organisations in which the sharing of experiences and perspectives is facilitated through observation and practice
- from explicit to explicit, achieved through social processes including meetings, team development, inter-team communication, the documentation of existing knowledge and the shared use of IT systems

- from tacit to explicit, which takes place through meaningful dialogue in which team members are able to articulate practices normally taken for granted
- from explicit to tacit, a process closely linked to experimentation and learning-by-doing.

Nonaka argues that the creation of organisational knowledge rests on a ‘dynamic interaction’ between the four modes of knowledge conversion. Certainly this shifts the focus from individual learning to the interaction of individuals within the organisation. From this perspective, the design of work organisation determines the extent to which the conditions for such interaction are provided through the provision of opportunities for dialogue, teamworking and innovation in day-to-day work. For example Esbjerg Centralsygehus, a Danish county hospital, found that lack of interdisciplinary co-operation was a barrier to creating both physical and social space for dialogue between staff, and has developed team-based work practices to address this.

Autoliv, a Swedish manufacturer of automotive products, set out to develop teamworking as a means of using more of the organisation’s knowledge in its production and development work. It introduced just-in-time techniques, target-monitored teams and new approaches to product development. As well as generating faster reactions to market requirements, a better capacity to meet delivery deadlines and lower costs, the result has been a considerable improvement in the capacity for innovation with turnover increasing by 800% over ten years.

Regular team meetings play a key role in everyday co-ordination, though the ability to capture and share experiences, and promote reflection, may well require additional investments of time. Weekly meetings may provide the opportunity for deeper reflection on working practices. A Dutch building company, Hollandse Betongroep, has self-managed construction teams. They write task plans, manage their own budgets and are responsible for safety, quality, logistics and materials, as well as for completing the construction work on time. There is a weekly meeting where all these issues are discussed, but which also provides opportunities for dialogue on a wider range of issues and can be a significant source of workplace innovation.

As these case study examples suggest there is widespread evidence to suggest that teams are the key-learning unit in organisations (Argyris, 1992; Kofman *et al*, 1993; Senge, 1990; Stata, 1989; Takuchi & Nonaka, 1986), though it is critical to understand the characteristics of team practice which make this possible. Nonaka (1990) refers to the role of ‘redundancy’ (perhaps better described as organisational slack): in short providing the organisational spaces in which individuals can come together to share knowledge and to consider new perspectives. As several of the Hi-Res case studies demonstrate, this both challenges traditional hierarchical and horizontal demarcations and demands that all employees have equal access to company information and creative opportunity. Ericsson Radio in Sweden, for example, actively encourages all employees to use its “Green Rooms” at any time for personal reflection, de-stressing or creative dialogue (Hague, den Hertog, Huzzard and Totterdill, 2003). This approach stands in stark contrast to those accounts of Japanese quality circles in which each worker is expected to contribute suggestions for improvement at regular, perhaps weekly, intervals (Guest, 1998) - a distinctively ‘low road’ approach to innovation.

Likewise the measures used to assess organisational performance are critical to sustaining knowledge creation and creativity (Jervis, 1998). In an environment which places a premium on the ability to reinvent products and services continuously, ‘productivity’ needs to measure an organisation’s level of innovation and not just its quantitative outputs.

However the organisational locus of innovation is becoming hard to locate (Jervis, 1998). Innovation is increasingly associated both with intra- and inter-organisational networking rather than individual research teams or enterprises, a factor which will be discussed in the section on teamworking later in this chapter.

In summary we have argued that organisational performance increasingly relies on the ability to develop and deploy employee knowledge as a shared resource for continuous improvement and innovation. It is this which drives the emergence of new forms of work organisation in Europe, hinging critically on workplace partnership and involvement, job

design and teamworking, as well as employment patterns and the use of technology. These issues are explored below.

Workplace partnership, involvement and participation

Differences in workplace social partnership in EU member states reflect wide variations in European culture, industrial relations heritage and trade union strength. In Germany for example works councils have legal rights and work closely with trade unions, which themselves enjoy certain constitutional guarantees. In contrast in the UK, with its strong voluntarist tradition, employers and government will not willingly embrace legally empowered models of employee representation. Scandinavian co-determination approaches are frequently cited as having produced an approach to industrial relations in which both parties share a sense of responsibility for the success of the organisation. The Netherlands also has very low strike figures and a well-established system of works councils. Dutch unions are much weaker than in Germany and works councils therefore operate almost independently from trade unions.

There may also be differences between sectors in particular countries, such as that between the pattern of industrial relations traditionally seen in manufacturing with its high union density, and that seen in the service sector where union densities tend to be lower. There may also be differences between the public and private sectors.

At its most basic level workplace partnership is a way of dealing proactively with industrial relations issues, ensuring early consultation on pay and conditions, employment changes and organisational restructuring. However emergent thinking moves workplace partnership away from its traditional focus on industrial relations, recasting it as a potentially important driver of, and resource for, organisational innovation in the broadest sense (Dawson, Hague, Knell and Totterdill, 2002). In Ireland, for example, social partners and government identify workplace partnership as central to the modernisation of work organisation (Savage, 1999; Sharpe & Totterdill, 1999). Involving employees in both design and implementation activities can help to ensure 'ownership' of the process and alleviate some of the problems of inertia and innovation decay seen in many projects.

In this respect, partnership is not viewed as another managerial fad for coercing employees to endorse management strategy, but a framework for animation and driving innovation.

The Irish experience demonstrates that participative forms of work organisation can have beneficial effects on the climate of industrial relations. Many organisations were prompted to move to partnership by a history of poor industrial relations, manifested in strikes, which prompted both management and unions to conclude that there must be a better way of relating to each other. At Waterford Crystal, for example, a three-month strike, a 25% cut in wages and a halving of the workforce was a grim starting point for a partnership relationship, which began in 1994 with the signing of a new agreement. Since then unions and management have worked constructively on the restructuring of the plant's manufacturing function, backed by heavy investment in training and information and consultation. The case study evidence shows that this process has not been without setbacks, but that structured dialogue can at least identify the potential for gainsharing through workplace innovation.

Partnership and participation in their fuller senses have to permeate all levels of the organisation. Representative structures and measures such as partnership agreements, works councils or employee directorships may play an important role in anchoring partnership firmly within the practice and culture of an organisation. However they are not in themselves sufficient to ensure the direct involvement of employees in day-to-day decision-making, enabling their full knowledge and experience to be utilised in identifying opportunities for innovation.

Direct forms of partnership may be introduced to deal with a wide range of issues, for example:

- steering and informing organisational change
- reviewing performance at all levels of the organisation
- initiating contact with other stakeholders
- devising alternative reward structures
- reviewing working practices and working time

- considering technological options
- introducing teamwork
- implementing family friendly policies
- assessing and reviewing the role of management
- harmonising partnership and industrial relations developments
- anticipating potential legislative impact.

In part such direct employee involvement is a product of effective job design and teamworking (see the next section of this chapter) but wider measures such as permanent partnership forums (Savage, 1999) or ad hoc change conferences (Gustavsen, 1996) - both of which establish avenues of dialogue bypassing conventional line management structures - are important ways of maximising the innovative potential of employee involvement and participation.

Blue Circle Cement moved to high levels of employee involvement and participation as a result of a partnership agreement entered into when the company faced difficulties in the 1990s. Blue Circle has mechanisms for both representative and direct participation. Local action teams bring together managers and shop stewards at each plant to discuss ways in which plant efficiency can be improved. These local teams quickly identified dozens of ideas to improve the operation of the plant. In addition there is a company-wide action team consisting of 16 shop stewards, four works managers and four head office personnel. There are also improvement teams comprising process and craft workers taken off their normal duties, who go round their own plant identifying and implementing improvements. Membership of these groups is rotated among the workforce. Other mechanisms enable shop-floor workers to make suggestions for change which are then signed off by the unions.

Of course the development of effective partnership practice may require considerable resourcing in the early stages, but in the longer term strategies based on employee involvement are seen to provide more effective and sustainable outcomes. In the same way training and development may help employees to participate in collaborative

practices, and this can be particularly crucial for employees whose work experience has previously been limited to isolated and fragmented tasks.

Indeed ‘bottom-up’ approaches need careful preparation and the use of validated tools to promote dialogue and organisational learning. Above all, there needs to be an acceptance by management that lean, cost-driven organisations can rarely be innovative organisations. As the previous section of this chapter argued, a degree of slack is needed in which dialogue may take place, both to create change and to support continuous improvement. In the case of Vestre Kirkegaard, a Danish municipally-owned cemetery in which gardeners and maintenance workers secured more direct participation in day-to-day work, a key factor in the success of the project is that ‘there was time and space for discussions about work organisation’, and that this allowed the workforce gradually to become committed to the project. The process was led by employee representatives (it had been the employees’ idea to instigate the project) and a union consultant funded by the municipality. Employee involvement and participation also challenges senior and middle management prerogatives, exposing decisions and styles to greater scrutiny. At a minimum this requires the acquisition of new competencies by managers. In practice, however, middle and senior managers rarely appear to receive training in the new ways of working.

Finally partnership has been observed to advance in organisations where trust can be established between stakeholder groups. For some organisations this may extend to agreements on employment security, for others this may mean removing some of the symbols of hierarchy and privilege such as management car parking spaces or staff-only canteens. Communication structures, which integrate partnership practices with day-to-day workplace and management issues, are of critical importance. Partnership forums and change conferences, for example, need to give great consideration to membership, wider consultation and the communication of key decisions. Partnership may also be extended into areas of financial participation or gainsharing. This may include a range of practices from rewards for suggestions schemes to profit sharing or share-ownership.

Job Design and Teamworking

Partnership from the high road perspective moves beyond representative structures and participation mechanisms to make a direct impact on the task environment. Building a workplace in which employees can develop and deploy their competencies and creative potential begins with job design. According to standards of job design developed in The Netherlands (TNO, 1995), for example, employees at all levels should be able to assume responsibility for day-to-day decisions about work through co-operation or communication with others. Systematic opportunities should exist for problem solving through horizontal contact with peers. The ability of the employee to adapt the execution of work to changing demands, circumstances and opportunities is an essential prerequisite for occupational learning and reduces stress. The job should contain demonstrable opportunities for analysis, problem solving and innovation, in which the working environment is a place of learning. A high frequency of horizontal and vertical contact is required to support problem solving, learning and innovation, taking the form of ad hoc co-operation, formal and casual discussions, and possibly social contacts outside the work sphere. 'Distributed intelligence' throughout the organisation is also required to support problem solving, ensuring that knowledge and expertise are widely shared or readily accessible by individuals throughout the organisation. However, effective job design must develop in synchrony with the wider organisational context. The key concept here, once again, is teamworking.

Teamworking has been one of the defining characteristics of new forms of work organisation, with deep roots in European thinking about management and organisation dating back to the work of the Tavistock Institute in the 1940s and 50s. More than two-thirds of the case studies analysed in the Hi-Res project involve some form of teamworking and, though the sample is not designed to be representative, this gives an indication of its significance as an organising concept in workplace innovation. Other research evidence, for example the Employee Participation and Organisational Change (EPOC) study, also stresses the importance of teamworking while demonstrating that high road approaches are not widely used (European Foundation, 1997).

The current interest in teamworking dates back to its rediscovery in North American manufacturing during the mid-1980s, since when the concept has spread widely into other areas of work. Among many other recent examples the Hi-Res study has shown that team-based approaches can be found in financial services, health, government and transport. Interpay, a clearing-house for interbank payments in the Netherlands, introduced self-managing teams within an ICT department employing 125 people. Esbjerg Centralsygehus, a Danish county hospital, reorganised a surgical ward along team lines. The 48 nurses, four secretaries, three consultants and a number of temporary junior hospital doctors are organised in a team structure designed to break down interdisciplinary barriers and to improve the standard and continuity of care. An increase in competition and more demanding customers prompted Province Gelderland, a Dutch civil service department, to adopt a new model of work organisation based on teams, while a Swedish transport company also adopted teamworking to help it deal with the increased competition and the need for customer orientation that resulted from deregulation. A more unusual example is Vestre Kirkegaard, a Danish municipally-owned cemetery employing skilled and unskilled gardeners, and maintenance workers. Employees heard about a municipally-funded project to reduce sickness absence and decided to take part. The project involved a transition from heavily supervised work to a new approach in which employees took more responsibility for tasks and had more influence on planning.

In almost any context the scope of a team's responsibilities can include any or all of the following (Procter & Sherrin, 2002):

- work allocation
- work pacing
- staffing issue such as recruitment and training
- improvements to the process.

However 'teamwork' is increasingly used to describe such a diverse range of workplace situations that arguably the term has become meaningless. While teamworking may refer to a general 'sense of community', or a limited enlargement of jobs to enhance

organisational flexibility, in a high-road sense teamworking will involve a radical re-appraisal of jobs, systems and procedures, throughout the whole organisation.

Mueller and Purcell (1992) attempt to clarify the modern conception of teamworking by drawing on the definition used in GM/Opel:

- the team works on a common task
- its work is spatially concentrated and it has a recognisable territory
- the allocation of tasks is largely organised by the team
- the team encourages and organises the acquisition of multiple skills
- it has decision-making power over time and appropriate means
- there is team spokesman/leader
- the team has some influence on who will join it.

IDS (1992) defines teamworking as “the formal organisation of the workforce into distinct, permanent teams of workers”. What distinguishes a team in the sense used here from a collection of workers who merely work in the same department is the degree of autonomy enjoyed in relation to formal line management structures. However it is also necessary to consider the quality of dialogue and innovation which takes place inside the team. If teams are to be more than decentralised units for the production of a given product or service, all team members must have the potential for a high level of reflexivity unconstrained by internal demarcations and privileges (Gustavsen, 1996). Teams in which the specific knowledge and expertise of each team member are valued and make a tangible contribution to product and workplace innovation meet important criteria for convergence between enhanced productivity and enhanced quality of working life.

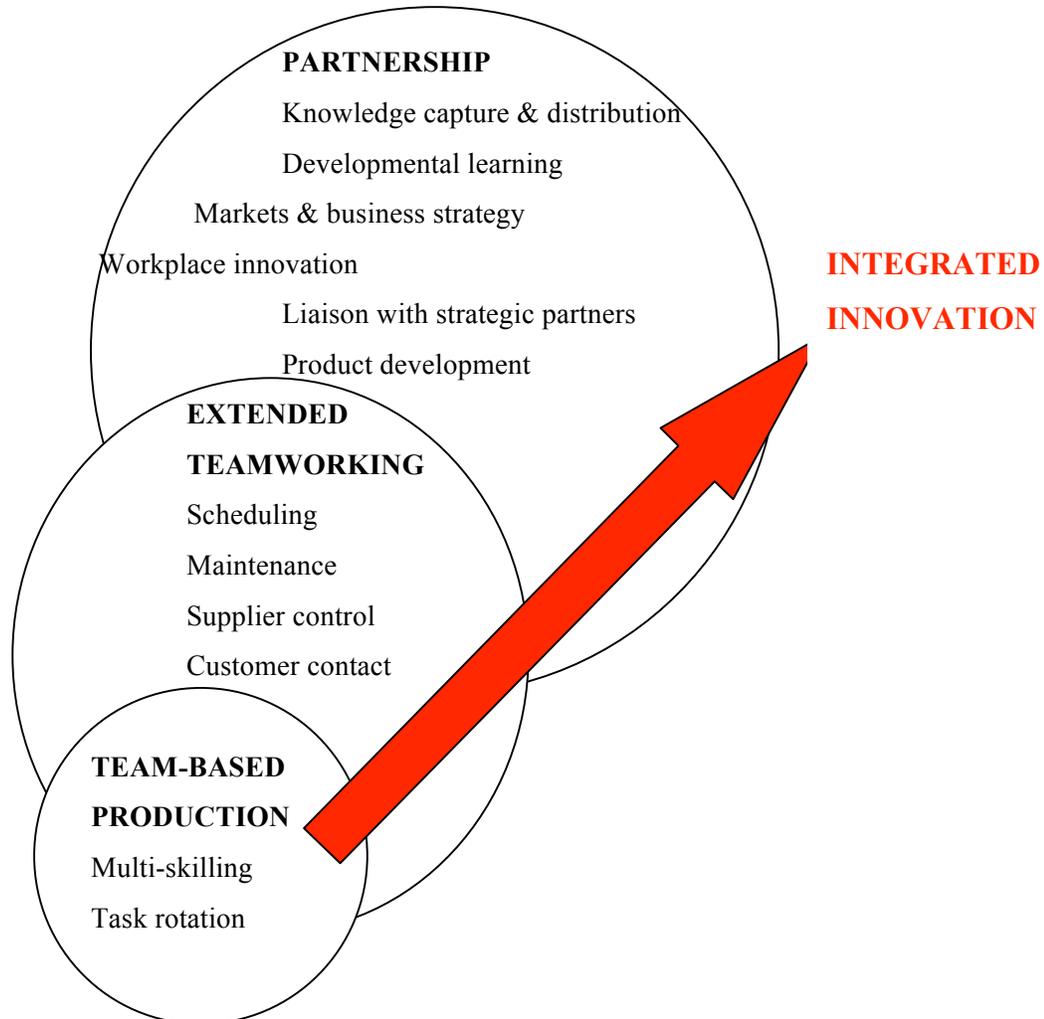
What is important here is that the concept of autonomous working groups emerges as a spontaneous, intuitive response to certain working conditions (Buchanan, 1997). In contrast to more recent organisational approaches such as Business Process Re-engineering it was not something invented by consultants and imposed upon

organisations. Rather it emerged from much more fundamental considerations about the way in which work should be organised and its value is therefore likely to be longer lasting. In Buchanan's words, teamworking is subject to an 'eager and enduring embrace'. Yet as both macro-level studies and case study evidence demonstrate, effective teamworking is far from common practice in Europe. The majority of organisations make no more than concessionary efforts to introduce team practices. Even where a focused attempt is made to introduce teamworking, the reality often falls far short of the potential. Buchanan and Preston's study of a 'manufacturing systems environment' within a producer of high-precision components concluded that the 'radical potential' of the cellular team structure was not being realised. Many of the Hi-Res case studies reveal a long process of experimentation, learning and refinement. In order to capture the benefits of teamworking a full understanding is required both of the concept itself and of its wider implications for the way in which organisations are managed, especially its interconnectedness with the knowledge creation and workplace partnership practices discussed earlier in this chapter.

Teamworking as the pathway to integrated innovation

Teamworking cannot be seen as a discrete set of practices within an organisation. Rather it has the potential to permeate approaches to work organisation and management, and in the high road context it is closely interwoven with the knowledge and partnership dimensions discussed above. We have argued above that work organisation is an inseparable component of integrated innovation, and that effective collaboration between enterprises involves multilateral co-operation and engagement. Team-based practices are central to the realisation of such collaboration. This is illustrated in Figure 2, which demonstrates the relational pathway between teamworking, the enterprise as a whole and partner organisations:

Figure 2: Work Organisation and Integrated Innovation



Team-based approaches can be designed according to both low road and high road rationales. Teamwork can mean little more than multi-skilling and job enlargement on the floor of a factory, office or clinic. At this basic low road level, functional flexibility achieved through job rotation can achieve tangible gains for the employer, though in many such cases job enlargement can result in greater employee pressure and stress rather than job enrichment. The Ecco case is interesting in this context: when the Danish shoe manufacturer piloted a lean production system, the employees turned it down because the resulting job enlargement generated too much stress. Management supported their decision and the company reverted to its home-grown group working system which,

although characterised by complete job rotation, gave employees greater control over day-to-day decision-making.

Certainly the extent to which teams enjoy control over the work environment is critical. Thus high road teamworking achieves flexibility but does so by enabling employees to take overall responsibility for the production of the product or service. Within the team this will involve significant latitude for autonomous scheduling and planning. However it will also lead teams into external problem solving and innovation through direct involvement with customers, suppliers and other parts of the supply chain, rupturing the organisational boundaries of 'classic' workgroups (Hague, den Hertog, Huzzard & Totterdill, 2003).

Extended teamworking is evident in Volvo Aero, Sweden, which manufactures jet engine components. The company integrated blue and white-collar workers into teams which independently plan and carry out their work, taking responsibility for contacts with suppliers, programming of machines, production technology and quality assurance. They also determine the level of overtime to be worked and can allocate free time of up to one day. The organisation has built on its experiences from these production units, appointing 'methods owners' who have the responsibility for supporting the production units and encouraging technical development with the provision of in-depth expertise. Cross-functional product teams have also been established.

Inter-organisational teamworking between customers and suppliers is likely to increase with the emergence of complex product networks facilitated by ICTs and involving frequent horizontal collaboration between employees at all levels. Extended teamworking of this sort offers a positive trajectory for quality of working life, offering scope for personal development through self-direction, building wider relationships and participation in both operational and strategic innovation. At this point teamworking begins to blend seamlessly with partnership and knowledge creation, becoming the locus for active involvement and participation for employees at all levels. Teamworking becomes a mode of operation within the organisation as a whole, embracing the types of workgroup described in the Mueller & Purcell definition cited above, but also creating

much wider opportunities for dialogue, reflection, creativity, innovation and improvement by cutting across horizontal and vertical demarcations.

Likewise this broader conception of team-based working is closely linked to creativity and innovation in the production of goods and services. The Tayloristic separation of day-to-day operations from development functions has long been understood to extend the trial and error cycle in the introduction of new products and services, inhibiting flows of information between operational and developmental functions and preventing the tacit knowledge of operational employees from being utilised within the innovation process. Likewise operational staff have to deal with the consequences of poor fit between the design of new products or services and their actual delivery, often leading to repeated iterations in the development process.

Ecco confronted this problem head on. The work had traditionally been carried out on Taylorist production lines, all of which had 20 employees, each performing one simple task. Then the work was reorganised around autonomous groups consisting of six or seven employees, each able to carry out all the production tasks and take part in decision making. This resulted in increased productivity and employee satisfaction. Machinists are now able to discuss, challenge and modify the orders received from the designers and technicians, and are expected to generate practical guidance that will make production cheaper, easier and more attractive. In effect, they are debugging new designs before they are sent to subsidiary companies for manufacturing.

ABB Cewe, a Swedish manufacturer of electrical switchgear, took clear action to close the gap between design and production functions by relocating development engineers onto the shopfloor. A distance of 30 metres along the corridor, it was argued, was sufficient to prevent adequate flows of information and knowledge between the two areas of activity. Direct involvement of production employees in the development process has reduced lead times, reduced production difficulties and enriched jobs. Similar results were obtained when ABB LVS integrated activities such as marketing, order processing, assembling and testing into work of the teams.

Such cases play a critical role in defining the nature of integrated innovation and its inseparability from questions relating to work organisation. Integrated innovation must include direct and representative involvement of workers as part of a multilateral collaboration between companies and with other regional actors. It also embraces the sense that the continual reinvention of products and services required for competitiveness in the 21st century economy requires continuous workplace innovation. Work processes must evolve continually with shared learning and changing production requirements in order to sustain the conditions for innovation.

Individuals may therefore be involved in several teams dealing with different levels of activity, from day-to-day operations to strategic development issues. For example, in a hospital context a nurse could be involved in a specific ward or clinical team, a 'pathway' team designed to provide patients with integrated care across different functional boundaries, a development team concerned with issues relating to service improvement, and an organisation-wide clinical governance team. In the high road, the common factors, which define such diverse teams, will not be in terms of structure or membership but rather in the nature of practices relating to dialogue, decision making and accountability. High road teams, whether operational or developmental, will become arenas in which the knowledge, experience and creative potential of all participants are captured, and in which the force of the better argument - rather than the force of managerial prerogative - is the principal determinant of outcomes (Gustavsen, 1992; Senge, 1990).

Such practices, which simultaneously challenge both horizontal and vertical demarcations, remain rare, but provide a vivid illustration of the 'radical potential' of teamworking in building high road organisations.

Entrepreneurial behaviour in its organisational context

This chapter has analysed the organisational practices conducive to employee engagement both in internal processes of innovation and improvement, and in collaborative innovation involving other companies and stakeholders. However the characterisation of employee engagement remains under-researched.

In a forthcoming paper Rosemary Exton (2008) explores the nature and significance of entrepreneurial behaviour in the workplace, arguing that “policy entrepreneurs” play a significant role in effective and sustainable change. Exton’s study examines the implementation of a government policy initiative in nine organisations within the UK’s National Health Service (NHS). Although the aim of the government initiative was to harmonise practices (in this case HR practices) across the NHS, Exton observed significant differentiation in the responses of the nine organisations. She characterises these differences in the following terms:

- *Compliance* – concentration on achieving the standards required but without the instigation of substantial organisational innovation.
- *Resistance* – in which managerial effort is focused on meeting external audit requirements but where the rationale for the initiative and the need for change is not accepted.
- *Entrepreneurship* – where one or more individuals pursue sustainable and effective improvements relating to the aims of the initiative, often involving workplace innovation through non-conventional means.

Exton argues that such differentiation is likely to be significant in explaining the success or failure of organisational innovation, and that greater attention should be paid to understanding how the conditions for entrepreneurship can be created. Evidence from the NHS suggests that entrepreneurial behaviour results from a complex interaction between organisational factors and individual processes of identity construction, but that this interaction is susceptible to senior management intervention.

Integrated workplace innovation

We have argued that work organisation must be seen as a continuous process of innovation, reflection and learning across the whole organisation, and not as a series of discreet change initiatives designed to achieve predictable end states. In any given example, new forms of work organisation represent the cumulative outcome of that process.

Sustainable organisational change requires sustained innovation and resourcing: there are few successful 'quick fixes'. Critically the task is not to try and catch up with 'best practice' but to develop a strategy firmly orientated towards the creation of innovative and self-sustaining processes of development (Belussi and Garibaldo, 1995; European Work and Technology Consortium, 1997). Perhaps one of the most important resources for change is the development of a culture which values research, negotiation, experimentation, critical appraisal and redesign over many cycles. An innovating organisation must also recognise that setbacks are inevitable and that a 'blame culture' only stifles experimentation.

The learning organisation is good at networking; it is close to all its stakeholders; it accumulates, distributes and uses knowledge effectively from a wide variety of sources. Change may also involve looking for external knowledge, assistance and support. Social partners (Beese et al, 2004; van Klaveren, 2004), business support organisations (Claussen 2004; Ennals, Ford and Totterdill, 2004; Gustavsen, 2004) and universities (Brulin, 2004) may all help to resource workplace innovation. Internal solutions may be inspired by critical appraisal of different models of leading-edge practice in external organisations, while opportunities for peer-exchange and review may also alleviate some of the 'loneliness' of the organisational innovator. Comparing divergent alternatives, perhaps through visiting other organisations, has been shown to be effective in supporting organisational innovation. External facilitators, who can be seen as neutral brokers between the interests of different stakeholders, have been particularly useful in supporting the development of the partnership practices which subsequently underpin other organisational innovations (see for example Hague, den Hertog, Huzzard and Totterdill, 2003; Savage, 1999). Recent experiences have shown that developments in networks between companies can form a productive platform for bottom-up approaches by bringing employees together to work on common development tasks. Likewise new tools and methods, such as employee videos, job swaps between companies, forum theatre and café seminars facilitate the sharing of employees' experiences and creativity (see Banke *et al*, 2004; also Banke and Holsbo, 2002).

Management values and attitudes deeply affect the nature and effectiveness of the change process. The necessity for 'top down' senior management commitment has been identified by many researchers and the Hi-Res analysis confirms that this is of crucial importance in securing the legitimacy and effectiveness of 'bottom-up' change strategies. At Cederroth International the entire management team backed the change process, and the managing director chaired the steering group which drove the initiative. This gave a clear message to local managers that the new ways of working must be supported. But in a number of the Hi-Res case studies senior management backing was not obtained until some way into the process, which slowed it down. The change project at Carlsberg's bottling plant, for example, was not driven by top management and took a long time to achieve results as consequence.

Effective change requires widespread involvement and participation across the whole workforce. Innovation arises in part from making it possible to question established expertise, received wisdom and authority:

“We're actually constrained by our own mind-set . . . the constraint is the organisational hierarchies we work in, know of, or feel, are our norm as a culture” (quoted in Jervis, 1998).

Many managers understandably find the implications of this difficult and threatening. Such potential obstacles need to be anticipated and addressed, often through the significant redesign of management roles and responsibilities as well as by developing new management competencies. When Philips Lighting introduced self-managed teams, managers found it hard to let go of control and to stop assuming it was their responsibility to deal with problems. Training was necessary to help the managers adopt a new style of leadership where they supported workers and encouraged them to use their own initiative when problems arose.

Supervisors also need new skills. They may either have to develop different behaviours, becoming facilitators and coaches, or may acquire new responsibilities themselves as self-directed teams take on some of their previous work. In organisations such as NKT Cables, operators and supervisors are trained together in the new ways of working. The

management function within organisational structures is often redesigned to remove the supervisory role and any other jobs where teams take on responsibility for previously discrete functions such as planning, dealing with suppliers or quality.

However while proactive management and leadership play an essential role in creating the conditions for workplace innovation, change can rarely be ‘managed’ in a linear, planned way. The idea of the ‘change agent’ leading successful innovation from the front needs to be challenged. A condition of successful change appears to be that it is multi-voiced, messy and unpredictable (Engeström, 1992). Some more imaginative examples of practice actively embrace chaotic and widely dispersed possibilities for organisational innovation. Ericsson Radio, for example, has introduced a number of staff at all levels of the organisation as ‘inspirers’ with a specific brief to ‘sense the feeling’ of the organisation, identifying possibilities for innovation which combine improved performance and enhanced quality of working life (Hague, den Hertog, Huzzard and Totterdill, 2003).

The road to permanent change in methods of work organisation is long and winding. Even if a company acknowledges that its way of organising work is out of step with its production and sales opportunities, there will be a considerable degree of inertia which curbs innovation. The existing system will have established a kind of equilibrium through decades of adaptation. Products, markets, machinery, layout, buildings, corporate culture, the qualifications of managers and operators, planning systems, software, pay systems, productivity targets, supplier networks and so on will have been integrated with each other in such a way that intervention to change individual elements will have no permanent results (Banke et al, 1999).

References

Andreasen, L.E., Coriat, B. and Kaplinsky, R. (eds) (1995) *Europe's Next Step – Organisational Innovation, Competition and Employment*. London: Frank Cass.

Argyris, C. (1977) *Double Loop Learning in Organisations*. Harvard Business Review September- October, pp115-125.

Asheim, B. (1997) "The territorial challenge to innovation policy: agglomeration effects and regional innovation systems". Paper presented to the European Network on Industrial Policy Conference, University of Warwick, 11 - 15 December.

Banke, P. and Holsbo, A., (2002) Institutional support for developing SMEs. In Docherty, P., Horslin, J. & Shani, A.B. (eds) *Creating Sustainable work systems*.

London: Routledge. Baptista, R. & Swann, G.M.P. (1998) Do firms in clusters innovate more? *Research Policy*. (5), 527-542.

Belussi, F. and Garibaldi, F. (1996) Variety of Pattern of the Post-Fordist Economy: Why are the 'old times' still with us and the 'new times' yet to come? *Futures*, 28(2): 153-171.

Bessant, J. (1995) "Networking as a mechanism for enabling organisational innovations: The case of continuous improvement". In Andreasen, L.E., Coriat, B., den Hertog, J.F. and Kaplinsky, R. (eds) *Europe's next step: Organisational innovation, competition and employment*. Ilford: Frank Cass.

Bessant, J. (1983) Management and Manufacturing Innovation: The case of Information Technology. In Winch, G. (ed) *Information Technology in Manufacturing Process: Case Studies in Technological Change*. London: Rossendale.

Blackaby, F. (1979) *De-industrialisation* London: Heinemann.

Boer, H. (1991) *Organising Innovative Manufacturing Systems*. Aldershot: Gower.

Buchanan, D. (1997) *An Eager and Enduring Embrace: the Ongoing Rediscovery of a Management Idea*. Presented at the International Workshop on Team working. UK: University of Nottingham.

Burnes, B. (1996) *Managing Change: A Strategic Approach to Organisational Dynamics*. (2nd Ed.) London: Pitman Publishing.

Business Decisions Ltd. (1998) *New Forms of Work Organisation: Case Studies. A report prepared for DGV of the European Commission*. Brussels: Commission of European Communities.

- Business Decisions Ltd. (2000) *Government Support Programmes for New Forms of Work Organisation. A report prepared for DG Employment & Social Affairs of the European Commission*. Brussels: Commission of European Communities.
- Child, J. and Smith, C. (1987) The Context and Process of Organisational Transformation – Cadbury Limited in its Sector. *Journal of Management Studies*, 24(6), 565-592.
- Collins, D. (1998) *Organisational Change: Sociological Perspectives*. London: Routledge.
- Cook, S. and Seely Brown, J. (1996) *Bridging Epistemologies: The Generative Dance Between Organizational Knowledge and Organizational Knowing*, Draft, Xerox PARC.
- Cooke, P. and Morgan, K. (1992) "Intelligent Regions?" Cardiff: University of Wales.
- Damadoran, L. and Olphert, W. (2000) Barriers and facilitators to the use of knowledge management systems. *Behaviour & Information Technology*. 19(6), 405-413.
- Dawson, P. (1994) *Organisational Change; a Processual Approach*. London: Chapman.
- Emery, F.E. and Thorsrud, E. (1969) *Form and Content in Industrial Democracy*. London: Tavistock.
- Engestrom, Y. (1992) Expertise as Mediated Collaborative Activity. In Engestrom, Y. (ed) Helsinki: University of Helsinki, 1992, (pp. 3-28).
- Exton, R. (2008) UKWON Research Paper (to be published at www.ukwon.net).
- European Foundation for the Improvement of Living and Working Conditions (1998) *Can Europe Realise its Potential? (EPOC Study)*. Luxembourg: Office for Official Publications of the European Community.
- European Work and Technology Consortium (1997) *Work Organisation, Competitiveness, Employment: The European Approach Vol.II*. Nottingham: Centre for Work and Technology, The Nottingham Trent University.
- Farrands, C. and Totterdill, P. (1993) *A rationale for an appropriate level of regulation in the European Community* in Sugden, R. (ed) *Industrial Economic Regulation: A framework and exploration*. London: Routledge.

- French, W.L. and Bell C.H. (1990) *Organisational Development*. New York: Prentice-Hall.
- Fricke, W. (1983) Participatory research and the enhancement of workers' innovative qualifications. *Journal of Occupational Behaviour* Vol. 4, 73-87.
- Fricke, W. (1997) Evaluation of the German Work and Technology Programme from an action research point of view. In Alasonini, T., Kyllonen, K. and Kasvio, A. (eds) *Workplace innovation: a way of promoting competitiveness, welfare and employment*. National Workplace Development.
- Fricke, W. and Totterdill, P. (2004) *Action Research in Workplace Innovation and Regional Development*, 2004, Amsterdam: John Benjamins Publishing.
- Friedrich, P. and Lantz, A. (1998) Skills development through networking. In Swedish: Lokal kompetensutveckling genom network. Research report no 2. Innovation MTO, University College of Mälardalen.
- Garibaldo, F. and Belussi, F. (1996) "Variety of pattern of the post-Fordist economy: Why are the 'old times' still with us and the 'new times' yet to come?" *Futures*, 28:2, pp.153-171.
- Garvin, D. (1993) Building a Learning Organisation. *Harvard Business Review*, July – August.
- Goldman, S.L., Nagel, R.N. and Preiss, K. (1995) *Agile Competitors and Virtual Organizations. Strategies for Enriching the Customer*. New York: Van Nostrand Reinhold.
- Grandori, A. (1997) An Organisational Assesment of Interfirm Coordination Modes. *Organization Studies*, vol 18. No 6. pp 897 - 925.
- Guest, D. (1998) What Next? In Jervis, P. (ed) *Leading the continuously creative enterprise*. London: RSA.
- Gustavsen, B. (1992) *Dialogue and Development*. Maastricht: Van Gorcum.

- Hague, J. (2000) *Work organisation: new wine in old bottles?* Nottingham: The Nottingham Trent University.
- Hague, J., den Hertog, F., Huzzard, T. and Totterdill, P. (2003) *Better to be rich and healthy than poor and sick: conditions for the convergence of competitiveness and the quality of working life in Europe*. Innoflex Research Paper. Nottingham: The Nottingham Trent University.
- Hedberg, B. (1981) How can Organisations Learn and Unlearn. In Nystrom, P., Starbuck, W. (eds) *Handbook of Organisational Design* Vol. 1. Oxford: Oxford University Press.
- IDS. (1992) *Teamworking (Study 516)*. London: IDS.
- van Klaveren, M. (1994) *Trends en keuzes in het onderzoek naar de kwaliteit van de arbeid*. Amsterdam: SISWO.
- Kofman, K. and Senge, P. (1993) Communities of Commitment: The Heart of Learning Organizations. *Organizational Dynamics* Volume 22, Issue 2, pp 5 - 23.
- Kreienbaum, W. (2001) How we changed structures and processes. *Concepts and Transformation* 6,2.
- Lundvall, B.-Å. (1992) "Introduction". In Lundvall, B.-Å. (ed) *National systems of innovation: towards a theory on innovation and interactive learning*. London: Pinter.
- Middleton, D. and Totterdill, P. (1992) "Competitiveness, working life and public intervention: teamworking in the clothing industry". In Kasvio, A. (ed) *Industry without blue collar workers - perspectives of the European clothing industry in the 1990s*. Tampere: Work Research Centre, University of Tampere.
- Mueller, F. and Purcell, J. (1992) The Drive for Higher Productivity. *Personnel Management* Pp 28 – 33.
- Nonaka, I. (1994) A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, Volume 5, Number 1.

- Nordenl w, L. (1994) Entrepreneurship and industrial networks. In Swedish: Entrepren rskap i industriella network. EFI research report, The Economic Research Institute at Stockholm School of Economics.
- Peters, K. (2001) Individual autonomy in new forms of work organisation. *Concepts and Transformation* 6,2.
- Pettigrew, A.M. (1987) Context and Action in the Transformation of the Firm. *Journal of Management Studies*, 24 (6), 649-670.
- Polanyi, M. (1983 [orig. 1966]): *The Tacit Dimension*. Magnolia, MA: Peter Smith.
- Procter, S. and Sherrin, J. (2002) *The Team-Based Organisation Hi-Res Working Paper*. Nottingham: The Nottingham Trent University.
- Savage, Patrick T. (1999) *New Work Organisation in Ireland*. Irish Productivity Centre, Dublin.
- Senge, P. (1990) *The Fifth Discipline*. New York: Doubleday.
- Shapiro, G. (1999) *Exploring the impact of changes in work organisation on Employees*. Centre for Research in Innovation Management, University of Brighton.
- Sharpe, A. and Totterdill, P. (1999) *An Evaluation of the New Work Organisation in Ireland Programme*. Dublin: Irish Productivity Centre.
- Skorstad, E. (1992) *From Taylorism to Toyotism in the Norwegian Textile Industry?* in Kasvio, A. (ed) *Industry without blue-collar workers: perspectives of the European clothing industry in the 1990s*. Work Research paper 36/92, Tampere: University of Tampere, Finland.
- Stalk, G., Evans, P. and Schulman, L. (1992) Competing on Capabilities: The New Rules of Corporate Strategy. *Harvard Business Review* (70).
- Strikwerda, J. (2000) De beperkte visie van de consultant. *Management Consultant*, nr.5, pp 46-49.

Sydow, J. (1996) Inter-organizational relations. In Malcolm and Warner (eds) International encyclopedia of Business and Management. Vol 3, pp 2360-2373. Routledge, London.

TNO (1999) *Work & Employment*. Study Work in the Information Society. Hoofddorp: TNO.

Trist, E., Higgin, G., Murray, H. and Pollock, A. (1963) *Organisational Choice: Capabilities of Groups at the Coal Face under Changing Technologies: the Loss, Rediscovery and Transformation of a Work Tradition*. London: Tavistock.

III.7. Leadership – An Action Research Approach *by Nazir Walji*

3.54 *Abstract*

The role of leadership in the 21st Century is challenging and varied, with changes often impacting across national borders. Leadership is a process, involving reciprocal influence. It has shortcomings and limitations, but in optimum conditions it can harmoniously harness and synthesize relevant knowledge, make sense of environmental features and changes, and co-generate new knowledge, usually in response to strategic demands and exigencies. Leadership responsibilities are all encompassing and require a holistic overview. Participatory action research is the chosen methodological vehicle, supported by various research instruments. There is ongoing active engagement, including with a non-governmental organisation ABC, where the researcher has an advisory role.

Keywords: leadership, participatory action research

3.55 *Introduction*

The beauty of (social) scientific research, especially in the way it has been practiced in the Western world since the 1950s (Toulmin, 1990), is precisely its inherent incompleteness and revisability – the recognition that what we know, at any point in time, is inherently inadequate and that, as a result, we should always be careful to submit our assumptions and perspectives to scrutiny. Such a scrutiny should not lead, however, to paralysis, but only to greater awareness, so that we can conduct our inquiries from a better position next time – and the time after that, and so on. In the words of T.S.Eliot:

‘We shall not cease from exploration

And the end of all our exploration

Will be to arrive where we started

And know the place for the first time'

(Antonacopoulou and Tsoukas, 2002, Pg.861)

This article is based on empirical experience, a survey of various reported research activities, and current academic debates. It has been an exploratory expedition, to improve the scope of research activity, and synergistic interaction between researchers and practitioners.

In the past, much work lay in the Cartesian camp, where the quantitative, positivist approach provided only an artificial glimpse of human interactions, and often overlooked the sensibilities involved. The scope for deeper and richer understanding, accessed through interpretive methods, was recognised. Research instruments had to provide a common language between the researcher and the practitioner, as well as valuable insights to, and learning for, all actors. Participatory Action Research was considered to be the most suitable and appropriate research vehicle.

3.56 Leadership

Leadership today is concerned with 'influencing' performance and changes systems-wide: change is an intrinsic part of reality. The consensus was that rapidly evolving environmental complexities required a new approach: to think, learn, and act differently (Kelly *et al*, 2002), Leadership, in postmodernism, becomes a process, unique to its own organisational surrounds, with its own cultural and political conditioning, gravitating towards an increasingly discursive/dialectical style. Sense making and organizing (Weick, 1999) become part of the new vocabulary, and the ontological base shifts from 'being' to 'becoming'. A leader works on several matters at the same time (also through her/his executive team). His role, unless examined holistically, will not be fully appreciated, nor will what constitutes an effective leader be properly understood. Goranzon (1997) aptly refers to leadership as the orchestration of reflection – a reflexive and a dialectical social process. This has been confirmed in practice.

3.57 *Leadership Studies*

Leadership studies in the past have been undertaken by social science, political science, psychology, management etc. Most have taken a parochial angle, addressing a narrow dimension within one specific area at a time e.g. traits, behaviour, contingency, situational etc. A review of the evolution of these earlier leadership theories indicates a positivistic underpinning, and an economic/transaction base; where the cost of resources is to be kept to a minimum and the investors' returns maximized (Kakabadse and Kakabadse, 2005). However, postmodernism and environmental changes (Chia, 2003, Habermas, 1972; Toulmin and Gustavsen, 1996) have influenced a reinterpretation of CEO level leadership role and style, for both for-profit and not-for-profit organisations. The resultant broader definition of stakeholders has reined in all parties concerned, directly and indirectly, and over time, through pressures and turns of events (eg Enron and Parmalat), top leadership has had to demonstrate an increasing level of transparency, and moral and ethical responsibility. The increasing level of education, and gradually improving economic wellbeing, has raised personal self-confidence, and closed these gaps vis-à-vis leadership. Leadership theories have begun to play down the emphasis on the economic/transaction base, and introduced an increasing level of dialogue. First came participative leadership, but its initial token gestures stopped short of improving performance beyond a certain level. In its place transformative leadership (see Bass, 1985), which invoked a significant involvement and commitment all round, seemed to be the answer. Its personnel and organisational developmental features, for the first time, palpably stepped beyond the traditional economic/transaction base. Leadership required a different and a higher quality of discourse, more likely to be achieved by those with emotional and social intelligence (Mayer and Salvoy, 1993; Kobe *et al*, 2001), where organisational progress is under-layered by empathy, ethics and a mutually beneficial outlook. The main critique of leadership theories remained that it only provides keyhole perspectives, and none offer an aggregate solution (Alvesson and Deetz, 2000) e.g. vision (Bennis and Nanus, 1992), organisational culture and change (Schein, 2004), strategizing (Cummings and Wilson, 2003; Pettigrew, 2003). However, research on executive leadership, and its interface with organisational complexities and embedded complexions

(Simon, 1945; March and Simon, 1958; and Cyert and March, 1963) generating organisation action is nonexistent, largely due to practical difficulties and limitations of traditional research methodologies.

Within academia “*Several authors have called for a profound reorientation from elaboration and measurement of abstracted constructs to the analysis of leadership as a practical accomplishment and social process (Bryman, 1996; Hosking, 1988; Knights and Wilmot, 1992; Smircich and Morgan, 1982)*” (Alvesson and Deetz, 2000, p 51). The growing view that CEO level leadership could not depend on the previous models of management, and pressing environmental changes, suggested that a leader, especially at the CEO level, is a more sophisticated individual. Her/his presence today is more likely to be merit based as opposed to patrimony. ‘Accountability’ (giving it the broadest definition to rope in interests of all direct and indirect stakeholders)³¹ increases with its share of conflicting interests and paradoxes.

Current Debate

More recent work seeks to understand the role of executive leadership. Herbert Simon’s theory of bounded rationality (1957) was the basis of Hambrick and Mason’s (1984) Upper Echelons Theory (on information filtering processes at executive level). This generated vibrant academic debate, also calling for a more comprehensive, in-depth research on executive leadership (Carpenter *et al*, 2004). Briefly, the filtering process suggests: a) the executive’s orientation affects his/her field of vision: a CEO, or even the entire executive team, cannot scan every aspect of the environment and the organisation;

³¹ Stakeholders are those individuals or groups that experience harm or benefit from an organisation’s actions (Donaldson and Preston, 1995) both in the short and the long run. Primary constituencies maintain formal, official, or contractual relations and have a direct economic impact on the organisation, more particularly investors, employees past and present or their representatives e.g. trade unions, lenders etc. Secondary constituencies are all others who can influence an organisation or are affected by it (Savage *et al*, 1991), these include consumers, intermediaries and those in the supply chain, public authorities, monitoring bodies and agencies, as well as the future generation for whom we hold the world in trust (Ennals, R.- personal communication).

b) a CEO will selectively perceive only some of the phenomena that lie within the field of vision (he/she will notice only a subset); c) the executive then interprets, or attaches meaning, to the stimuli that have been noticed. As an outcome of the “*three-step filtering process, an executive’s ultimate reading of the strategic situation, or “construed reality”, may bear only a faint correspondence to the overall objective situation. Or, put another way, two executives who have very different personal orientation will arrive at very different construals of a given situation.*” (Hambrick, 2005, page 112).

Hambrick (2005) offers two further refinements. Firstly, the level of discretion an executive has will be reflected in organisational choices². Secondly, behavioural integration is the degree to which mutual and collective interaction exists within a group (executive team). Its three main manifestations are: information exchange, collaborative behaviour and joint decision-making. Behavioural integration is related to, but is distinct from, “social integration”, which places emphasis on members’ sense of group pride or team spirit (Shaw, 1981).

Carpenter *et al* (2004) revisited the upper echelons theory (in Hambrick and Mason, 1984) by assessing the academic impact of the article (cited nearly 600 times). Ambiguity caused by a lack of methodological coherence has raised various issues namely: i) decision-making processes are more complex than presumed; and ii) the following may also have an impact on the decision making processes: a) corporate governance and structure; b) institutional constraints; c) social responsibility; d) corporate ethics; e) stakeholder interests; f) institutional forces etc. Finally, the need for examination of organisations holistically was recognised, but without academic initiatives in response. A revised schematic provides a good starting point for comprehending the “... *social processes that stand between executive characteristics on the one hand and executive behaviour on the other.*” (Hambrick, 2005, page 122).

Hambrick and Mason’s information filtering process could be made efficient, depending upon the quality of input and team deliberation “during the sense-making process”:

involving reflexive, discursive/dialectical processes and collaborative behaviour. Secondly, although there has been discussion around how executive teams can be motivated and perform better, there has not been any research examining the processes that stand between executive (characterisation) and executive behaviour (Hambrick, 2005). Carpenter *et al* (2004) also confirms that “*little systematic investigation examining concomitant processes has emerged*” (ibid, page 7), ie “*getting inside the black box*” (Hambrick, 2005, page 122). Aligned managerial profiles exhibited superior performance, as opposed to organisations where such alignment is lacking (Strandholm *et al*, 2004). The CEO could influence performance by creating an enabling environment through: a) better and clearer understanding of the executive team’s preoccupations or concerns and responding with an attempt to balance/reconcile personal values, beliefs and goals with those of the organisation; b) harmonizing play between various actors and maintaining equity. These then would be prerequisites for optimizing organisational coherence and effectiveness.

3.58 *Research Focus*

Two areas particularly require research.

Carpenter *et al* (2004) indicated that research on concomitant processes where a leader participates has not yet been undertaken adequately. If leadership is to be understood from a holistic perspective, a sound appreciation of the complexities of that role is essential. Normally employing discursive and dialectical styles, she/he *orients* through, amongst others, vision, imagination, charisma, transformation; *socially bonds and creates social capital*, for instance, embeds organisational values and ethical principles, role-models, creates a sense of self-belief and self-efficacy encouraging creativity and competency, and appeals to higher level needs like esteem, self-fulfillment; *animates* an iterative pursuit (reflexivity) of existing practices, questioning intermittently the informing assumptions and worldviews, also in the light of variations and new findings;

2 Discretion exists when there is an absence of constraint and when means-end ambiguity is great. It

acts as the ultimate custodian of organisational resources, is accountable together with the board of directors for its consumption to the stakeholders, some directly; and *imparts practical wisdom*, apart from others in drawing the distinction between rationality and reasonableness (Toulmin, 2000, 2001), providing a bridge (*savoir faire*) or Bourdieu's "habitus" – "*...a kind of practical sense for what is to be done in a given situation – what is called a feel for the game*" (1998, page 25) entwined in skills, knowledge and experience (including tacit knowledge), which time and again is put to use through resolution of paradoxes, arrangements, commitments, alliances, assessments etc.

Research Question (first order):

"... I don't think you can read your way to developing a theory. It is far better to start with a real-life puzzle; then develop a preliminary set of ideas for solving the puzzle; and then turn to the literature for guidance and insight" (Hambrick, 2005, page 124)

The research question is based on a problem currently faced by leadership, and tabled for a satisfactory solution. This situation captures the human dynamics, and gives the researcher first hand understanding of phenomena. This approach ensures that the outcome of the research activity provides maximum benefit to leadership practitioners (Zaccaro and Banks, 2004). In the cases currently under review, this approach has proved to give a very useful start to dialogues with the practitioners.

Secondly, a leader can in most cases sway the performance of his or her executive team; if so, the challenge is to seek superior results from "the information filtering process". The key here is to influence richer involvement from the executive team through reflexive, discursive/dialectical processes and collaborative behaviour. This requires examination of the processes that stand between executive characteristics and behaviour (Hambrick, 2005).

emanates from the environment, the organisation and from the executive's own orientation.

Research Questions (second order): As integral parts of the first order research objective above, the following comes under review to optimize the impact of interactions between leadership and its executive team:

- a) Skills and methodologies, leadership would need to hone
- b) Social architecture and processes so as to align: organisational and personnel values, tasks and characteristic and skills, and to encourage reflexivity, and discursive/dialectical styles
- c) Meaningful involvement of the executive team – amongst others saving and sharing valid information, early detection of emerging changes, engaging in action learning, contributing towards identifying actionable knowledge, participating in grafting new activities into the current organisational operations, facilitating permeation of relevant knowledge to other levels of the organisation,

Based on current experience, the validity of this approach grows, for its application has proved appropriate and has drawn approval from participants.

3.59 *Research Vehicle*

The choice of paradigm becomes critical (Burrell and Morgan, 1979; Hassard and Keleman, 2002). Its outcome should contribute quality and richness in feedback to those involved; it should inform, clarify, and contribute (Deetz, 1996) towards the enhancement of the practitioner and organisational performances. The choice of paradigm/research framework is informed by contextual realities. The research quest should inform paradigmatic choice, which determines research methodologies. The final choice of course is influenced by the researcher's experiential knowledge³.

³ “Experiential knowing means unrestricted perception and radical meeting. The former is the creative shaping of a world through the transaction of imaging it. The latter is participative empathy, through which we commune with the inner experience of beings and their modes of awareness. The transaction of imaging a world is not restricted to sense perception, but includes productive imagination and extra-sensory perception... I suggested that these kinds of knowing are a systematic whole, a pyramid of upwards support in which experiential knowing at the base upholds

Cartesian Inheritance

“...the wrong turn begun in 17th Century with the emergence of the Cartesian model, in which knowing how (“*phronesis*”) was separated from the world of reason, abstraction, and distance - the world of “*techne*”....

(Greenwood and Levin, 2000- Pg.97)

A number of difficulties were caused by the dichotomy between *theoria* and *praxis*. The distinction between academics and practitioners, and academic reliance on the positivist/quantitative approach in proposing seemingly valid generalised knowledge applicable to organisational, more particularly human resource related issues, caused a divide/rupture between the two worlds. Academics continue training practitioners (eg producing MBAs) and rationality often takes place of reasonableness (Toulmin, 2001). The outcome of these impacts is also seen in Habermas’ (1987), divide between lifeworld and social system, where social system is beginning to colonize lifeworld. Personal values and principles are overridden by organisational/social systems, and human resources are commoditised. Only since the mid-twentieth century have these and other problems been recognised, and the potential critical long-term consequences have come to the fore.

3.60 Emerging Perspectives

Postmodernism

Previously leadership studies were within the positivist/quantitative approach, and relied on retrospective behaviour description questionnaires, or some other measurements. The interpretivist approach (modernist), that gradually replaced the structural functionalist

presentational knowing, which supports propositional or conceptual knowing, which upholds practical knowing, the exercise of skill.” (John Heron, Co-operative Inquiry, 1996, page 52).

(positivist/quantitative approach), failed to correct some significant shortcomings of its predecessor. The critical assumptions were that organisations were static entities whose affairs followed a simplistic linearity (Gergen and Thatchenkery, 1996). Modernists worked towards their perception of complete and ultimate truth, but do not question the ‘fitness’ of those solutions when the built-in assumptions or segregated variables did not hold out. Postmodernism has now radicalised interpretivist thinking, and in line with the linguistic turn (Wittgenstein, 1953, 1978; Rorty, 1967), created the ontology of processual thinking; establishing that language was not the mirror of the mind.

The paradigmatic shift, which focuses on construction and sense making, admits non-linearity, indetermination, variability and inconsistency, and only takes a tentative view. This involves loosely coupled explanations, where resonance, resemblance, recursion etc are preferred to modernists’ firm deterministic assertions. There is no closure ever, as a result discursive/dialectical processes, if continued, could bring better or circumstantially more fitting responses.

Linguistic Turn and Reflexivity

Richard Rorty’s work (1967) popularised the concept of the linguistic turn. In the 1970s the humanities recognised the importance of language as a structuring agent. The fact that language is not a transparent medium of thought has been stressed by a very different form of philosophy of language. Analytical philosophy did not relate to this tradition.

Language is not an objective tool, nor does it represent a state of affairs identically for all. It is a complex instrument which reveals as much about the participants as about the matters under discussion. Its partiality, historicity and inherent incompleteness of any dialogue is now realized. Reflexivity (reflecting on reflections) is key to a clearer assessment of a situation, and also personal leanings or bias.

Live Systems

Arie de Geus (1997), based on a study at Shell, identified the characteristics of organisations which survived major environmental changes and were flourishing with

their corporate identities intact (some Fortune 500 firms are over 200 years old). The significant characteristics were: (a) a strong sense of community and collective identity around a set of common values and assurance of mutual support; (b) openness to new ideas and individuals, underpinned by an ability to learn and adapt to changing circumstances. Priorities need to shift from managing companies to ‘optimizing’ people. The governing metaphor – ‘machine’ – had shaped the character of most organisations, lowering their life expectancy – between 40-50 years (again from the Fortune 500 firms). This has proved to be a valuable insight, for in more than one case, the leaderships’ current endeavours are to revive the organisation by giving the staff a more meaningful status, and consequently involvement in matters concerning the organisational operations. Second, the alternative of looking at organisations as living beings offered different perspectives. They consist of individuals, and as formal and informal communities of practice. They are ‘influenceable’ but only through complex interactive processes which are just as likely to alter the influencer as the influence.

Real Time, Real Space and Reflexivity in Research

Social phenomena occur in time, evolve in time, and are shaped by humans whose perceptions, experiences, and interactions are formed in time (Bateson 1979), and to the extent the outcomes are internalised through reflexivity, they may variously inform the actors’ future behaviour. Particularly, if change is an intrinsic part of reality, an appreciation of the human dynamics (which harbour multiple perspectives arising from motives, tensions, fears, etc) and the obtaining conditions at the inter- and intra-organisational levels (for instance, structural relationships, financial dependency or such other lifeline, code of conduct, political maneuverings, etc) would be essential, and this cannot be satisfactorily gauged retrospectively. There is the risk of Shotter’s “*ex-post facto fallacy*” (1993) – where a chosen representation pushes for retrospective acknowledgement for its place in a continually reinforced framework of understanding, through the support of other (newer and possibly better articulated) statements put forward as an intellectually formulated explanation eg camouflaging an occurrence with

invalid evidence, which cannot be verified. Once inside such a system, there is a substantial risk of entrapment – unless there is a major discord, the reinforced system could take on an iconic position and deny entertainment of questions, including those urging a review of its validity, as well its current relationship with the once relevant sectors of socio-historic surrounds. A related telling finding in the cases being handled has been the earlier unquestioning, unqualified acceptance of certain processes; where further probing has exposed their hollowness and in fact contradictory presence.

The special issue ‘Time and Reflexivity in Organizational Studies’ in *Organizational Studies* (2002, 23/6) concluded that a researcher needed to be close to a system ie engaged, if she/he was to properly understand the system’s internal life and development. It was not only to capture the dynamics, but also to reflect those dynamics into the theorising by making it more dynamic; together with drawing on experiential knowledge to derive personal insights (Hatch, 2002). Calori (2002), quoting William James (1950) makes a distinction between knowledge of acquaintance (gained through experience) and knowledge about (similar to *episteme* – scientific knowledge), and suggests that the researchers should try and seek the former. He proposed that the researcher should try to immerse themselves in the lifeworld of the people she/he studies. The researcher and practitioner should “walk the path together”, each sharing the other’s role. This approach has been adopted for ABC. With a pragmatic epistemology, the researcher and practitioner share time-space and action-reflection in ongoing face to face situations, to generate knowledge of acquaintance and transform it into knowledge about, as well as obtain a better understanding of, human beings (Schutz, 1967). This is as long as Heidegger’s “das man” hurdle is cleared (1962). Calori stipulates that ultimately the knowledge gathered would include an understanding of the dynamics, more specifically the actor’s moral motives, emotions and behaviour that would drive behaviour, intentions, desires, and political agenda, as well as underlying and evolving tensions. The researcher would have a better understanding of relevant context, knowledge of enactment processes and the knowledge of relationships. Lewin’s action research is one of the more reliable methodologies recommended. The options also included ethnography and enactive research.

...Action research returns social research to “phronesis”, to “knowing how” by acting on the phenomenon, and away from the “techne’s” world of inaction and putative distance from the subject (Toulmin, 1990; Toulmin and Gustavsen, 1996)”
(Greenwood and Levin, 2000- Pg.97)

Participatory Action Research (PAR)

There is no one definition for action research (AR) (Ladkin, 2004) nor for PAR which derives from it. AR is not a specific unitary approach – it has evolved circumstantially; its employment and adaptability is left to the task in hand (Kemmis and McTaggart, 2000), eg action science (Argyris *et al* 1985; Argyris and Schon, 1974); action research as democratic dialogue (Toulmin and Gustavsen, 1996, Goranzon *et al*, 2005), and PAR (Kemmis and McTaggart, 2000).

Greenwood’s (2002) description of what PAR should achieve is noteworthy.

“To my mind, conducting research means developing habits of counterintuitive thinking, questioning definitions and premises, linking findings and process analyses to other cases, and attempting to subject favourite interpretations to harsh collaborative critiques. Throughout these processes the collaborative process of reflection is the guiding thread that integrates the work.” (Greenwood, 2002, page 131). Although not as specifically as on the subject covered above, we see parallels in Wittgenstein’s *Philosophical Investigations* (1953) and Toulmin’s *Return to Reason* (2001).

PAR is an intersubjective, interactive relationship characterised by joint action, involvement and shared responsibility (van Beinum, 1999). It is a cyclical/iterative process. The issue/ problem is first defined, relevant knowledge is co-generated, social research techniques are learnt and executed, action is taken, results are interpreted to generate new learning, if necessary a revised action plan is executed, and so on (Greenwood and Levin, 1998).

Quality of collaboration between researcher and practitioner determines the quality of eventual PAR output. In this respect, use of language may have to cut through

psychological, cultural and other elements. The environment of use is the first reference point for interpretation. Language is a tool, and does not necessarily mirror reality; there has to be a joint understanding and commitment to look beyond that mirror (Reason, 2003). Most of the training of leaders, in business schools, universities or of a vocational nature, will probably have a modernist/positivistic edge; their work responsibilities, career aspiration, appraisal procedures, rewards and statutory reporting responsibilities etc will all have a modernist/positivist slant. Toulmin aptly highlights the issue: *“For now the spotlight remains on the intellectual validity of Rationality itself: the human values of Reasonableness are expected to justify themselves in the Court of Rationality. The question has not yet been accepted let alone any answer agreed upon – whether the twin concepts of “rationality” and “reasonableness” are not interdependent ideas, of comparable authority and philosophical interest. Indeed, it is not always recognized that the two ideas can be distinguished. ...”* (2001, page 2). The researcher needs to choose his/her collaborating partners with care. He/she will have to encourage analogical thinking as a critical discourse tool.

The leader has to be a visionary working in the long-term interest of the organisation and its stakeholders, able to contemplate changes on the horizon and their after- effects. He and his team should be able to give adequate dialectical flavour to communication with the researcher, with a commitment to see through the process. The process, discursive/ dialectical style may not suit everyone, especially for fear of exposure. Leadership that is not keen on such a process will defer from participating. The researcher needs to probe for such clarification before commencing PAR.

The researcher needs to have a repertoire of all round business and organisational skills, and a sound understanding of business and social environments (Greenwood, 1999). Although PAR is a collaborative initiative, the researcher does not have executive responsibility; he/she can act as a prompter but not as a final decision maker. Any incorrect signal could cause umbrage and the beginning of conflict and disaffection. PAR is with practitioners who operate in the ‘real’ world. The researcher therefore needs to be sensitive to practitioner concerns (Winter,1996).

The other dimension of ethics asks for the recognition of the different orientation of a participant – his/her beliefs, values etc. This is particularly critical if PAR activity is in a foreign culture. Levinas (1991a and b) explains that Western philosophy has consistently practiced suppression of the ‘other’ (reducing it to the less of the ‘same’ with devastating consequences – social, psychological, intellectual, cultural, etc). Greenwood (1999, page 13) elaborates “*The two major mistakes we can make in action research are: a) that we reduce the Other to the Same, that is we take ourselves as point of departure, and b) that we cannot accept that we never can fully understand the otherness of the other*”. There is a new conundrum, the ‘other’ or the ‘same’ are gradually taking on (in a multi-cultural environment) heterogeneous characteristics where the conflict between the ‘other’ and the ‘same’ lies within themselves, for instance where the local enterprise has adopted a global culture, alien to its own social surrounds. The researcher needs to interpret the situation with the help of the CEO and his/her executive team, recognising where the point of departure rests and the validity of the reasons for it.

If candour is encouraged, there may be a need for containment of the psychodynamic phenomenon (ie strong reactions, tension arising during a complex discourse). These reactions need to be mediated and played back in a more reasonable form, and the researcher normally plays a lead role. It is vital that practitioners and researcher have a reasonable understanding of each other’s critical subjectivity (Reason, 1994).

One of the research goals remains, where possible, to make a positive contribution at the social front; but more importantly to remain vigilant during the research process so as not to exacerbate social injustice or oppression, (Elden, 1983, Selener, 1997). This includes ensuring that researcher efforts do not become conveniently translated into ‘hypothesised’ views (those of the hierarchy).

3.61 *Research Tools*

Underpinning PAR are various research tools:

Hermeneutic phenomenology:

The process embraces pre-understanding (intellectual and emotional) understanding and explanation (Gummesson, 2003). The preparedness necessary requires development of hermeneutic understanding (hermeneutic phenomenology) - in which the “*aim is to construct an animating evocative description of human actions, behaviours, intentions and experiences as we meet them in the life world*” (Van Maanen, 1990, page 19). This requires engagement in communicative action with leadership’s lifeworld. This process is meant to engage the parties in meaningful reflexivity – ie, it relies on the exercise of mutual criticism and dialogue between the two; the leader would possess just as rich power of comprehension and interpretative competence (Habermas, 1987). Weick (2002) cautions on the misuse of the process of reflexivity; – there is a danger that reflexivity can degenerate into narcissism, where one party falls in love with his/her own voice, while neglecting what the other may have been trying to say. Provided adequate attention is given, the exercise is responsibly done, and only tentative weighting is given at any point, hermeneutics would be a sound starting point. Hermeneutics get played into relationships formally and informally, now and then, and in an incomplete manner.

Discourse Analysis, Critical Realism, Social Constructivism:

Discourse analysis is an essential part of any study that touches on the organisational setting (Wodak, 2003).

“... Discourse analysis as a social process implies a dialectical relationship between particular discursive event and the situation(s), institution(s) and social structure(s), which frame it. The discursive event is shaped by them but also shapes them. That is discourse is socially constituted and as well as socially conditioned – it constitutes

situations, object of knowledge and the social identities of and relationships between people and groups of people...” (Fairclough and Wodak, 1997, Pg.258)

Critical realism is now gaining currency in organisational studies. It is seen to posit itself against postmodernism and social constructivism. Closely examined, critical realism and social constructivism are not antithetical concepts (Tsoukas, 2000) and seen through a postmodernistic lens provide useful information and insights (Fleetwood, 2005). They both rely on ontological assumptions that social phenomena (including organisations) are socially constructed, and people connected therewith, even remotely, contribute to its reproduction and transformation via discourses (Fairclough 2005). The dichotomy arises due to different starting points. Social constructionists tend to go to the root of the phenomena: all reality is socially created and we need to understand what contributed to it historically, culturally etc. Finer and deeper analysis causes the problem at the practitioner level. Apart from other potential risks, time consumption can pose serious difficulties, particularly at practitioner level. Critical realism bypasses these difficulties but, unless given sufficient depth during analysis, may appear to give shallow interpretation to social phenomena.

Critical realism accepts the presence of a real world, including a social world, which exists independent of human knowledge about it. At any given time, the social world is pre-constructed for any human being, and some aspects of that world may not be clearly understood by him/her, and/or that she/he may have mistaken knowledge relating to them: consequently, critical realism guards against ‘epistemic fallacy’ ie confusing the nature of reality with knowledge of reality, and therefore reject ‘judgmental relativism’: the view that all representations of the world are equally good. Critical realism, which is moderately social constructivist, rejects the tendency for concepts with institutional settings to be reduced to discourse analysis, locating it instead within an analytically dualist epistemology which gives primacy to researching relations between agency and structure on the basis of a realist ontological structure. Practitioners also prefer less abstruse conceptualisation.

Research Cases

A set of research cases are unfolding. The specific objective has been to capture all round perceptions of leadership role, informed by practice. It therefore includes an autobiographical review with insights the researcher has gained over time, a cluster of case studies to follow through how leadership acquitted themselves in implementing organisational changes, plus current situations, such as ABC, where there is direct researcher involvement with the practitioners.

3.62 Conclusion

The research framework and cases pose a formidable challenge, both pragmatic and intellectual. This calls for reflections on individual and organisational ethical and moral stands in certain situations, including demonstration of leadership capability to arbitrate over paradoxes and exercise wisdom. There have been difficulties. Despite prior arrangement, access to practitioners has been problematic. Time constraints encourage short dialogue or quick conclusive comments, more so from those who have a regimentalised and an ossified outlook. A positive edge to this may be the opportunity to establish lack of involvement of senior staff and its impact on the organisation.

The next challenge will be to write full case study accounts about the insider's view of human dynamics, situational context, and the leadership's interventions.

The centipede was happy quite

Until a toad in fun

Said, "Pray, which leg goes after which?"

That worked her mind to such a pitch,

She lay distracted in a ditch

Considering how to run. (Mrs. Edward Craster, 1871)

In Mintzberg, H. (2005) *Developing Theory about the Development of Theory* (to be Published in Smith and Hitt's, *Great Minds in Management*, Oxford University Press.

3.63 Reference List

Alvesson, M. and Deetz, S. (2000) *Doing Critical Management Research*, London: Sage Publications.

Antonacopoulou, E. and Tsoukas, H. (2002) Time and Reflexivity in Organization Studies: An Introduction. *Organization Studies* **23**, 857-862.

Argyris, C., Putman, R. and Smith, D.M. (1985) *Action Science: Concepts, Methods and Skills for Research and Intervention*, San Francisco: Jossey-Bass.

Argyris, C. and Schon, D.A. (1974) *Theory in Practice: Increasing Professional Effectiveness*, San Francisco: Jossey-Bass.

Bateson, G. (1979) *Mind and Nature*, Toronto: Bantam]

Bennis, W.G. and Nanus, B. (1992) *Leaders: Strategy for Taking Charge*, New York: Harper and Row.

Bourdieu, P. (1998) *Practical Reason: On the Theory of Action*, Stanford, CA.: Stanford University Press.

Bryman, A. (1996) 'Leadership in Organizations' in: *Handbook of Organization Studies*, London: Sage Publications]

Burrell, G. and Morgan, G. (1979) Two Dimensions: Four Paradigms. In: Burrell, G. and Morgan, G., (Eds.) *Sociological Paradigms and Organizational Analysis*, pp. 21-37, 82-87, 395-402. Aldershot, England: Ashgate]

Calori, R. (2002) Essai: Real Time/Real Space Research: Connecting Action and Reflection in Organization Studies. *Organization Studies* **23**, 877-883.

Carpenter, M.A., Geletkancycz, M.A. and Sanders, W.G. (2004) Upper Eschelons Research Revisited: Antecedents, Elements, and Consequences of Top Management Team Composition. *Journal of Management* **30**, 749-778.

- Chia, R. (2003) Ontology: Organization as "World-Making". In: Westwood, R. and Clegg, S., (Eds.) *Debating Organization: Point-Counterpoint in Organization Studies*, pp. 98-113. Cornwall, United Kingdom: Blakewell]
- Cummings, S. and Wilson, D. (2003) Images of Strategy. In: *Images of Strategy*, pp. 1-39. Oxford, England: Blackwell Publishing]
- Cyert, R.M. and March, J.G. (1963) *The Behavioural Theory of the Firm*, Englewood Cliffs, NJ: Prentice-Hall.
- De Geus, A. (1997) *The Living Company: Growth, Learning and Longevity in Business*, London: Nicholas Brealey Publishing Ltd.
- Deetz, S. (1996) Describing Differences in Approaches to Organization Science: Rethinking Burrell and Morgan and Their Legacy. *Organization Science* **7**, 191-207.
- Donaldson, T. and Preston, L. (1995) The Stakeholder Theory of the Corporation: Concepts, Evidence and Implications. *Academy of Management Review* **20**, 85-92.
- Elden, M. (1983) Democratization and Participative Research in Developing Local Theory. *Journal of Occupational Behaviour* **4**, 21-34.
- Fairclough, N. (2005) Peripheral Vision: Discourse Analysis in Organization Studies: The Case for Critical Realism. *Organization Studies* **26** (6):915-939.
Notes: 10.1177/0170840605054610
- Fairclough, N. and Wodak, R. (1997) Critical Discourse Analysis . In: Van Dijk, T.A., (Ed.) *Introduction to Discourse Analysis*, pp. 258-284. London: Sage Publishers Ltd.]
- Fleetwood, S. (2005) Ontology in Organization and Management Studies: A Critical Realist Perspective. *Organization* **12** (2):197-222.
Notes: 10.1177/1350508405051188

Gergen, K.J. and Thatchenkery, T.J. (1996) Organization Science as Social Construction. *The Journal of Applied Behavioral Science* **32**, 356-377.

Goranzon, B. (1997) Leadership: Implementation of Theory or Development of Practical Skills? *AI and Society* **11**, 166-176.

Goranzon, B., Hammaren, M. and Ennals, R. (2005) *Dialogue, Skill and Tacit Knowledge*, Chichester, U.K.: John Wiley and Sons.

Greenwood, D.J. (1999) *Action Research: From Practice to Writings in an International Action Research Development Program*, Amsterdam: John Benjamin.

Greenwood, D.J. (2002) Action Research: Unfulfilled Promises and Unmet Challenges. *Concepts and Transformation* **7**, 117-139.

Greenwood, D.J. and Levin, M. (1998) *Introduction to Action Research: Social Research for Social Change*, Thousand Oaks, CA.: Sage Publications Inc.

Greenwood, D.J. and Levin, M. (2000) Reconstructing Relationships Between Universities and Society. In: Denzin, N.K. and Lincoln, Y.S., (Eds.) *Handbook of Qualitative Research*, pp. 85-106. Thousand Oaks, CA: Sage Publications]

Gummesson, E. (2003) All Research is Interpretive! *The Journal of Business and Industrial Marketing* **18**, 482-492.

Habermas, J. (1972) *Knowledge and Human Interests*, London: Heinemann.

Habermas, J. (1987) *The Theory of Communicative Action. Vol. 2: Lifeworld and System: a Critique of Functionalist Reason*, Boston, MA: Beacon.

Hambrick, D.C. (2005) Just How Bad Are Our Theories? A Response to Ghoshal. *Academy of Management Learning and Education* **4**, 104-107.

Hambrick, D.C. and Mason, P. (1984) Upper Echelons: The Organization as a Reflection of its Top Managers. *Academy of Management Review* **9**, 193-206.

- Hassard, J. and Kelemen, M. (2002) Production and Consumption in Organizational Knowledge: The Case of the 'Paradigms Debate'. *Organization* **9**, 331-355.
- Hatch, M.J. (2002) Essai:Doing Time in Organization Theory. *Organization Studies* **23** , 869-875.
- Heron, J. (1996) *Co-operative Inquiry: Research into the Human Condition*, London: Sage Publications.
- Hosking, D.M. (1988) Organizing, Leadership and Skilful Process. *Journal of Management Studies* **25**, 147-166.
- James, W. (1950) *The Principles of Psychology, Vols. I and II*, New York: Dover]
- Kakabadse, N. and Kakabadse, A. (2005) Discretionary Leadership: From Control/Coordination to Value Co-Creation Through Polylogue. In: Cooper, C.L., (Ed.) *Leadership and Management in the 21st Century: Business Challenges of the Future*, pp. 57-106. Oxford: Oxford University Press]
- Kelly, E., Leyden, P. and Members of Global Business Network (2002) *What's Next?: Exploring the New Terrain for Business*, Cambridge, MA: Perseus.
- Kemmis, S. and McTaggart, R. (2000) Participatory Action Research. In: Anonymous *Handbook of Qualitative Research*, 2nd Edition edn. pp. 567-605. Thousand Oaks, CA: Sage Publications]
- Knights, D. and Wilmot, H. (1992) Conceptualizing Leadership Processes: A Study of Senior Managers in a Financial Services Company. *Journal of Management Studies* **29**, 761-782.
- Kobe, L.M., Reiter-Palmon, R. and Rickers, J.D. (2001) Self-Reported Leadership Experiences in Relation to Inventoried Social and Emotional Intelligence. *Current Psychology:Developmental•Learning•Personality•Social* **20**, 154-163.

- Ladkin, D. (2004) Action Research. In: Seale, C., Gobo, G., Gubrium, J.F. and Silverman, D., (Eds.) *Qualitative Research Practice*, pp. 536-548. London: Sage Publications Ltd.]
- Levinas, E. (1991a) *Otherwise Than being or Beyond Essence*, Dordrecht: Kluwer.
- Levinas, E. (1991b) *Totality and Infinity, an Essay on Exteriority*, La Haye: Martinus Nijhoff.
- March, J.C. and Simon, H.A. (1958) *Organizations*, New York: Wiley.
- Mayer, J.D. and Salovey, P. (1993) The Intelligence of Emotional Intelligence. *Intelligence* **17**, 433-442.
- Pettigrew, A.M. (2003) Strategy as Process, Power and Change. In: Cumming, S. and Wilson, D., (Eds.) *Images of strategy*, Oxford, England: Blackwell Publishing]
- Reason, P. (2003) Pragmatist Philosophy and Action Research: Readings and Conversation with Richard Rorty. *Action Research* **1**, 103-123.
- Reason, P. (1994) Three Approaches to Participative Inquiry. In: Anonymous *Handbook of Qualitative Research*, pp. 324-339. Thousand Oaks, CA: Sage Publications]
- Rorty, R. (1967) Anonymous *The Linguistic Turn: Essays in Philosophical Method*, Chicago: University of Chicago Press]
- Savage, G., Nix, T., Whitehead, C. and Blair, J. (1991) Strategies for Assessing and Managing Organizational Stakeholders. *Academy of Management Executive* **5**, 61-75.
- Schein, E.H. (2004) The Learning Culture and the Learning Leader. In: Schein, E.H., (Ed.) *Organizational Culture and Leadership*, 3rd edn. pp. 393-418. San Francisco: Jossey-Bass]
- Schutz, A. (1967) *The Phenomenology of the Social World*, Evanston, IL.: Northwestern University Press]

Selener, D. (1997) *Participatory Action research and Social Change*, Ithaca, NY: Cornell Participatory Action Research Network.

Shaw, M.E. (1981) *Group Dynamics*, New York: McGraw-Hill.

Shotter, J. (1993) *Conversational Realities: Constructing Life Through Language*, London: Sage Publications.

Simon, H. (1957) *Anonymous Models of Man, Social and Rational: Mathematical Essays on Rational Human Behaviour in a Social Setting*, New York: Wiley]

Simon, H.A. (1945) *Administrative Behavior*, New York: Free Press.

Sjostrand, S., Sandberg, J. and Tyrstrup, M. (2001) *Invisible Management*, Cornwall, England: Thomas Learning.

Smircich, L. and Morgan, G. (1982) Leadership: The Management of Meaning. *The Journal of Applied Behavioral Science* **18**, 257-273.

Strandholm, K., Kumar, K. and Subramanian, R. (2004) Examining the interrelationships among perceived environment change, strategic response, managerial characteristics, and organizational performance. *Journal of Business Research* **57**, 58-68.

Toulmin, S. (2000) Be Reasonable, Not Certain. *Concepts and Transformations* **5**, 151-163.

Toulmin, S. (1990) *Cosmopolis: The Hidden Agenda of Modernity*, New York: Free Press.

Toulmin, S. (2001) *Return to Reason*, Cambridge, MA.: Harvard.

Toulmin, S. and Gustavsen, B. (1996) *Beyond Theory: Changing Organizations Through Participation*, Amsterdam: John Benjamin.

Tsoukas, H. (2000) False Dilemmas in Organization Theory: Realism or Social Constructivism? *Organization* 7 (3):531-535.

Notes: 10.1177/135050840073012

Van Beinum, H. (1999) *On the Design of the Acres Program*, Amsterdam: John Benjamin.

Weick, K.E. (2002) Essai: Real-Time Reflexivity: Prods to Reflection. *Organization Studies* 23, 893-898.

Weick, K.E. (1999) Theory Construction as Disciplined Reflexivity: Tradeoffs in the 90s. *Academy of Management Review* 24, 797-806.

Winter, R. (1996) Some Principles and Procedures for the Conduct of Action Research. In: Zuber-Skerritt, O., (Ed.) *New Directions in Action Research*, pp. 13-27. London: Falmer Press]

Wittgenstein, L. (1953) *Philosophical Investigations*, Oxford: Blackwell.

Wittgenstein, L. (1978) *Philosophical Investigations*, Oxford: Blackwell.

Wodak, R. (2003) Critical Discourse Analysis. In: Seale, C., Gobo, G., Gubrium, J.F. and Silverman, D., (Eds.) *Qualitative Research Practice*, pp. 197-213. London: Sage Publications Ltd.]

Zaccaro, S.J. and Banks, D. (2004) Leader Visioning and Adaptability: Bridging the Gap Between Research and Practice on Developing the Ability to Manage Change. *Human Resource Management* 43, 367-380.

iv Integration in the knowledge economy

In this section a number of contributions (5) discuss; trends and fads such as the knowledge economy, collaborative arrangements with knowledge institutions like the university and knowledge sharing across generations/distance. A common subject seems to be knowledge generation, with knowledge transfer and knowledge sharing as ways of making change and innovation happen. Questions are posed concerning whether or not we have a common understanding of innovation and integration. Whether there are inherent prejudices in several of the approaches to these concepts is given thorough account. Specific attention based on these critical reflections is given to some of the contributions, like the core chapter II.1, as well as the main target of the project by which this publication was made possible.

Chapter IV.1 'Disintegrated Innovation by Richard Ennals' takes as a starting point a critical reflective account of the main topic of the core chapter as well as the project itself. In addition, it addresses several very important topics discussed in other contributions in Section II. The chapter questions whether it is possible to talk about one single Nordic model, as well as one society or stable social system. Is there inherent in some of the contributions an image based on the monocultural Norwegian point of reference? Do we not have to consider that dialogue-encountering differences is a vital point of reference for any position addressing topics on change and innovation?

The chapter raises discussion on several topics that are important reminders, in order not to be caught in one or the other side of the dilemmas discussed and reflected upon in the core chapter II.1. Efforts to make additional contributions to the dialogue approach risks being interpreted as an ambition to create a new alternative position of its own, where a system approach is the *only* solid foundation. Thus, the contribution of this chapter is an important reminder not to fall into this trap.

In the chapter, dichotomies are raised regarding innovation. Dichotomies such as convergent as opposed to divergent, neat as opposed to scruffy, are highlighted and

analysed. A caution is given against emphasising convergent and neat approaches in action, innovation and change.

As a reflective opponent to more systemic and unified approaches in social science, the chapter points to Gödel's presentation regarding the impossibility of arguing a system of propositions that is both consistent and complete. Wittgenstein and his view of social interactions as forms of life is presented as an alternative approach to social life in human society. These overall philosophical arguments are applied in order to phrase discourse innovation as a position to consider. Out of these considerations a possibility can be put forward where integrated innovation could be phrased as systemic *and* discursive innovation, rather than making fixed preferences for one or the other.

Remarks are also made on the lack of focus on technology innovation in most of the contributions, with an exception to the contributions making ICT an important technology to consider in innovation. In addition, the discussion on whether it is possible to identify *one* Nordic model is raised.

Chapter IV.2 'Virtual Links: intergenerational learning and experience sharing across age divides and distances by Anne Inga Hilsen and Richard Ennals' touches upon issues of age and generation which are linked to the discussion in chapter III.4. Here the extent to which new technologies (ICT) can provide an environment in which virtual links can be established across borders, cultures, disciplines and generations, is a core issue. Specific emphasis is given to the utilisation of ICT in changing 'seniors' from being viewed as a problem, to being seen as a solution.

An important linkage in the context of the research conducted and the experiences utilised in the chapter, is the Norwegian Programme for senior workers. One of the main objectives in this programme is to promote active ageing.

As a good practice model fulfilling the objectives of the programme for senior workers to promote active ageing, the model 'the Golden Link' was chosen. This is a computerised model based on: dialogue over time between seniors and juniors, acknowledgement of experience-based competences and the making of implicit tacit knowledge explicit. 'The Golden Link' was a way of bringing all involved into the discussions and problem-

solving process at the workplace level. Local people themselves were asked to contribute and develop their solution.

The ‘Golden Link’ addresses three challenges:

- The demographic challenge; who will replace the seniors when they leave?
- The competence challenge; who will possess knowledge to be replaced?
- The mobile technology challenge; making knowledge accessible at a distance.

Facing these challenges, Virtual Link builds on the model of the ‘Golden Link’. Virtual Link aims at providing links between people across geographical divides. This link is based on low-level technology. Thus, the knowledge economy, as well as networking and collaboration are important in this respect.

Chapter IV.3 ‘Innovation in regions of disintegrated knowledge intensive firms – some reflections and assumptions by Hans Chr. Garmann Johnsen ‘ raises some basic questions regarding innovation and the concept of the knowledge economy. What counts as a knowledge economy? Is the knowledge economy something significant, or just a fad?

These questions are of fundamental importance when one wants to encourage a critical debate and in-depth reflections on buzzwords popping up in different discourses. Many of the concepts and phrases used throughout this publication need a similar critical consideration. The discussion in this chapter has linkages to the critical account of integrated innovation give in chapter IV.1. As in chapter IV.1 this chapter questions the concept of innovation, and presents a similar critical discussion to the one on the concept of the knowledge economy. Questions like; “what counts as an innovation?” and: “what is the relation between innovation and the knowledge economy?” are given thorough investigation.

The theoretical discussion is supplemented with experiences from an innovation process in the ICT industries in Agder region. The experiences are based on an interesting survey, shedding light on whether integration is favourable seen from the industry perspective. In

this ICT network it seems that disintegrated network/collaborative structures operate as disintegrated clusters in the regional knowledge community.

There is a paradox to be seen in the 'New Economy' of which the ICT network is imagined to belong. On the one hand the 'New Economy' is short-term, flexible, using outsourcing, short-term contracts, more overtime, less 'family-friendly' and more market-driven. On the other hand, these industries are supposed to have greater focus on individual competences, human resource management, long-term development of competences and require stability of their workforce. The finding of the survey of the ICT industry in Agder did not reveal significant differences between this ICT industry and other national industries regarding this paradox as well as most aspects of the conceptualisation of the 'New Economy'. The question then arises as to whether we can talk about a 'New Economy' at all. In Chapter II.3 (see page 140) a similar question is posed concerning the concept of globalisation.

There are two important chapters on the different roles of the university in regional innovation and national politics that follows.

Chapter IV.4 'Reflections on the engagement of a university in regional development in the UK by Peter Totterdill' highlights a UK experience which makes up great potential for comparisons with a very specific Norwegian experience from Agder, presented in Chapter IV.5.

The chapter makes a historical review of changes in local regional policies and authorities regarding the promotion of local interventions through empowerment of citizens and employees. A critical review is given of the recent creation of nine English Regional Development Agencies (RDAs). This recent creation reflects technocratic approaches to regional development and the absence of a critical-reflective dimension.

Three modes of policy production are listed;

- *Bureaucratic*. Provides support to individuals and business according to carefully defined rules and criteria.

- *Technical-rational*. Resources allocated according to prescribed criteria and defined targets as part of a hierarchy of aims and objectives. Performance measurements are essential.
- *Discursive*. Interventions building coalitions acting on working consensus reached through dialogue.

At Nottingham Trent University, The Work Institute (TWI) functioned according to the discursive mode. The Work Institute for quite some time played a significant role in promoting local regional development. Changes in work organisation were a significant feature.

Interventions by TWI were identified as:

- a culture with sufficient slack for experimentation
- long-term relationship with key actors internally and externally
- long-term core projects
- multi-voiced approaches based on interaction and learning between researchers and practitioners.

In a critical review of the university's own role in regional development, several obstacles were identified:

- inter-faculty and multidisciplinary approaches have been actively discouraged
- no attempts to identify key areas where the university enjoys advantages in research, policy or consultancy
- lack of executive capacity to pursue corporate initiatives
- expertise spread across several faculties. Informal networks rarely develop and without sustainability
- no university-wide examination of research funding possibilities
- difficulties for teaching staff to invest time, build competences and develop knowledge required for commercial work.

Successful collaboration between practitioners and academics are among the most challenging obstacles in order to promote research based change and innovation processes, where the university or linked subsidiaries have potentials for engagement.

After the closedown of TWI, the current state is summarised as the emerging failure of RDAs and universities in fulfilling their Triple Helix third task:

- failure to conceptualise the third task (see also chapter IV.5) properly.
- failure to deepen the engagement of the university in the regional agenda.
- failure to create funding regimes which support university innovation and involvement.
- failure to address national performance measurement.

Chapter IV.5 ‘The complexity of the different regional roles of the university by *James Karlsen*’ introduces the ‘Agora’ arena as a public meeting place between the university and the region. This concept is interesting to consider in relation to the discussion on coalition collaborative arrangements and solid network structures and their systemic features, as well as what these features can imply (Chapter IV.4 and II.1).

The contribution discusses four roles the university can play on the Agora facing the region. Two of these are closely linked with the concept of Mode-1 (participatory observer/theoretical constructor, a passive role), while the other is more associated with Mode-2 (acting change agent/experimental, an active role). This distinction can be associated with the distinction between knowing that and knowing how (Ryle). The Mode-1 and Mode-2 conceptualisation additionally implies some parallel and comparative potential to the identified contradictions in the innovation dilemma between structured bureaucracy and more spontaneous creativity (Chapter II.1). Similar dichotomies were addressed in Chapter IV.1 and IV.3.

The possibility of different kinds of knowledge, and their relations to specific roles in the university system, is discussed and differentiated. In relation to integrated innovation, the way these different forms of knowledge and roles are integrated and expressed on the

Agora, has an interesting comparative potential to the discussion of integration in chapter II.1.

Dilemmas of the 'capitalist university' are part of the general dilemma of academic freedom and neutrality of science on the one hand, and applied commissioned work on the other. The history and current state of affairs in England, as presented in Chapter IV.4, has interesting comparative stories to tell. Policy modes listed in Chapter IV.4 conceptualise aspects of this dilemma. Additionally there is a parallel to the discussion of dilemmas in action research in Chapter II.1.

IV.1. Disintegrated Innovation by *Richard Ennals*

Introduction

As it is presented in the core paper, the *Integrated Innovation* project comprises reflections, in a context of tranquility worthy of the poet William Wordsworth, on case study experience, which is now complete. It makes use of existing data. In order to counteract a possible tendency to move towards an unnaturally smooth overall conclusion, this paper is intended to raise some complications. It comes from an author who has been involved with *Integrated Innovation* from the start, and who is in sympathy with the approaches which have been used. In addition, introductions are provided for the other researchers whose work is included in this collection.

Spanner

At this stage in the *Integrated Innovation* project at IRIS, as we move to the concluding publications, the long considered core theoretical argument, based on Norwegian tradition and modern systems thinking, is being bolstered by supplementary material, in the form of papers from Norway and the UK. It may now be appropriate to throw a spanner in the works illustrated in Trond Haga's cogwheel diagram, which he has used both in the core paper and in his 2007 PhD thesis on network orchestration, as well as in other publications (Haga 2007, 2008).

We can contrast approaches to thinking about change and *innovation*. The classic reference is to *convergent* and *divergent* thinking, and the work of Liam Hudson (Hudson 1966).

- The *Integrated Innovation* model is *convergent*, and reflects much well established Norwegian thought and practice, as well as a wider Scandinavian and Nordic context.

- By contrast, in the UK, *innovation* tends to be associated with *divergent* thinking. It is reported that leading entrepreneurs typically parted company with formal education at an early stage. They tend to be depicted as individualists.

Alan Bundy, an artificial intelligence researcher based in Edinburgh, and working in a context of mathematics and theorem-proving, talked of the distinction between those who are *neat*, and those who are *scruffy* (Bundy 1987). Perhaps Norwegians and British, respectively, often fit the two stereotypes.

As in the past, I will make use of *analogical* thinking, using approaches learned in Sweden over the last 20 years (Göranzon and Josefson 1988), trying to cast light on the cultural contexts in which we are working, and unearthing some tacit assumptions (Göranzon et al 2006). I need to step sideways between examples and contexts, relying on the power of language, and its associations. It is not enough to try to ‘drill down’, with further stages of analysis of explicit data. Humour, with multiple interpretations of the same utterances, can be a valuable resource, but of course, does not always translate between cultures.

I draw my inspiration from the series of interventions on ‘Artificial Stupidity’ at the 1988 Stockholm conference on ‘Culture, Language and Artificial Intelligence’ (Göranzon and Florin 1990, 1992). At a time when there was widespread enthusiasm for what computers could do, Göranzon and his colleagues drew attention to the inherent limitations, noting what they could not do. American researchers had looked forward to replacing human experts by expert systems. However, such systems are restricted, in that they can represent explicit knowledge, and some implicit knowledge, but cannot deal with tacit knowledge.

Initial responses to what had been intended as provocative ideas encouraged me to develop the chapter further. The result may have the curious attraction of rationalising apparent inconsistencies. I do not claim that the separate paragraphs are always tightly integrated. As a precedent I can cite the paragraphs in Wittgenstein’s ‘Philosophical Investigations’ (Wittgenstein 1954), which have confused readers since they were first published, after the philosopher’s death. Wittgenstein was concerned to address

confusions, to “show the fly the way out of the fly bottle”, but had no intention of presenting an overall systematic view.

The important point about *dialogue* is not that it should result in unanimous agreement, but that the participants should be able to listen to each other, respect the differences, relate what they hear to their own practice, and identify new ways of going on (Gustavsen 1992). The language games should be played. We learn from differences. If all of our views were already the same, it has been suggested, learning would stop.

Kuhn (Kuhn 1962) provided an account of *paradigm change*. He highlighted the stage of *discontinuity* and mutual incomprehension. We should expect this to arise with *innovation*, at least on occasion. Festinger (Festinger 1957) wrote of *cognitive dissonance*. Integration breaks down at this point.

In the context of our current debate, I am suggesting that we are dealing with *discourse innovation*. It can be *scruffy*, unsurprisingly, because we tend to look for *neat* solutions in line with our previous work, and life is not always so straightforward. There is another reason for *scruffiness*: the *neat* formality of one discourse is rarely fully aligned with that of another. In order to permeate the intellectual membranes between discourses we need to find routes through, which can involve making interventions. Shotter (2006) writes of learning through encounters, emphasising the performative aspects of utterances, and of written texts. Speech act theory is also practically important. Afterwards we may wish to describe these stages as *neat*, but I suggest that there was *scruffiness* at the time.

Time

It is now some time since the end of the IRIS practical field work in local enterprises in South Western Norway, primarily using a method described as *Action Research*, which formed the core of the project. We have had a substantial subsequent period of reflection and writing, which may have added some distance. In a separate paper in this collection, I provide a tutorial introduction to both *Working Life Research* and *Action Research*, making reference to cases from *Integrated Innovation*.

I am reminded of a recent PhD at KTH, where I was the opponent. The thesis had been submitted as *Action Research*, but by the time it was completed and submitted, 16 years later, it had to be regarded as a contribution to the history of ideas: valuable, interesting, but different. The thesis needed to be approved for humanitarian reasons, so that the researcher could continue with his life, which had been suspended for so many years. He had not been part of the intervening debate, and had no understanding of what had happened since his chosen case study projects ended.

Patterns of explanation will usually become contaminated, as the *logic of discovery* is transmuted into the *logic of justification and explanation*.

Distance

Matters have been complicated at IRIS by the serial departure of many of the key actors, since the original case study work was undertaken. It is as if the drama had been transformed into a radio play, performed by remote and scattered individuals using mobile phones, operating asynchronously. This changes the nature of the interaction. However, by dispersing, their work may, paradoxically, have been made more accessible to a new generation of colleagues and readers. This collection represents, in itself, a diffusion exercise, as the work of the IRIS team is linked with work elsewhere in Norway (in particular Agder and Tromsø), and across the North Sea in the UK (in particular Kingston). Kingston and Stavanger feel like part of the same virtual region: we are able to share many meanings.

Prophecy

The IRIS team have been conscious of working within Norwegian, and Nordic or Scandinavian, traditions of *Working Life Research* and *Action Research*. There has been collective pride in being different from other countries, but a corresponding pressure to conform to a perceived model stereotype. Indeed, this was explicit in the original research proposal.

I am reminded of St Matthew's Gospel in the New Testament, which presented Jesus Christ as the fulfilment of numerous Old Testament prophecies. At times this meant reworking or augmenting narratives to fit the required pattern. True believers will see the necessary signs. Outsiders, or theological 'dummies', will be confused.

By contrast, the work at Agder University and Agder Research, now funded from VRI and other sources, is more explicit in drawing on varied paradigms (Johnsen *et al* 2008). They do not start with the assumption that there is an *integrated* approach to *innovation*. Indeed, the account of knowledge intensive firms, by Hans Christian Garmann Johnsen, talks of *disintegration*. Roger Normann locates the work in the context of regional governance. James Karlsen concentrates on the role of Agder University as a regional actor. Jens-Kristian Fosse explores innovation at the level of municipalities. On the other hand, it could be argued that they also lack substantial foundations in cases based in enterprises, and there is little common direction. Rather than the New Testament, the text is *Ulysses*, by James Joyce: frenetic, unpunctuated, rambling and poetic, but curiously memorable. There may be a stream, a tributary of the River Liffe, but there is also intelligent consciousness.

Elephant

My work over recent years has suggested that there are in fact several different 'Norwegian models': it is not simply a matter of the blind men of Hindustan grasping different parts of the same model. During the EDWOR (Enterprise Development and Working Life) doctoral programme, hosted by the Norwegian University of Science and Technology in Trondheim, it became apparent that there were several different *Action Research* elephants in the room. As each was largely unaware of the others, there were periodic collisions, and even stampedes. Onlookers could be trampled.

Furthermore, current work now supported by VINNOVA suggests that the Nordic or Scandinavian 'model of innovation' does not currently exist in a unified form, other than as the name for a discourse between rival camps of believers. They now prefer to arrive at an ecumenical solution, and hang together, rather than face extinction, being hung

separately. In the context of the turbulence of globalisation, it is helpful to have something to hang on to.

The Swedish model is now in a museum, following the closure of the National Institute for Working Life. Former Director-General Anders L. Johansson had written the epitaph in 1995 (Johansson 1995), but few had paid attention. Both Claussen and Johnsen, in this collection, refer to criticisms of the wider Scandinavian or Nordic model.

Dramatis Personae

Tor Claussen and Trond Haga have been writing in the context of traditions and discourses with which Tarja Tikkanen and Peter Totterdill are less familiar, for different reasons. Through a series of joint projects it has become apparent that all four can share a common vocabulary, expressed in European English, but they do not necessarily give the same meanings to particular words, when it comes to their own practice.

Nazir Walji, based in Kingston, has been working within an Action Research tradition strongly influenced by Norwegian work. However, the context in which he works lacks the framework of tripartism, partnership and social dialogue, which is assumed by Norwegians.

Carol Baily, at Kingston, has, like Tarja Tikkanen and Anne Inga Hilsen, started with an emphasis on learning and generational change. Tarja Tikkanen (at IRIS in Stavanger) and Anne Inga Hilsen (at AFI in Oslo) have respectively concentrated on ageing learners and ageing workers: the same individuals are seen through different research perspectives. The same intervention may be seen as beneficial in terms of working life but detrimental in terms of learning. For Carol Baily the focus is “reverse intergenerational learning”, in which the old can learn from the young. Nazir Walji’s approach is of the sparring partner, working alongside the leader in NGOs.

Perhaps unusually, in the context of a research programme on the theme of *Integrated Innovation*, it is never entirely clear what this theme means. Monty Python presented the search for the *Holy Grail*, and *Innovation* fits within such a narrative. *Spamalot* provided a contrived end to the legendary search, in which the occupant of a particular theatre seat

is deemed to have the Grail. This is in the pantomime tradition of popular culture, well aligned with the management of government initiatives. We would probably wish to assert that our research went beyond pantomime.

To offer a *reductio ad absurdum*, Monty Python provided a simple alternative definition of *Innovation*: "... and now for something completely different", with sketches which conform with Liam Hudson's description of *divergence* (Hudson 1966). The explicit contrast, for Monty Python, was with chartered accountants, who were not considered to epitomise creativity or innovation.

Innovation

So what do we mean by *Innovation*? Each of the researchers named above are reluctant to focus on *technology* as the key, but that reluctance is not fully shared by Lene Foss, in Tromso, whose scenario, in the collection, deals with the commercialisation of biotechnology. My own previous professional lives, in a sideways skid between many different professions, have included managing national research programmes in new technologies. The fundamental issues turned out to be about managing and orchestrating collaboration between organisations.

Tor Claussen and Trond Haga are interested in *process innovation*, which they see as resulting from new ways in which people work together. A new outcome, such as the ecologically acceptable recycling of toxic dust, or a novel process in a smelter, is seen as the culmination of a narrative in terms of networks. They focus on a small number of cases, and attribute the successful outcomes to the elements which form the core of their own interventions. Luhmann has been lurking systemically, but has yet to fully emerge from the shadows, as explained by Tor Claussen.

Tarja Tikkanen's starting point is *learning*, and the argument that the new demands of the economy and society require innovative approaches to education and training. In particular she has established an international reputation in her work on older learners (Tikkanen and Nyhan 2006). These individuals are considered more as learners than as

workers, and measurement of their progress tends to be in terms of courses studied, rather than organisational change. Much of the discussion is in terms of *competence*.

Both Peter Totterdill and Anne-Marie McEwan have been concerned with new forms of work organisation, based on practical interventions by the UK Work Organisation Network and the Centre for Working Life Research, but have been sceptical about over-simple solutions. Norwegian assumptions do not necessarily hold true in British regions.

In the UK there has been a narrowly reductionist Taylorist approach to competence, which the Germans (such as Felix Rauner in Bremen) fear could be replicated at European level, with disastrous effects (Corbett *et al* 1990). In Sweden, with Bo Göranson at KTH, the focus has been on *skill* (Göranson 1995), and I have argued, in *Dialoger*, that we have to go “*beyond all competence*” (Ennals 1996). Bjorn Gustavsen’s evaluation of the Swedish ALF programme (Gustavsen *et al* 1996) demonstrated that investments in *training* are not correlated with improvements in *productivity* and *innovation* unless they are integral to organisational development.

Peter Totterdill captured the imagination with his ‘Hundredth Monkey’ project, with the UK Work Organisation Network, which was concerned with the *diffusion* of innovation, and the gap between *leading edge practice* and a typically long tail of mediocrity. For Peter Totterdill, the key is *work organisation*, and he has led numerous projects, in the UK and across Europe, in which good practice in *work organisation* is documented in case studies, and made available for wider adoption (Fricke and Totterdill 2004). In the UK, however, there has been an absence of consistent policy and sustained government support. Instead the demand has been for *innovation*, and there have been a series of short-lived inconsistent initiatives, typically neither piloted nor evaluated. Anne-Marie McEwan’s work on Healthy Working Centres, which included facilitating new regional networks, was funded for only 10 months. The networks which she stimulated are still flourishing some years later.

At Agder there is a Centre for *Working Life* and *Innovation*, with a formidably cohesive team of researchers, but no pre-emptive definition of how the two are linked. The openness of mind is admirable. In Tromsø there has been some *Action Research*, but with

a more limited following within a strong traditional university. There is perhaps less opportunity for dialogue and the co-generation of knowledge in fishery sciences.

Structuration

I have often discussed Giddens' work on *structuration* (Giddens 1984), and the incoherence of the view that the social science researcher can claim objective detachment when addressing subjects in which he has been, or continues to be, an actor. Neither Giddens nor Scott (Gibbons *et al* 1994; Nowotny *et al* 2001) have made the move to endorse *action research*, but they have shared a discourse on the *new production of knowledge*. Having punctured conventional social science, they leave open the question as to what should take its place.

I have indeed worked with each of our four principal characters, and each of the subsidiary contributors, over a number of years, so cannot claim detachment. I can point to both a *common* vocabulary which unites them, and *divergent* meanings which can put them into apparent opposition. They are not necessarily opposed, but they have been talking about different things, using apparently the same language. They have come from different backgrounds, following different trajectories, and for a period have shared a vocabulary. This is a familiar phenomenon in international research communities, as I documented in the case of logic programming in the 1980s.

My own task has been to try to translate, and, as Trond Haga might argue, *orchestrate* the *discourse*. Indeed, what I have been doing is *discourse innovation*. I have sometimes described my role in terms of *mending*, *cleaning* and *ironing*. The thread may need to be heavy duty, if we are to cover the cracks and cope with the strain. Sometimes the task is too demanding. I have to address much more than propositional content. Our principal characters are substantial, and we have to understand more than the explicit surface utterances and texts. In the context of speech act theory, we need to see their utterances as *actions*, and understand their *meanings* in context.

Audience

When considering the workplace actors as our subject matter, we may at times forget the audience for the required published outputs. It would be unfortunate, but not at all unusual, to write elaborate academic papers which nobody would read.

For *Integrated Innovation*, the Norwegian Research Council requires the delivery of a prescribed menu of published outputs, meaning that Trond Haga and Tor Claussen are expected to add bricks to the wall of the edifice which constitutes the *Norwegian Model*. Tarja Tikkanen is a highly experienced editor.

Tarja Tikkanen is not by origin Norwegian, and her focus is not *working life*, but *learning*, seen in a European context. The dynamics are different. She has worked in a separate tradition, and recent efforts to integrate the two paradigms via hybrid projects with Cedefop (Tikkanen and Nyhan 2006; Gustavsen et al 2007) have had at best partial success. Indeed, her Nordic Council project on ‘active age’ tried to blend *working life*, *learning* and *health*, which have had distinct traditions. I have worked in each of the three paradigms, and can report that they are indeed different. At the superficial level of shared vocabulary the hybrid approach was fine, but it disintegrated once it was necessary to consider *practice*, and what would constitute *evidence*.

Peter Totterdill is accustomed to focussing on *work organisation*, and despite his profound research insights, it is not unusual for his projects, and those of Anne-Marie McEwan, to be evaluated by particular sponsors, such as the European Social Fund, in terms of ‘bums on seats’ at dissemination events. This has been a pragmatic compromise, in a country, UK, which has no recent tradition of *action research* for organisational renewal, and has abandoned any pretence of *social partnership* or *social dialogue*.

4.64 *Waiting for Gödel*

Philosophers of knowledge, faced with the apparent disintegration of respected edifices of knowledge, might console themselves with well-established arguments.

Gödel (Gödel 1931) argued that it was not possible for a system of propositions to be both consistent and complete. It is not possible to reason comprehensively about a system from within and at the level of the system itself. I argue that this theorem does not apply merely to systems of formal logic.

The later Wittgenstein talked about the forms of life in which language games are played (Wittgenstein 1954). New participants in a given form of life need to learn to follow the rules, many of which will not be explicit. He recanted his early logical positivism, in which language was seen as providing a picture of the world (Wittgenstein 1922). Language, he realised, is used for many purposes. We have many tools in our language toolbox. Language games are played.

Wittgenstein was a great admirer of Ibsen, whose plays, in the view of George Bernard Shaw, brought to life not only nineteenth century Norwegian middle class attitudes, but illuminated social life across Europe. I always regarded EDWOR doctoral teaching weeks as workshop versions of Ibsen plays in five acts, with battles of ideas and personal crises. Ibsen delighted in debunking myths of integration and civility, for example in *The Wild Duck*, *Ghosts*, *Pillars of Society* and *An Enemy of the People*. By the end of each play, the mood was more of disintegration.

In 1969 I directed the world premiere of Pinter's play *Landscape*, where two characters sit on the stage, without moving, uttering speeches, but wholly failing to engage in dialogue. Half of the audience walked out. The good news was that half of the audience stayed.

Academic life can be like that. You spend years "waiting for Godot", and then several come along at once, and fail to communicate. Perhaps this is what John Cleese and Connie Booth were saying with *Fawlty Towers*, which was perhaps the spiritual home for EDWOR teaching weeks. Situation comedies may have much to teach us about action research.

A Theology of Action Research

The argument (in both the New Testament and *Action Research*) is that man could not make sense of his own problems sufficiently to be able to solve them. It required an intervention from outside, by someone who could join and participate in the human form of life, but retain a perspective (possibly even supernatural) which was not subject to the same constraints of time, place and cultural presuppositions.

It is hard to reconcile such a view of interventions with a traditional positivist view of social science, in which the scientist is a detached observer. We need a new social science.

There can also be problems with a systems approach, which may tend to downplay the significance of individuals and their interventions, and may seek to mould complex reality into a common shape. Peter Totterdill has made this criticism, in the debate on the core paper.

We might argue that Trond Haga's work on *network orchestration* (see core paper) squares the circle. He points to the *systemic* importance of networks, but highlights the ongoing role of the creator, designer and *orchestrator*. Networks are *artificially* constructed and maintained. They are not natural phenomena.

In *Artificial Intelligence and Human Institutions* (Ennals 1991) I considered models of leadership and diffusion, with case studies of particular institutional structures, many of which I had designed and implemented. One of the models was drawn from the New Testament, with disciples sent out two by two. This approach was used in 1980-85 to establish pilot projects around the world, using computers in education, based on my 'Beginning micro-PROLOG' (Ennals 1983).

National Myths

Even in the modern world, we are surrounded by myths.

In the UK, the government trumpets the virtues of 'Britishness', as yet officially undefined, which is held to combine tolerance, democracy, openness and a concern for

justice. It is hard to reconcile that myth with, for example, the realities of the slave trade, slavery, empire, and continued inequality. It is simpler to live in Denial (which is not just a river in Africa).

In Norway the national myth involves participation, democracy, consensus, human rights and decent work. This is the Norwegian model (“Isn’t it good, Norwegian wood”), with an additional focus on the regional dimension.

Do the realities correspond? In national programmes like ED 2000 and VC 2010, where the case study workplaces for interventions by research were typically chosen by the labour market parties, it is hard for outsiders to know what to conclude. What has been the impact of North Sea Oil? Are markets and choices being distorted? What has been the over impact on research programmes at national and local levels? In Agder, community ownership of the proceeds from North Sea Oil has enabled generous funding of research via foundations in the region. Is the underlying truth that companies are becoming more “pragmatic”, or ruthless, and that the veneer of social partnership is now very thin?

Denial

There are some subjects which are simply too terrible to contemplate, such as war, plague, and other forms of disaster, so we move them to the back of our minds. Quite soon we can forget that they exist, and they are not included in what we pass on to the next generation. It is not that we necessarily falsify our account of the past, but our memories are adjusted, removing items which cause pain. I suggest that this phenomenon is widespread. I have discussed how it arises in defence and technology policy, downplaying the consequences of nuclear war (Ennals 1986), and in the long history of slavery and the slave trade (Ennals 2007).

Stephen Toulmin incorporated such an account in his *Return to Reason* (Toulmin 2001). He argues that physics was developed based on the myth of stability, and that neo-classical economics was based on the myth of equilibrium. The truth was that those fields of study are chaotic, but it was more convenient to use wishful thinking and impose a supposedly rational structure for the new artificial disciplines. Given the artificiality of

the disciplines in a chaotic world, their explanatory models are unlikely to be fully successful. If we then take account of change over time, then it is not hard to see that rigid artificial models will be found to be inadequate. The arguments which Toulmin deploys against scientific myths can also be used against national myths, and simple accounts of innovation. Interestingly, Toulmin favours the approach of clinical intervention, noting that human agency is central to addressing practical problems. On this basis, action research is presented as integral to processes of change in a post-mythical world. Perhaps unsurprisingly, schools of *action research* can themselves construct myths, which need to be challenged.

Community Cohesion

I have submitted a five-year research programme for funding by the Leverhulme Trust: *Community Cohesion as a Process: The Management of Cultural Diversity*. One central assertion is that *Cultural Diversity* is a key resource for *Innovation*. The programme is designed to develop cohesion at several levels: local, regional, national and international, with many links accomplished through diaspora communities. By contrast, Norway has been largely monocultural and monolingual. Debates on diversity, including those led by Lene Foss, tend to have concentrated on gender.

There are implications for theoretical accounts of *Innovation*. We are no longer thinking in linear terms about *monocultural* contexts. We regard *dialogue*, and the encounter with *differences*, as fundamental to *learning*, changing the behaviour of individuals and groups, resulting in *Innovation*. Here *Innovation* refers to phenomena which are seen as new. Shakespeare addressed this in *The Tempest*. Miranda declared “Brave New World!”. Prospero responded “’Tis new to thee.”

In the context of *Community Cohesion*, *dialogue* and *orchestration* are going to be important. We encounter many different trajectories, where those concerned see the changes in terms of *Innovation*. They amplify their accounts by referring to different models. In Lithuania, for example, there has been a transition from state socialism to western capitalism (Augustinaitis 2007, 2008). In Mozambique there has been a

transition from colony to independent state. In Norway there were celebrations of the centenary of freedom from Swedish rule, and debates on the legacy of slavery have included accounts of rule by the Danes.

In the twentieth century the common concern was for national cohesion, complicated by cultural diversity. In the twenty-first century, globalisation means that ‘Innovation in one country’ may no longer be coherent. This presents challenges for both Norway and the UK, as each has sought to stand apart from the crowd. Both have been Groucho Marxists, reluctant to join a club which would have them as members. They have remained on the margins, willing to advise and criticise others, and, in this collection of papers, reflecting on their own experience.

References

Augustinaitis A. *Learning Lithuania - building a small country*. In eds. Gustavsen B., Nyhan B. and Ennals R. *Learning together for Local Innovation: Promoting Learning Regions*. Cedefop, Luxembourg 2007.

Augustinaitis A., Ennals R., Malinauskiene E., and Petrauskas R. *E-Redesigning of Society: Towards Experiential Connectivity of Generations in Lithuania*. *AI & Society* 23.2 2008.

Bundy A. *AI Bridges and Dreams*. *AI & Society* 1.1 1987

Corbett J.M., Rasmussen L.B. and Rauner F. *Crossing the Border: The Social and Engineering Design of Computer Integrated Manufacturing Systems*. Springer Verlag, London 1990.

Ennals R. *Beginning micro-PROLOG*. Ellis Horwood, Chichester 1983.

Ennals R. *Star Wars: A Question of Initiative*. Wiley, Chichester 1986.

Ennals R. *Artificial Intelligence and Human Institutions*. Springer Verlag, London 1991.

Ennals R. *Preventing IT Disasters*. Springer Verlag, London 1995.

Ennals R. *From Slavery to Citizenship*. Wiley, Chichester 2007.

Ennals R. and Gustavsen B. *Work Organisation and Europe as a Development Coalition*. Benjamins, Amsterdam 1999.

Festinger L. *A theory of cognitive dissonance*. Evanston, Ill: Row Peterson, 1957.

Fricke W. and Totterdill P. (eds.) *Action Research in Workplace Innovation and Regional Development*. Benjamins, Amsterdam 2004.

Gibbons M., Limoges C., Nowotny H., Schwartzman S., Scott P. and Trow M. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. Sage, London 1994

Giddens A. *The Constitution of Society: Outline of the Theory of Structuration*. Polity, Cambridge, 1984.

Gödel K. *The Undecidability Theorem* . University of Vienna, 1931

Göranzon B. *The Practical Intellect*. Springer Verlag, London 1992.

Göranzon B. (ed.) *Skill, Technology and Enlightenment: On Practical Philosophy*. Springer Verlag, London 1995.

Göranzon B. and Florin M. (eds.) *Artificial Intelligence, Culture and Knowledge: On Education and Work*. Springer Verlag, London 2000.

Göranzon B. and Florin M. (eds.) *Skill and Education: Reflection and Experience*. Springer Verlag 2002.

Göranzon B. and Josefson I. (eds.) *Knowledge, Skill and Artificial Intelligence*. Springer Verlag, London 1988.

Göranzon B. Hammarén M. and Ennals R. (eds.) *Dialogue, Skill and Tacit Knowledge*. Wiley, Chichester 2006.

Gustavsen B. *Dialogue and Development*. Van Gorcum, Maastricht 1992.

Gustavsen B., Ennals R., and Nyhan B (eds.) 2007 *Learning together for Local Innovation: Promoting Learning Regions*. Cedefop ,Luxembourg 2007.

Gustavsen B., Finne H., and Oscarsson B. (eds.) *Creating Connectedness: The Role of Social Research in Innovation Policy*. Benjamins, Amsterdam, 2001.

Gustavsen B., Hofmaier B., Philips M.E. and Wikman A. *Concept-Driven Development and the Organisation of the Process of Change*. Benjamins, Amsterdam, 1996.

Haga T. *The role of development agents in company innovation in Norway*.

In eds. Gustavsen B., Nyhan B. and Ennals R. *Learning together for Local Innovation: Promoting Learning Regions*. Cedefop ,Luxembourg 2007.

Haga T. *Orchestration of network instruments: A way to de-emphasize the partition between incremental change and innovation?* *AI & Society* 23.1 2008.

Hudson L. *Contrary Imaginations*. Penguin, London 1966.

Johansson A.L. *The Swedish Model*. Swedish National Institute for Working Life, Stockholm 1995.

Johnsen H.C.G., Karlsen J., Normann R. and Fosse J-K. *The Contradictory Nature of Knowledge: a challenge for understanding innovation in a local context and workplace development, and for doing action research*. *AI & Society* 23.1 2008.

Johnstad T. *From a learning company to a learning region – the case of Raufoss in Norway*. In eds. Gustavsen B., Nyhan B. and Ennals R. *Learning together for Local Innovation: Promoting Learning Regions*. Cedefop ,Luxembourg 2007.

Kuhn T. *The Structure of Scientific Revolutions*. Chicago University Press, Chicago 1962.

Levin M (ed.) *Researching Enterprise Development*. Benjamins, Amsterdam 2002

Nowotny H., Scott P. and Gibbons M. *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty*. Polity, Cambridge 2001.

Shotter J. *Dialogue, Depth, and Life inside Responsive Orders: From External Observation to Participatory Understanding*. In eds. Göranson B., Hammarén M. and Ennals R. *Dialogue, Skill and Tacit Knowledge*. Wiley, Chichester 2006.

Tikkanen T. and Nyhan B. (eds.) *Promoting Lifelong Learning for Older Workers: An International Overview*. Cedefop, Luxembourg 2006.

Toulmin S. *Return to Reason*. Harvard University Press, Cambridge Mass, 2001.

Wittgenstein L. *Tractatus Logico-Philosophicus*. Routledge, London 1922.

Wittgenstein L. *Philosophical Investigations*. Blackwell, Oxford 1954.

IV.2. Virtual Links: intergenerational learning and experience sharing across age divides and distances

by Anne Inga Hilsen and Richard Ennals

Abstract: *This article presents and discusses ‘Virtual Links’. This builds on ‘The Golden Link’, a model which was developed to address the challenge of how to make experience based competences of senior workers available to the organisation and to younger workers with less experience. ‘Virtual Links’ support cross-generational communication and learning, as well as enabling access for mobile workers to the knowledge of experienced seniors not physically present.*

Keywords: *Good practice, Ageing workers, Cross-generational learning, Learning organisations, Mobility*

4.65 Older workers, ICT and cross-generational communication

The key question behind this article concerns the extent to which new technologies can provide an environment in which sustainable virtual links can be established, across borders, cultures, disciplines and generations. The parallel is with a common medium such as writing, or a natural language, such as English. Can we develop useful Virtual Links? This is not primarily a question about technology, but about the context in which it is used.

This article explores a good practice model, developed within a project aimed at promoting active ageing, to the wider field of communication and learning across differences and divides. Information and communication technology (ICT) is often seen as a hindrance for ageing workers, and a threat to lifelong learning. With the challenge set by the European Council in Lisbon in 2000, stating that Europe was to become the most dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion, promoting lifelong learning

(Gustavsen *et al* 2007) and active ageing (Tikkanen *et al* 2006) is vital. Ageing workers are not only valuable as labour from a macro-economic perspective, but they possess experience based competences that are vital for successful production. Linking ICT and ageing workers is one of the great challenges facing the European knowledge-based economy (Ennals 2005).

Cross-generational knowledge production and mobile work are not only a European concern. The theme of intergenerational links is vital in the SADC countries of Southern Africa, where the technological environment is very different. Access to the Internet is rare, but mobile phones and iPods are becoming universal. They support communication, including knowledge transfer between generations, building on traditional patterns, but now potentially supported by modern wireless networks.

Good practice models are useful to demonstrate possible ways forward, possible ways of combining the experience based knowledge of ageing workers with organisational development through the use of ICT. Our models could be applicable in the context of communities hit by HIV/AIDS, or by large-scale migration, where the demographic balance has been disrupted, and new approaches are needed.

4.66 A good practice model to further organisational learning and promoting senior workers as a resource in the workplace

We present and discuss models that utilise ICT as a tool for development and learning in organisations. They are developed to help senior workers explicate experience-based knowledge, and share it with their younger colleagues.

Organisational learning requires sharing of knowledge. It is important to the organisation that senior workers share their experience-based knowledge with younger colleagues (and, of course, vice versa). It is not a matter of making that expertise fully explicit, and capturing it in software, but of enabling, in particular, junior workers to gain access to tacit knowledge through dialogue (Göranzon *et al* 2006). The process of cross-

generational dialogue also serves to display the experience-based competence of the older workers, and demonstrates the resources of older employees to their managers and younger colleagues alike. This can take the form of community networking.

The importance of the tools does not lie in the technological part of the project, and our concern is not about developing tools of industrial significance. The tools presented in this article are models of cross-generational dialogue, with value based on the local practice and low level technology needed. The models do not only serve to further organisational learning, and promote senior workers as a resource in the workplace, but enhance mobility through sharing knowledge across physical distances.

4.67 Lifelong learning and enterprise development

The good practice models can be understood both within a discourse of enterprise development, and in the context of lifelong learning.

From the perspective of work, lifelong learning can be seen as a broad and inclusive concept encompassing individual education and training. Equally, and perhaps more importantly, it encompasses participative collective workplace learning that is actively supported by employers. In the field of active ageing, this means ensuring that enterprises become places of learning for employees of all ages. This raises issues about employers' roles and responsibilities in promoting lifelong learning for working people, as they grow older, as well as about the role and responsibility of ageing employees themselves, and of trade unions.

Lifelong learning is important in the development of agricultural societies, and the transformation of industrial societies into post-industrial knowledge societies. Lifelong learning is central if the European Union is to achieve the Lisbon goal. The models support the sharing of knowledge between experienced seniors and juniors with ICT competence. Whether we describe the importance of good practice models in terms of enterprise development, or of lifelong learning, we can see the relevance of organising

for development and learning, as well as the importance of broad participation in the process, within a framework of co-operation and social dialogue.

4.68 Enterprise development and broad participation

The good practice model ‘The Golden Link’ was developed locally within the context of a development project to promote active ageing in a public sector organisation in Norway. The project was part of a Norwegian Programme for senior workers, aimed at initiating and supporting and development projects to promote a better working environment and awareness of the potentials and resources older employees have. The project developed and diffused this, and other models, in the area of promoting active ageing.

The workplace that developed the model faced the challenge of an ageing workforce, and realised that many senior workers would take their experience based competences with them when they retired, unless they came up with a systematic way to share knowledge while still present in the workplace.

From the end of this decade, Norway faces a marked ageing of the population. “For the first period after 2010 this will be related, in particular, to the fact that the baby-boomers born between the late 1940s and the early 1970s will be nearing retirement age. However, in the longer run the ageing of the population will increasingly be caused by higher life expectancy on the part of retirees. This may result in the population over the age of 65 being almost doubled by 2050 as a share of the population of working age, from just over 22 per cent today to about 40 percent in 2050” (www.pensjonsreformen.no).

The need to reverse the trends, and promote active ageing, motivated the workplace where ‘The Golden Link’ was developed (Hilsen and Ennals 2006). Their approach was to change focus, stop considering ‘seniors’ as a problem, and instead start seeing them as the solution. Bringing everybody into the discussions and problem-solving process at the workplace level seems to be the only possible way to do this. Instead of implementing solutions not of their own invention, the local people were asked to contribute their

knowledge in developing the solutions. Broad participation, where employees and employers combine their efforts in a process of problem solving, provided the necessary commitment and input in the process to allow the development of a real good practice model. In this article, we take the approach further, introducing ‘Virtual Links’.

4.69 The Golden Link – a Good Practice Model Description

By ‘good practice model’ we refer to the methods and techniques that are generally accepted by professionals to be the most up-to-date, effective and efficient ways of meeting the challenges in that field. Our first good practice model was a computerised tool called ‘The Golden Link’. The basic elements of the model are: dialogue (informal interview) over time in the workplace between seniors and juniors; acknowledgement of experience-based competences – seeing seniors as a resource in the workplace; and making implicit and tacit knowledge explicit.

The practical solution to the challenge facing the workplace was to develop a tool that linked the experience base competencies of senior workers, and the need to take part in this knowledge, as well as the computer skills of younger workers through information technology. ‘The Golden Link’ combines the different and complementary competences of younger and older workers, through a process of experience sharing supported by self-developed information technology. The tool consists of a digital flow chart that describes the progress in a field of executive work. The experienced senior gives a detailed and step-by-step description of the progress of a task, while the junior with computer skills fills out the flow chart. An example might be an application for an old-age pension. The flow chart describes every step from when the initial application is submitted. What kind of information is required, what kind of information should be given to the applicant, what are the rules and regulations, how is the application handled and when and how is processing of the case finished? The experienced senior answers all these questions, and all the steps are filled into the digital flow chart by the computer proficient junior. Every step is linked to the next, and by following the flow-chart less experienced juniors can easily handle complicated cases.

The junior-senior dialogue is an important dimension of 'The Golden Link'. Sharing experiences and knowledge, through a knowledge representation, which both can use with confidence, has a value to the participants, as well as demonstrating the value of experience-based competence. Thus 'The Golden Link' contributes to the appreciation of senior workers and experience-based knowledge in an organisation. One repeatedly cited reason for early retirement in Norwegian work life has been lack of appreciation and feedback from managers (Midtsundstad 2005; Storaas 2005; Hilsen and Steinum 2006). 'The Golden Link' could alleviate this situation, by demonstrating to managers and employees alike the value of experienced employees. Through the process of filling out the flow chart, seniors familiarise themselves with information technology, and thus improve their computer skills. There was similar experience on the project "Logic as a Computer Language for Children", from 1980 (Ennals 1983), where children aged 9-10 were able to use logic declaratively, handling familiar subject matter, while the computer regarded their descriptions as programs.

The technology used in this case is not state of the art, but a simple application of PowerPoint, and does not demand additional investments to implement. In the organisation there were two parallel systems operating: a newer, Windows based system and an older command based system (developed from DOS). The Windows based system was an intranet and used for information resources, documents, legislation, electronic forms etc. The older command based system was purely a system for executive work. Older workers found the older system easier to use than Windows. While the younger workers easily adapted to the Windows based system, they had difficulties getting used to the command based system, and had to rely on the seniors to help them through the intricacies of the system. Many seniors confessed to being uncomfortable with using the Windows based system, and needed the help of their younger colleagues.

Rather than using complicated and costly software, the local stakeholder used what was already available, and converted it to their need. This stresses local ownership of the model, and serves to make information technology less intimidating to the unskilled. The seniors did not need to learn to use new software in order to access the flow charts.

The technology used for ‘The Golden Link’ already existed, based on local knowledge and solutions, and did not rely on generalised systems approaches. As in many countries, major new systems have collapsed amid scandals. In the UK there has been a succession of problems with ambitious IT systems to deal with regional health systems (Ennals 1995, Brooks 2006), child support, processing of pensions, and booking of appointments with doctors. All too often the alternative has been presented as a reversion to manual approaches. There is a middle way, where tools are used by workers with experience and skill, rather than depending on the perfect operation of a complex system solution. The National Health Service in Wales, in their ‘Informing Health’ programme, with a networking approach, is learning from the experience of ‘Connecting for Health’ in England, where the model has been centralised and top-down.

4.70 Organising learning – creating space and time for learning in the workplace

‘The Golden Link’ is a potentially valuable tool in organisational learning, enabling experience-based competence to be made explicit and shared across generations. The model addresses three challenges: the demographic challenge of who will replace the seniors when they leave working life; the competence challenge of who will possess the knowledge when the knowledgeable leave; and the mobile technology challenge of how to make the knowledge accessible to workers at a distance. A potential answer to these challenges can have a great positive impact at the organisational level, but will also be beneficial to society at large. We need to move beyond the individual case, exploring ‘Virtual Links’. We draw on the experience of BEEP (Odamtten and Millard 2007).

The demographic challenge of who will replace the seniors when they leave working life is a challenge at national level, and a good practice model that promotes active ageing could have societal benefits. The picture has been complicated by labour mobility since the enlargement of the European Union in 2004. 600,000 workers have moved to the UK from new member countries, and it appears that 10 per cent of the Lithuanian population has left the country over the same period, defying predictions.

In most European countries governments are considering major changes to pension systems, increasing retirement age and withdrawing previously agreed schemes. Here we are suggesting changes to work organisation, including the enabling role of technology in transforming intergenerational relations, and reducing the need for particular training. This is a practical approach.

The competence challenge, of who will possess the knowledge when the knowledgeable leave, is not only a challenge to work organisations facing a situation where a large number of their employees are moving towards retirement age. It is a challenge to societies threatened by disrupted cross-generational communication and experience sharing (Augustinaitis *et al* 2007). Countries experiencing immigration of the economically active age group for economic or political reasons face the same challenge. So do African countries threatened by HIV/AIDS, where the demographic balance is disrupted. Under normal circumstances, knowledge, experience and learning is being passed from generation to generation, and a disruption of this pattern may have far reaching consequences.

Within working life, experienced older workers possess important competences on which the organisations depend, and transferring/sharing experiences and knowledge with younger colleagues is important to secure competences in important practical areas of the enterprise, and ensure the ability to maintain production. Senior competence is valuable to the enterprises, and comprises more than the theoretical knowledge of employees straight out of schools and universities. In addition to theoretical knowledge, seniors have practical knowledge acquired through experience. Göranson (1992) discusses experience-based knowledge as one of three types of knowledge, together with theoretical and tacit knowledge. Whereas theoretical knowledge is learned ‘from textbooks’, tacit knowledge is socialised knowledge learned, unconsciously, over time.

Seniors learn how to perform their work through long experience, but they also learn about good practice in itself. Practical knowledge needs room for reflection, and such time and place must be organised by any organisation that wants to develop and share

practical knowledge. ‘The Golden Link’, is a model for cross-generational communication, which lets the seniors reflect on their practice while talking through practical situations with the younger colleague. The good practice model furthers organisational learning, through supporting development and sharing of practical knowledge. Göranson (1990) argues that the practical and tacit knowledge of experienced workers is a necessary resource for good production. He describes cases where the enterprises did not realise what they had lost until laid-off seniors had left, taking all their hard-earned knowledge with them. Similar consequences have been reported from automation, restructuring and downsizing.

The third challenge concerns mobile technologies, which offer new ways of making knowledge accessible to workers who are distant or working remotely. As the technology becomes more widely available, it is no longer necessary for all workers to share the same physical workplace, which may involve expensive and time-consuming travel. Once working relationships have been established, they can be maintained. Work organisation can be re-designed, with teams including remote members, and networks between enterprises. This challenge is a challenge for working life, but it also opens great possibilities for developing Virtual Links across borders, cultures and generations. This principle is being followed in the use of mobile phones in Crete, for example for the dissemination of agricultural information in rural areas (Stratakis 2007). Whether through synchronous voice communication or asynchronous text messaging, the mobile phone can transform work organisation and constitute a virtual link.

4.71 The value of Virtual Links

Virtual Links can provide links between people across geographical divides, and preserve knowledge and experience from being lost. Virtual Links are often facilitated by the model being based on low level technology. Rather than requiring large-scale investments, Virtual Links can be developed using existing technology. Universal access to mobile phones, combined with appropriately located computers and free software

make developing Virtual Links possible even for developing countries where more costly models might be economically prohibitive.

It is often claimed that developing countries have entirely different challenges - eg brain-drain vs brain-gain – which affect ability to balance inequalities (Selvanathan 2006). In the case of Virtual Links the similar challenges and possibilities are more striking than national differences. Whether linking remote villages in sub-Saharan Africa or transferring the knowledge of a dying generation in countries suffering heavily from HIV/AIDS, connecting Lithuanian workers abroad to their home country, or bridging the gap between older and younger workers within an enterprise, the challenge and the technology can be the same. What is generally seen as the problem of ageing workers, in a world of new information and communication technologies, can be re-interpreted as the basis for a solution to a number of inter-generational problems. The key resource of an organisation or a society is the knowledge of the population, which is not simply a matter of explicit knowledge, but of access to implicit and tacit knowledge.

While the aspirations of the artificial intelligence community in the 1980s had been to capture the expert knowledge of the specialist, making him no longer necessary, in the new millennium we are more aware of the fragility of state of the art systems, and the new potential of mobile technologies for bringing people together. Given that we will never have access to complete knowledge on which to base our decisions, virtual links provide valuable practical examples of practitioner use of technological tools, supporting inter-generational collaboration. The models can serve to suggest a way in which locally derived insights can be applied in other organisations or contexts, where demographic change is challenging the continuity of complex processes, with considerable social implications.

4.72 *References*

Augustinaitis A., Ennals R., Malinauskiene E. and Petrauskas R. (2007): *E-Redesigning of Society: Towards Experiential Connectivity of Generations in Lithuania*. IST-Africa.

- Ennals, R. (1983) *Beginning micro-PROLOG*. Chichester: Ellis Horwood.
- Ennals, R. (1995) *Preventing IT Disasters*. London: Springer Verlag.
- Ennals, R. (ed.) (2005) *Mobility, Technology and Development*. Special issue, AI and Society, 19.4
- Gustavsen, B., Ennals, R. and Nyhan, B. (Eds) (2007) *Learning together for local innovation: promoting learning regions*. Thessaloniki: Cedefop
- Göranzon, B. (1990) *Det praktiska intellektet: datoranvändning och yrkeskunnande*. Stockholm: Carlssons.
- Göranzon, B., Hammarén, M. and Ennals, R. (Eds) (2006) *Dialogue, Skill and Tacit Knowledge*. Chichester: Wiley
- Hilsen, A.I. and Steinum, T. (2006) *Fortell meg at jeg er ønsket*. AFI-rapport 3/06. Oslo: AFI.
- Midtsundstad, T. (2005) *Ikke nødvendigvis sliten... En analyse av tidligpensjonering og seniorpolitikk i staten*. FAFO-rapport 482. Oslo: Fafo.
- Odamtten T. and Millard J. (2007) *Learning from others within "transitional economies" and the challenge of ICT development for African countries*. IST-Africa, Maputo, Mozambique.
- Selvanathan, P.J. (2006) *Brownfields and Greenfields. Global Landscape for ICT4D*. Presentation for IST-Africa Conference 04.05.2006, South Africa.
- Storaas, G. (2005) *Avtalefestet pensjon, en verdig løsning? En studie om hvorfor eldre trygdefunksjonærer velger uttak av Avtalefestet pensjon (AFP)*. Master thesis in sociology. University of Oslo 2004. Published in The Work Research Institute's series of master Thesis. Oslo: AFI.

Stratakis M. (2007) *Innovative Agricultural Telediagnosis Systems for Rural Areas*. IST-Africa 2007, Maputo, Mozambique.

Tikkanen, T and Nyhan, B. (Eds) (2006): *Promoting Lifelong Learning for Older Workers: An international overview*. Thessaloniki: Cedefop.

www.pensjonsreform.no

IV.3. Innovation in regions of disintegrated knowledge intensive firms – some reflections and assumptions *by Hans Chr. Garmann Johnsen* ³²

Introduction

There is a growing literature around the theme of *new economy* and *knowledge economy*, where the argument is that there is a paradigmatic shift in the economy. The knowledge economy is different, both related to its drivers (with knowledge as basically a common good in economic terms, as the main driver), and subsequently in how it operates, is organised internally and externally (post-fordism, networking, etc are key words). The local business environment competencies and connectedness are supposed to be crucial for innovation.

The questions I want to address in this paper are as follows: What is the innovation dynamics in the new knowledge-based economy, and how is it different from the more traditional economy?

³² An earlier version of this paper has been presented at the workshop: *The Knowledge Economy: new directions in work organisation and regional innovation*, Kingston University, London, September 1st, 2006 and Paper presented at Stanford University, Scancor meeting, October 27th 2006 and presented at 2. workshop on Knowledge Economy, Kristiansand, February 26 and 27, 2007.

4.73 Theories on the knowledge economy

Innovation in the new knowledge based economy

Phillip Cooke (2002) argues that there is a new type of growth dynamics in the new knowledge-based economy. It develops in ways that are different from the more traditional economy. What I above described as ‘soft’ institutional infrastructure and ‘un-traded interdependencies’, institutional thickness, learning, networking, reduced transaction costs, associated economy, stability and risk reduction, participation, trust and social stability, seem to be more relevant in the new economy (like ICT) compared with the more traditional economy (Parker and Tamaschke, 2005). However, this is a paradox, since the new, knowledge based economy, like the ICT sector, is typically characterised by what Clayton Christensen (1997) has called ‘disruptive technologies’, that is; quick and powerful technological changes that threaten the existing enterprises

The above arguments can be summarised in a table, inspired by Phillip Cooke (2002).

Table 1: A typology of organisation and cooperation forms in networks and clusters

	Traditional industrial network	Value Chain cluster	Knowledge cluster
Drivers	Natural resources, technologic change	Efficiency of co-operation	Creativity
Unique advantages	Factual knowledge	Low transaction costs	Capability
Role in the value system	Specialization	Integrating	Disintegrating
Type of cooperation	Common competence in hierarchy	demand-supply relation	Common competence, personalized relations
Organisation model	Fordism, closed organisations	Fordism / post-fordism, closed network	Post-fordism, open network

Leadership model	Administration, strategic planning	Strategic leadership in combination with administrative and control systems (MIS)	Dialogical, visionary leadership, communicative competence
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Is the notion of the knowledge economy just a fad, or is there something happening in the economy that indicates a paradigmatic shift, in the sense that the value driver (knowledge) and implications (organisation) are different from our traditional understanding of economic development? The table indicates structural differences between our different perceptions of business clusters. The argument that can be read from the table is that the new, knowledge based businesses are different in their drivers, networking and internal organisation, from more traditional business clusters.

Different disciplines in the theorizing on innovation processes in the knowledge economy

What seems to be generally agreed is that there is no ‘press the button’ solution to enhance innovation. Literatures about these issues are found in many fields. Geography studies (Cooke 2002) have increasingly used a systems perspective in order to understand innovation. Furthermore, they see innovation as a result of a particular configuration of institutions in the region. Management and organisation theory (Nonaka and Takeuchi 1995; Tsoukas 2005) have discussed innovations as interactive learning processes between different competencies within the firm. Furthermore, organisational and management structures within companies (Holbek 1988), as well as structures between companies (Porter 1998), seem to influence the ability to innovate.

Also within philosophy (McKalvay 2002; Fuller 2002) we find arguments on what encourages innovation, with an emphasis on understanding the knowledge development part of innovation. Work-sociology (Gustavsen 2004) has discussed innovation both as larger systems, like regional development coalitions, and as participatory incremental innovation and learning processes at work.

The perspective on knowledge economy has a strong standing in applied economic geography (Lundwall 2002; Rodrigues 2002) and in the current university/region debates (Nowotny, Scott and Gibbons 2001). This literature argues normatively for closer co-operation between different partners in the innovation system, like businesses, networks of businesses, policy makers and universities. This is a way of thinking about innovation that has influenced the discussion of clusters, university, and enterprise co-operation in a regional context ie the Triple Helix model (Etzkowitz and Leydesdorff 2000).

Theories on innovation through knowledge development

The innovation literature gives references to innovation in both a broad (innovation system) and narrow (internal innovation processes in organisations) perspective. Furthermore, innovations are discussed as emergent and planned, incremental and radical, as a result of creative internal processes, or as a result of outside pressure (Poole 2004).

We consider the literature that tries to explain how knowledge develops in the knowledge economy. Some examples:

1. Cooke (2004) makes a distinction between ‘exploration’ (knowledge for development) and ‘exploitation’ (knowledge for commercialisation). He uses this distinction to argue that different types of knowledge play different roles in different types or phases of innovation.
2. Another predominant perspective focuses on how knowledge is created in knowledge- and research institutions, like universities, and commercialised in an entrepreneurial economy linked to this ‘knowledge base’. Triple Helix, Mode-2, Regional Innovation System, are example of this systems perspective on innovation (Etzkowitz and Leydesdorff 2000; Nowotny, Scott and Gibbons 2001; Lundwall 2002; Rodrigues 2002)
3. Another approach to innovation is represented by Michael Porter and his analysis of business climate (Porter 1990). His ideas are somewhat in opposition to but can also be combined with the idea of Florida, on people climate for creativity

- (Florida 2002). Both set of ideas focus on interaction and relations, and how different norms and attitudes are important for innovation.
4. Asheim and Coenen (2005) discuss three different knowledge types: synthetic (linear, causal orientate, technical science), analytic (reflexive, interpretive, social science) and symbolic knowledge (creative, socially applicable). They represent different competences, and often, different industries. They argue that a combination of these three, and to the extent that there are relations between these three competencies, enhance innovation.
 5. The knowledge management and knowledge economy literature often refers to knowledge development as a result of interrelations between different knowledge forms, in particular the interrelation between *codified* and *uncodified* knowledge (Nonaka and Takeuchi 1995; Spender 1997; Amin and Cohendet 2004). Much of this innovation literature is inspired by a dualist conception of knowledge (Ryle 1949; Polanyi 1966).
 6. Furthermore, enterprise development literature often takes as a point of departure an emphasis on locally communicated and *intersubjective* generated knowledge (Mintzberg 1998).

None of these perspectives, I believe, are able to fully explain, either if there is something special that we might call the 'knowledge economy', or what particular mechanisms explain innovation in this new economy. Furthermore, together with colleagues, I have questioned that lack of a deeper philosophical discussion of the concept of knowledge

(like Fuller 2002) as a foundation for the theories of knowledge management (Foss 2005), and the knowledge economy³³.

Regions as contexts for innovation

The situating of enterprises in a regional and local context has come more and more in focus after Pore and Sable's (1984) now classic study. But what is meant by local context or region? Roughly speaking, the economists (like Pore and Sable 1984; Porter 1998, and Cooke 2002) will tend to see regions as business environments. Regions are important because there is some local spillover or externality that companies, not least the small start-up firms, can utilise. These externalities can also be described as local or regional competencies. Geographers (like Florida 1995) argue for regions as environments for human creativity and learning. The work life discourse (Fricke and Totterdill 2004; Totterdill and Ennals 2006) is more focused on social processes in and between partners in the region. Others, (like Lundvall 2002; Etzkowitz and Leydesdorff 2000 and Isaksen 2001) take this further into the idea of Triple Helix and regional innovation systems. A regional innovation system is a particular configuration of institutions (businesses, research or university, and government initiatives or support systems) that is supposed to be particularly favorable for innovation.

To this spectrum of approaches comes a large literature from political science and cultural geography, about how to develop and govern regions (Pierre and Peters 2000). The territorial and regional governance literature discusses issues like fragmentation,

33 Hans Chr Garmann Johnsen, James Karlsen, Roger Normann and Jens Kristian Fosse, Agder University College and Agder Research . 2006: The Contradictory Character of Knowledge - A challenge for Understanding Innovation and doing Action Research³³. (paper in working). An earlier version of this article has been presented as a paper at: 21st EGOS Collegium, June 30th – July 2nd, 2005, Berlin, Germany. Sub-theme 18: When Organisation Studies Meet Economics: Alternative Philosophies of Knowledge Management and the Theory of the Firm. And a revised version was presented at the workshop: The Knowledge Economy: new directions in work organisation and regional innovation, Kingston University, London, September 1st, 2006.

multilevel governance, trans-national governance, epistemic and imagined communities, and Europeanisation polity. Almost all the above-mentioned literatures that emphasise the importance and uniqueness of regions have influenced European policies in this area, not least the Lisbon process (Rodrigues 2002).

How is it that these regional structures and processes enhance innovation? One argument is that regional innovation systems provide ‘soft institutional infrastructure’ for transfer of tacit knowledge in environments where interaction, face-to-face contact and trust is important. Storper (1997) talks about ‘un-traded interdependencies’. Furthermore, it seems that institutional thickness, cooperation between actors, and between institutions, both public and private, both enterprises and research, are favorable for innovation. Close and extensive networks stimulate technology and knowledge transfer and learning. Networks are often referred to as a ‘supportive web’ for the individual participant, especially for SMEs. This supportive web reduces the access-cost to technology, and gives SMEs more or less free access to external recourses. One has talked about an ‘associated economy’ in the local (regional) context.

The public sector seems to play an important role in this. They regulate many markets, including labour market, they invest in infrastructure and build institutions. Often they also provide risk capital, and at least they offer publicly financed research free or for a low cost to enterprises. Public sector thereby has a role of risk and cost reduction and stabilizer.

Cooperation versus competition

There has been a long and sustainable tradition in Norway, based on the ‘Nordic Model’ to interpret innovation and innovations challenges within a co-operative context (Asheim, Bjørn T. 2001; Levin, Morten (Ed) 2002; Gustavsen, B., Finne, H., and Oscarsson, B. 2001; Ennals, Richard and Gustavsen, Bjorn. 1999; Gustavsen, Bjørn. 2004; Gustavsen, Bjørn. 2005; Pålshaugen, Øyvind. 2002). This particular tradition will basically look for

co-operative advantages and also link this to the more normative approach of participation and industrial democracy.

This approach refers to the international concepts of innovation (innovation system, learning regions, clusters, etc), but the interpretations of these are argued within a Nordic Model context. This give a particular bland to the understanding of innovation processes, one that tends to under-communicate competition, conflicts and ‘creative destruction’.

My approach is that I believe that the Nordic approach is meaningful and interesting, and could have international relevance, but that would have to imply a deeper discussion of the relation between the broadly speaking co-operative and the competitive approach. Such a discussion goes beyond this paper, a case study of innovation processes in ICT industry in the Agder region, Norway

At Agder, a small region in Norway, we ask ourselves: How new and different is this knowledge economy? How should we develop relationships with businesses, and how could social science research have a role in studying and engaging in this? Furthermore, we plan to research deeper into knowledge creation, knowledge diffusion and innovation in the knowledge firm. Related to this, we also want to focus on internal and external work conditions in the new (and old) economy, including issues like inclusion and exclusion, and the development of new dialogical based ways of co-operation.

In concrete terms, there is a cluster of small mobile-telecom companies close to the University of Agder, with a small research unit by the Swedish telecom-giant Ericsson, as the most advanced company. We have been concerned with issues beyond the business environment, how this relation between university and business relates to regional governance, the emergence of new regional institutions, and the changing role of democracy in the region.

4.74 Some preliminary findings

My task has been to try to understand innovation processes in a disintegrated mini cluster like the ICT cluster at Agder, as a case for understanding the more boarder issue of innovation in the knowledge economy. I assume that there is a cluster, since there has been a sustainable growth of ICT companies in the region over the last decade.

Over that period of our involvement in the ICT industry at Agder, we have learned something and made some preliminary reflections. These have been based on both discussions with the firms, a conference, and some surveys. Below I refer some of the findings from this research. The findings refer to the activities described in Table 2. As will be seen, some of these findings are contradictory, and some support the contradictory term *disintegrated cluster*.

A) Activity to enhance knowledge creation and knowledge transfer between companies

In a survey among 22 of the ICT companies, I found that most of them had their markets nationally and internationally. Half of them reported that they regarded their competitive advantage to be in product development; 18 of them argued that they had co-operation with others in the region. They seem to agree that regional co-operation is important for the industry. However, only one answered that their regional co-operation was related to product development. On the question of the importance of regional co-operation (on a scale from 1-7, where 7 means very important) 5 answered 6 or 7 on the question of how important regional co-operation is, 7 answered 6 or on the question of how sincere they involve themselves in such co-operation and only one gave 6 or 7 on the question on how well this co-operation functioned.

B) Activity to enhance co-operation, knowledge creation and knowledge transfer between companies and university

In the same survey as referred above, companies in general seem to be of the opinion that developing local competences and extending and supporting the development of the university, is important. However, still only 5 out of 22 companies said that they co-operated with the University of Agder. Internal competence building seems to be the most important process to enhance innovation. Furthermore, 12 out of 22 answers that they co-operate with R&D institutions. On the question of how they develop their competences, 9 out of 22 say they do that in co-operation with consumers and suppliers. When asked what are the limitations they face in order to be more innovative, all but 3-4 answers that it is competences, organisation and leadership and capital.

C) Activity to enhance participation, co-operation, knowledge creation and knowledge transfer inside companies

In a study by Torunn Olsen (Olsen 2006), she has tried to compare the new ICT companies with more traditional industries related to some key issues in industrial relation and human resource management. An underlying assumption is that the new ICT companies are part of the 'new' more flexible economy. A paradoxical assumption has been that this 'new' economy, on the one hand, is more likely to be short-term, flexible, using outsourcing, short term contracts, use more overtime, supposed to be less 'family-friendly', and likely to be more market-driven. On the other hand, and this is the paradox, this industry is supposed to have a higher focus in individual competences, more emphasis on human resource development and more dependent on long term development of competences and stability of their employees.

Olsen finds, among 11 enterprises she interviewed, a representative part of that 20-40 companies that belongs to the ICT group at Agder, that they are only slightly different from what is average or common in Norwegian industries. There are a few differences. There seems to be less collective bargaining among the ICT enterprises, probably more

direct participation. Most workers are on fixed, full time contracts. The use of outsourcing is less than expected, also the use of part-time workers. The exception is that some enterprises use more consultants than is normal in other industries.

Employees in ICT businesses are slightly more educated than average. There are relatively more male than in other sectors, and the average age is less. In this sense, it is different. However, their work situation in general, conflicts at work, working hours, etc, seem to follow the same dimensions as usual in Norway. They are as family-friendly as others. In general, ICT businesses seem to take care of their workforce.

There are incentives in salaries, and the salary level is relatively high, but again, not greatly different from other sectors. Surprisingly, few of these companies have a plan or strategy for developing their human resources.

4.75 Some preliminary conclusions

In this paper I have presented some preliminary thoughts about the knowledge economy, and on how to research innovation in the knowledge economy. I ask myself: how 'new and different' is the knowledge economy, and in what way is it different? What is knowledge in this new knowledge economy? Furthermore, if it is different, what does that imply for understanding innovation? These are the overriding questions I have tried to approach.

Theories tell us that the new knowledge economy and the new firms are different. The Agder ICT case indicates that it is slightly different from the traditional economy. However, we have not got a clear idea about in what way it is different, and how knowledge developments occur. All the above referred explanations: regions, institutional setting, co-operation with R&D institutions, new work-environments, and more emphasis on employees competencies, etc, all seem to give some sense. How can we explain this growth?

- It could be that the growth is coincidental. However, since there has been a series of strategic initiatives during this development, it is hard to believe that it is purely incidental.
- It could be a part of a larger trend, independent of the region. This is possible, but would not explain why it is so strong in our region.
- The cluster could be a symbolic phenomenon, or something that creates identity. Companies are attracted to regions with this kind of identity. This is a possible, but not in our minds, sufficient explanation.
- It could be that there are some common competences among the companies in the region, in spite of the fact that they do not co-operate. This is in line with our assumption.
- There could be some few drivers in developing these competences. There could be a sort of ‘knowledge community’.

There seem to be contradictory tendencies in the knowledge economy, in comparison with the general assumptions on clusters and innovation. *Knowledge community* might be a term in that can explain this. As I have defined this, a knowledge community can be disintegrated in terms of co-operation and co-action, but still retain some cohesion in terms of common competencies and common understanding.

4.76 *Assumptions and reflections*

If there are differences between different economic systems (traditional, value chain, knowledge economy, etc), and if these differences are locally or regionally embedded, we might be able to identify a particular form that relates to knowledge intensive industries. Furthermore, we might in this new knowledge economy be able to talk about a ‘knowledge community’, as a distinct but comparable concept to Habermas *communicative community* (Habermas 1997) or Wenger’s *community of practice* (Wenger 1998). A *knowledge community* might be understood as a certain, distinct cluster of particular knowledge’s that are communicated in a geographically specific area.

Given the overriding assumption that a knowledge cluster (knowledge community) is not organised like a value chain or at supply chain, I have made some assumptions on how it works on a system level. In fact, if there are such differences, it would be interesting to know how different configurations of power and influence, ways of organising businesses and relations to the labour market, dialogical patterns and patterns of interaction that characterises different clusters, interact with their ability to, and ways to be innovative. Furthermore, it would be interesting to know if there are in general differences in these patterns of organisation and interaction between knowledge intensive firms, like ICT, and more traditional businesses.

If there are such differences in how innovation happens in different types of industries, I expect to find that knowledge development in the knowledge economy to some extent contradict well-established ideas on innovation in clusters. So I start out with these well-established ideas, such as:

- The innovation system assumption: that close connectedness between university and businesses generates increase knowledge flow, mutual learning and increased level of innovation.
- The knowledge assumption: that innovation is a result of increased flow of knowledge in one field, for instance specialised knowledge in a university that is commercialised or that supports and creates innovation in businesses.
- Co-operation and participation assumption: a high degree of participation and co-operation will motivate individuals to be creative and to engage in knowledge creation processes.
- Welfare assumption: stable and well organised work conditions will be favourable for developing engagement, create openness to share information and to increase co-operation.

If the knowledge economy is different, I expect that it to some extent will contradict some of these assumptions. Firstly, I expect the knowledge economy to work in a less connected and integrated manner than the assumptions above indicate. I foresee that

disconnectedness and loosely coupled relations will be more apparent than close connections. Furthermore, I believe that knowledge is not a uniform phenomenon that typical knowledge economies represent a variety of knowledge. This might indicate that competition is more predominant than co-operation between knowledge intensive forms, and that we will find more flexibility in the labour market and less institutionalised participation forms in the knowledge economy compared with the traditional economy. In the table below, I have tried to develop a set of counter-assumptions to the ones mentioned above.

Table 2: Alternative assumption on innovation

Area	Assumption in conventional economy	Assumption in the knowledge economy
Innovation process	Connectedness	Disintegrated
Knowledge	Concentration of knowledge	Diversity of knowledge
Interaction	Cooperation	Competition
Organisation form	Centralised	Decentralised
Labor marked / participation	Stability	Flexible

This table gives a set of competing assumptions that can form background for further research into the innovation dynamics if knowledge intensive firms. My primary focus is the micro-processes of knowledge generation in a local environment. These system level conditions will form the background for understandings the micro-processes of knowledge development.

References:

Amin, Ash and Partrick Cohendet. (2004) *Architectures of knowledge: firms, capabilities, and communities*. Oxford: Oxford University Press.

Asheim, Bjørn T. (2001) "Learning regions as development coalitions; Partnership as governance in European workfare stetes. *Concepts and Transformation* 6:1 (2001), 73-101.

Asheim, Bjørn T and L. Coenen. (2005) Knowledge Bases and regional Innovation Systems: Comparing Nordic Clusters. *Regional Policy*, 34, 1173-1190.

Christensen, Clayton M. (1997) *The Innovator's Dilemma*. Boston: Harvard Business School Press.

Cooke, Phillip (2002) *Knowledge Economies: Clusters, learning and cooperative advantage*. London: Routledge.

Cooke, Phillip. (2004) The role of research in regional innovation systems: new models meeting knowledge economy demands. *International Journal of Technology Management*. Vol 28. Nos. 3/4/5/6, 2005.

Ennals, Richard and Björn Gustavsen (1999) *Work Organisation and Europe as a Development Coalition*, Amsterdam: John Benjamins Publishing Company

Etzkowitz, H. og Leydesdorff. (2000) "The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of University – industry– government relations". I: *Research Policy* 29, 2000 p 109-123.

Florida, Richard. (1995) "Toward the learning region". *Futures*, Vol.27, No 5, pp 527 – 536.

Florida, Richard. (2002) *The Rise of the Creative Class: and how it's transforming work, leisure, community and everyday life*. New York: Basic Books.

Foss, Nicolai J. (2005) *Strategy, Economic Organization, and the Knowledge Economy*. Oxford: Oxford University Press.

Fricke, Werner and Peter Totterdill (Eds) (2004) *Action Research in Workplace Innovation and Regional*

Fuller, Steve. 2002. *Knowledge Management Foundations*. Boston: Butterworth Heinemann.

Gustavsen, B., Finne, H., and Oscarsson, B. (2001) *Creating Connectedness: The Role of Social Research in Innovation Policy*. Amsterdam: John Benjamins Publ. Co.

Gustavsen, Bjørn. (2004) Making knowledge actionable: from theoretical centralism to distributive constructivism. *Concepts and Transformation* 9:2 (2004), 147-180. John Benjamins Publishing Company.

Gustavsen, Bjørn. (2005) Innovation and action research. *International Journal of Action Research*. Volume 1, Issue 3, 2005.

Habermas, Jürgen. 1997 (1981): *Theori des Kommunikativen* English translation by Thomas McCarthy: *The Theory of Communicative Action: Reason and the Realization of Society*, vol 1. London: Polity Press.

Holbek, Jonny (1988) The Innovation Design Dilemma: Some Notes on its Relevance and Solutions, i Kjell Grønhaug og Geir Kaufmann (red.) *Innovation: A Cross-Diciplinary Perspective*. Oslo: Norwegian University Press.

Isaksen, A. 2001: "Building Regional Innovation Systems: Is Endogenous Industrial Development Possible in the Global Economy?". In: Canadian Journal of Regional Science (Special Issue), Vol XXIV

Levin, Morten (Ed) (2002) *Researching Enterprise Development. Action research on the cooperation between management and labor in Norway*. Amsterdam: John Benjamins Publishing Company

Lundvall, Bengt-Åke. (2002) *Innovation, Growth and Social Cohesion: The Danish Model*. Cheltenham: Edward Elgar.

McKelvey, Bill (2002) “Postmodernism vs. Truth in Management Theory”. in Ed Locke (Ed.) *Modernism and Management: Pros, Cons, and Alternatives*. Amsterdam: Elsevier.

Mintzberg, Ahlstrand and Lampel. (1998) *Strategy Safari*. New York: The Free Press

Nonaka, Ikujiro, and Hirotaka Takeuchi. (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation?* New York: Oxford University Press.

Nowotny, H., Scott, P., and Gibbons, M. (2001) *Rethinking Science: Knowledge Production and the Public in an Age of Uncertainty*. Oxford: Polity Press.

Olsen, Torunn. (2006) IKT sektoren i Grimstad – en arbeidslivsanalyse basert på 11 intervjuer. FOU rapport, Agderforskning.

Pålshaugen, Øyvind. (2002) Discourse democracy at work: On public spheres in private enterprises. In: *Concepts and Transformation* 7:1, 2002.

Parker, Rachel and Louise Tamaschke (2005) Explaining Regional Departures from National Patterns of Industry Specialization: Regional Institutions, Politics and State Coordination. *Organization Studies*. 26 (12): 1787 – 1807.

Pierre, J., and Peters, B. G. (2000) *Governance, Politics and the State*. London: MacMillan.

Piore, Michael J. and Charles F. Sable. (1984) *The Second Industrial Divide: Possibilities for Prosperity*.

- Polanyi, Michael. (1966) *The Tacit Dimension*. New York: Doubleday.
- Poole, Marshall Scott. (2004) Central Issues in the Study of Change and Innovation. In Marshall Scott Poole and Andrew H. Van de Ven. 2004: *Handbook of organizational change and innovation*. Oxford: Oxford University Press.
- Porter, Michael E. (1990) *The competitive advantages of nations*. London : Macmillan
- Porter, Michael E. (1998) *On competition*. Boston : Harvard Business School
- Rodrigues, Mario João (2002) *The New Knowledge Economy in Europe: A strategy for international competitiveness and social cohesion*. Cheltenham: Edward Elgar.
- Ryle, Gilbert (1949) *The Concept of Mind*. Chicago: The Chicago University of Chicago Press
- Spender, J. C. (1997) Making Knowledge the Basis of a Dynamic Theory of the Firm. *Strategic Management Journal*. 17: 45 – 62.
- Storper, Michael (1997) *The regional world: territorial development in a global economy*. New York: Guilford Press.
- Totterdill, Peter and Richard Ennals (2006) *Partnership for a New Organisation of Work*, John Wiley,
- Tsoukas, Haridimos (2005) *Complex Knowledge: Studies in Organizational Epistemology*. Oxford: Oxford University Press.
- Wenger, Etienne. (1998) *Communities of practice: Learning, meaning, and identity*. Cambridge Mass.: Cambridge University Press
- Zaltman, G., R. Duncan and J. Holbek (1973) *Innovations and organizations*. New York: John Wiley & Sons.

IV.4. Reflections on the engagement of a university in regional development in the UK *by Peter Totterdill*

4.77 *Introduction*

The nature of the political, professional and academic discourse surrounding the economic development of localities and regions in the UK has changed beyond recognition during the last twenty years. With origins in the dissenting research and polemic generated by community development projects in the 1960s, the idea that part of the 'local state' could be captured by progressive interests and used as an instrument of economic intervention was part of a highly politicised reaction against central government monetarism. This movement, which appeared during the late 1970s, came to full flower ten years later at the height of Thatcherism. It did not, however, last long in its radical guise. Central government sought to depoliticise local authorities through the abolition of the metropolitan councils that had played a leading role in the renewal of local intervention, and through the imposition of tight financial and regulatory controls on the sector as a whole.

Yet this did not mean the end of local economic intervention. Towards the end of the 1980s local economic development initiatives had become an embedded characteristic of the national policy scene resourced by central government measures, by local authorities representing a wide range of political complexions and, substantially, by EU Structural Funds. By this time the discourse had substantially changed. The transformative promise of local intervention – in the sense of its putative ability to empower citizens and employees – was steadily replaced by a technocratic and programmatic discourse based on securing tangible deliverables in compliance with defined targets. The language of 'social inclusion' and 'labour market opportunity' subtly replaced earlier political visions, which sought a substantial redistribution of power and resources to

disadvantaged communities, lower skilled workers and trade unions. The creation of nine English Regional Development Agencies (RDAs) by the incoming Labour Government in 1998 secured the primacy of this discourse. In each region the integration of principal funding sources within RDA strategic frameworks effectively ensured the adherence of key actors to a regime of strict performance management.

Universities have been tightly woven into the fabric of local and regional intervention throughout this period, though the nature of their engagement has also changed. As back numbers of journals such as *Capital and Class* from the 1970s and 1980s demonstrate, critical academic commentary informed radical models of local intervention both at theoretical and instrumental levels. Individual researchers gave up their positions in universities to join the new wave of politicised local authority economic development departments, notably the Greater London Council (GLC), Sheffield City Council and West Midlands County Council, yet continued to contribute to academic debate. Some universities and polytechnics established, or permitted the establishment of, local economy units specifically intended to strengthen the interaction of research and policy practice in this field. As an example, the Nottingham Local Economy Project which Dr David Gillingwater and I established at Trent Polytechnic with local authority funding in 1982 created a multidisciplinary team which worked for two years on sectoral strategies, dialogue with local trade unions and the creation of community-based worker cooperatives. The project was eventually brought in to the City Council to form a core component of its new economic development department.

The programmatisation of local economic development policy was matched by a steady loss of interest from academic social scientists and by the consequent erosion of critical academic analysis. Instead other university actors started to become part of this technocratic discourse, drawn in part by perceptions of new possibilities for income generation and in part by the emergence of a policy concern with 'knowledge transfer'. Section 5 examines this in more detail.

This chapter argues that the dominance of technocratic approaches, linked to the relative absence of a critical-reflective dimension is a serious weakness in the current state of British economic development at local and regional levels. It reflects my experience as both a practitioner and a researcher over a twenty-three year period. In particular it critically examines experience from an East Midlands university, demonstrating ways in which alternative approaches might be developed while emphasising the serious structural impediments to a more organic relationship between academic knowledge and practice.

4.78 Modes of local economic intervention

In a paper (Totterdill, 1989) for a special edition of *Economy & Society* on local economic intervention I argued that, following a schema proposed more than a decade earlier by Claus Offe (1975), UK experience could be understood in terms of the tension between three modes of policy production:

- The bureaucratic, in which the provision of support to individuals and business is essentially self-justifying and is allocated with minimal discretion according to carefully defined rules and criteria. The many local grant schemes, training subsidies and workspace provisions created since the early 1970s typically fit within this category.
- The technical-rational, typically characterised by a programmatic approach in which resources are allocated according to prescribed criteria in order to accomplish defined targets, themselves part of a hierarchy of aims and objectives. Harmonisation of actions and performance measurement are essential components of this approach, which can be exemplified by the notional operation of, for example, the European Social Fund (ESF) at regional level.
- The discursive, in which the principal intervention is to build inclusive coalitions able to act on the basis of working consensus grounded in dialogue free from domination or distortion. Evaluation, shared learning, reflection and continuous improvement are

central to this approach, making action-research a characteristic tool. Internationally the increasingly iconic example of a discursive approach is to be found in the Norwegian Value Creation 2010 programme. Within the UK cases are rare and isolated.

Each mode is characterised by specific limitations. Thus, in the bureaucratic mode, problematisation is taken as given. Grants to support business growth, for example, are seen as an inherently good thing. Moreover there are clear rules and procedures to protect against the inappropriate use of funds. However bureaucratic modes are stretched beyond feasible limits where there are multiple stakeholders and objectives requiring active reconciliation – for example business growth through the adoption of new forms of work organisation which lead to improved quality of working life. Bureaucratic modes are also inflexible and unresponsive to new and unforeseen demands.

Technical-rational modes are capable of addressing problems and objectives of far greater complexity. Strategic aims, often subjected to well-publicised consultation before adoption, are paramount in governing the hierarchy of objectives, measures and actions. Legitimation for technical-rational modes is gained through an explicit emphasis on expertise (often consultancy), the use of ‘evidence-based’ tools such as benchmarking against ‘best practice’, quantifiable performance measures to ensure accountability to funders, and restricted forms of democracy in which external stakeholders are recruited to sit on programme monitoring committees. However there are major limitations to technical-rational approaches to regional development. First it is inherently exclusive. Interests or ideas not articulated and recognised at the goal-setting stage are excluded from subsequent recognition and support, irrespective of the logic of individual cases. Second it imposes a hierarchical distance between policy and implementation: targets are set and performance against them is measured; dialogue, reflection and learning are held in abeyance until the next strategic planning cycle. Thus those responsible for ensuring performance against targets are set in opposition to staff delivering projects at the front line who, daily gaining a deeper knowledge of needs and opportunities, may learn to question fundamentally the relevance of the indicators against which their work is

measured. Third the centrality of performance measurement and accountability leads to an overemphasis on those outcomes that can be quantified. At worst (but not uncommonly) the quantification of project targets can be absurd – for example measuring the number of participants at workshops, courses or meetings without any assessment of content quality or relevance. The most valuable and potentially enduring outcome from any project may well be the creation of social capital – intangible assets such as networks, intermediate structures, shared knowledge and reticulist competencies. Yet because these outputs are not properly measured they are likely to be invisible to the agencies responsible for project funding – and therefore not valued and not sustained. Fourthly technical rationality ignores the possibility of conflict. Implementation is perceived as a linear process in which resistance is simply an obstacle to be overcome – a symptom of outmoded thinking or practice. This precludes the possibility of dialogue and creative experimentation geared to the achievement of previously unforeseen ‘win-win’ outcomes.

Discursive modes offer quite different challenges. Social capital building, dialogue and shared learning define the approach, but building such frameworks for consensual action can be painstaking and eventual outcomes tend to remain uncertain. Institutional actors in English regional development rarely include such roles in individual job descriptions – and rarely employ staff with the appropriate competencies. A recent proliferation of development agency and university job titles, which include ‘employer engagement’ involve, on closer inspection, little more than the marketing of standardised products and services. However, as Claus Offe pointed out in the 1970s, the potential contradiction inherent in the discursive mode is that open and democratic dialogue may lead to the formulation of demands which state organisations are incapable of meeting without significant structural change – whether for economic or political reasons. Nonetheless it is in this tension that the real transformative potential of regional intervention lies.

4.79 *A brief history*

To understand the potential for mobilisation inherent in local economic development it is worth examining the nature of local authority intervention during the early and mid 1980s. The majority of local authorities had ‘intervened’ in their local economies during the post-war period through, for example, the use of compulsory purchase to assemble land for employment purposes, the construction of workspaces for start-up businesses and SMEs, active marketing to attract ‘footloose’ companies and even the provision of business support grants. However it is common to trace the origins of the 1980s surge of activity to the publication of a widely circulated paper written by the Labour leadership of the London Borough of Wandsworth in 1976. Analysing the de-industrialisation of Wandsworth and the ineffectiveness of central government policy, this paper advocated deployment of a little-known discretionary power to raise money, which could then be used for the acquisition of controlling interests in local companies, thereby offering a means of preventing relocation and reversing declining competitiveness. The groundbreaking nature of this proposal triggered considerable debate amongst some Labour controlled local authorities, particularly those with a significant number of urban professionals amongst their political representatives. By the early 1980s a leading group of metropolitan authorities had established energetic departments which gained profile both for their proactive approaches to economic development and for their vocal critique of the local economic consequences of Thatcherism. Such departments were notable for the diversity of staff recruitment, bringing together individuals with backgrounds in universities, trade unions and companies in ways which were profoundly uncharacteristic of traditional local government. Although this group of authorities was small in number its political and intellectual influence spread more widely, stimulating varying degrees of both innovation and emulation in the majority of British cities.

It is difficult to characterise the types of intervention developed by these authorities, not least because of the diverse range of issues and approaches which they were designed to address. However recurrent strands included:

- a) The creation of sector strategies for ‘key’ local industries, focusing on the types of restructuring required to sustain competitiveness and employment in the medium to long term.
- b) Establishing Enterprise Boards as a channel for the provision of equity investment to local companies. Enterprise Board investment, often drawn from local authority pension funds, was typically linked to the dual objectives of enhancing long term prospects for competitiveness and improving employment and working conditions, both regulated by detailed contractual clauses.
- c) Support for trade unions facing industrial restructuring, including the creation of ‘Workers’ Alternative Plans’.
- d) Initiatives to develop local public enterprise as a means of job creation.
- e) Actions targeted at groups experiencing disadvantage in the labour market through the aggressive promotion of equal opportunities and the provision of specialist support and training.
- f) The development of social enterprises (such as employee or community cooperatives) as a means of job creation amongst disadvantaged groups.
- g) Area-based initiatives targeted at localities experiencing large-scale industrial restructuring or high levels of unemployment.

Of these, sector strategies provide a particularly interesting example because they addressed a domain traditionally reserved for national industrial policy. The 1974-9 Labour Government had taken some important steps towards national sector strategies grounded in dialogue with employers’ organisations and trade unions. However the strategies lacked effective delivery mechanisms and were quickly abandoned by the Conservative government which took power in 1979. In the face of rapid industrial change, and of serious decline in some sectors, several local authorities saw sector planning as a potentially powerful means by which they could both understand the local economy and identify effective levers to enhance competitiveness and employment. Typically these strategies would involve detailed critique of existing practices at

enterprise level based on extensive survey work tested through sustained dialogue with principal stakeholders. The London Industrial Strategy was perhaps the iconic example of this approach (GLC, 1985).

Approaches to sectoral intervention proved contentious. A debate in the pages of *Capital & Class* and *Local Economy* between Jamie Gough of the GLC and Jonathan Zeitlin of Birkbeck College juxtaposed direct equity investment against the provision of specialist services as strategies for intervention (Totterdill, 1989). Equity investment, it was argued, gave the authority direct control over managerial decisions affecting competitive strategy as well as employment practices. This would lead to the creation of ‘exemplary’ companies demonstrating competitive success and good employment, encouraging others to follow. Opponents pointed to the difficulties of expecting public officials to ‘pick winners’, arguing instead for the creation of comprehensive business support environments typical of industrial districts such as Emilia-Romagna and designed to raise the performance of entire sectors. Broader objectives, such as the improvement of employment conditions, could be addressed by restricting support to companies willing to comply with an appropriate code of conduct.

In a very short space of time such debates were to sound quite esoteric. The abolition of the Greater London Council and the metropolitan counties in 1986, linked to severe restrictions on the budget and autonomy of the rest of local government, severely dampened enthusiasm for radicalism and innovation. Many authorities continued to maintain active economic development programmes but found that they were increasingly dependent on the attraction of external funding, both from central government and the EU, involving a constraining mixture of competitive bidding and target setting. Moreover, from the mid-1980s new waves of central government initiatives began to appear which occupied much of the policy territory which local authorities had created for themselves. At the political level in Labour-controlled local authorities hope was kept alive by the anticipation of a future Labour government committed to restoring their autonomy. Many authorities prepared carefully for such an eventuality in the General Elections of 1982, 1987, 1992 and, finally 1997.

Yet the lasting significance of this era of local economic development lies precisely in its discursive nature. Politically motivated authorities initially driven by the non-interventionist policies of central government created new forms of dialogue within their own territorial areas, as well as between local actors and national bodies such as trade unions. Even though this dialogue was subsequently restrained within the confines of programmatic policy it remains a potential force for transformation.

4.80 The English RDAs: not what we'd hoped for?

The intervening years since the 1989 *Economy & Society* article have seen technical rationality triumph as the dominant mode of policy in the UK – not just in economic development but in almost all aspects of government policy (a typical English hospital is expected to provide the national Department of Health with over 40,000 performance measurements).

None of this was foreseen at the beginning of the movement for the establishment of RDAs. In 1981, supported by advisers from local authorities active in local economic intervention, John Prescott (then Labour Party parliamentary spokesman on local government and the regions, now Deputy Prime Minister) published a discussion document on the future of the English regions. Drawing enthusiastically on local authority experience, Prescott and his team argued for the creation of regional development agencies early in the first term of a new Labour government – an event which was not to occur for another decade and a half. Mixed with a clear political belief in decentralisation, there was tangible excitement about the recent attempts by local authorities to intervene in ways which were creative, responsive to local needs, and able to harness the knowledge and enthusiasm of other local stakeholders. RDAs were required because they would protect this local freedom from the centralising tendencies of national government, while at the same time enhancing local intervention by giving it a strategic dimension at regional level.

In practice, the 1997 Labour government adopted a very cautious and controlling approach to financial management. From a Treasury perspective, the English regions presented a picture of incoherence and fragmented governance. Regional expenditure was managed by several public agencies with little overall co-ordination, making it difficult to evaluate strategic effectiveness and value for money. RDAs would be given powers to ensure the closer alignment of expenditure from both national sources and from EU Structural Funds against strategic objectives and measurable targets.

An analysis of each Regional Economic Development Strategy from the nine RDAs demonstrates striking similarities. All contained strategic objectives relating to competitiveness and productivity, cluster development, skills, social inclusion, rural development, sustainable development and the renewal of strategic sites. Unsurprisingly the conclusion of a study commissioned by the government to evaluate the first round of Strategies (DTLR, 2001) concluded that most tended primarily to reflect national policy priorities with insufficient priority given to ‘the distinct and particular characteristics and issues specific to their region’ (p. 15).

In practice this means that the bulk of RDA expenditure is already prescribed and set against specific targets. While there is some discretion on how target outputs will be reached, the conditions under which RDAs operate do little to encourage innovation. During an interview in 2004, a senior official of one RDA made it clear that the ‘overwhelming majority’ of the agency’s resources had been allocated to ‘workhorse’ projects – in other words those designed to hit quantifiable targets in as safe and predictable way as possible. Policy innovation and experimentation was restricted to a small and much sought after component of total expenditure. Likewise, during the negotiations for the 2005-6 budget round, the East Midlands Development Agency (EMDA) announced its intention to withdraw the delegation of locally-based expenditure from seven sub-regional coalitions, preferring to control funding allocation centrally. In short, English RDAs are characterised by all the limitations of technical-rational intervention discussed above.

In mitigation, it can be argued that the very existence of RDAs as regional actors generates a more discursive view of regional development. EMDA, for example, is developing ‘cluster’ strategies for six sectors (motorsports, food, textiles, healthcare, creative industries and aerospace) each involving dialogue between a cross section of stakeholders and actors. But such dialogue may be limited in its autonomy to explore the real concerns of actors, being heavily dominated by the strategic timetables and performance culture of the agency.

4.81 Why are universities seen to have a role to play?

If RDAs have not lived up to early hopes and expectations of their role as discursive agents, are universities seen as filling the gap? The answer is ambiguous: from a formal policy perspective no; in practice, sometimes. Contemporary policy expectations of the role of universities in economic development can probably be dated back to the Conservative government’s 1992 *Competitiveness White Paper* and its anxieties about comparatively weak levels of innovation in the British economy. The problem was defined in terms of transference: British universities are amongst the best in the world, but they lack the close industrial links characteristic of their counterparts in many of the UK’s competitor countries. Brilliant ideas with great commercial potential were thought to lie locked in academic filing cabinets inaccessible to entrepreneurs with the skills and resources to bring them to market. Successive government initiatives – which demonstrate high levels of consensus between Conservative and Labour administrations – sought ways of filling the gap posited by this analysis: encouraging spin-off companies led by academic staff or students (perhaps in partnership with entrepreneurs); providing universities with marginal funds to explore ways of becoming more responsive to businesses in search of academic knowledge or consultancy; placing graduates to undertake time-limited development projects in SMEs. None of these interventions however come close to addressing the scale of the structural contradictions which separate academic and business practice.

The government sponsored Dearing Report into the future of higher education (National Committee of Inquiry into Higher Education, 1997) also saw ‘third income stream’ generation through such activities as an important plank in the strategy to reduce universities’ long-term funding gap. Faced by a consistent decline in core funding, a few universities such as Warwick have achieved benchmark status in higher education through the achievement of substantial private sector income by means of carefully designed products and services for large corporate enterprises. Other universities, though lacking the vision or political willingness to invest, nonetheless feel obliged to imitate Warwick’s example in pursuing a third stream. In many cases this amounts to little more than cosmetic additions: perhaps the inauguration of a dedicated business helpline linked to a database of university ‘expertise’, but doing little to address the more fundamental organisational issues described below in Section 6. Moreover at the level of national policy there has been no attempt to address the constraining influence on external activity of government-imposed targets relating to teaching and research. The government’s regulatory mechanism, the Research Assessment Exercise, imposes a particularly restrictive influence on the allocation of research effort.

The patchy national policy framework that has begun to emerge during the last decade also muddies the distinction between a strategy for ‘third stream’ income generation and the ‘third task’ of universities in resourcing economic and regional development (Burlin, 2004; Lantz and Totterdill, 2004). In the latter paradigm, the regional engagement of universities occurs because of their organic relationship with diverse partners, because of a highly developed corporate sense of stakeholding in their host regions, and sometimes because of an epistemology which values knowledge creation through such interaction. In this context universities might be expected to be driven by a different vision and to act in different ways than if they were principally focused on commercial income. In practice however the role of UK universities as animators of dialogue and sources of critique has largely been marginalised. Instead the policy vision has been defined in terms of universities’ potential as creators of knowledge-based commodities ripe for the market.

4.82 Work organisation in universities

In part, this limited perception of the university role reflects the structure and culture of universities themselves. Universities have to invest heavily in building local and industrial development coalitions if they are to realise their potentially unique dual role as stakeholders and as the mediators of knowledge. Prior investment in universities' own internal structure and capacity, in networking, and in the development of new models of learning and innovation should be seen as essential prerequisites.

Capacity building

While universities have sometimes been in the forefront of studying changes in other people's workplaces, a model of organisational innovation within universities capable of sustaining closer partnership with external organisations is lacking. Doubtless there are people in every faculty of a university who can contribute something towards the regional development process, towards a new vision of the region. But universities typically lack corporate mechanisms to bring individuals together across academic demarcations, and to bring them together with external partners in order to build a local community of expertise. As a local policymaker pointed out, 'the world is not divided up along faculty lines'. Universities therefore risk being perceived as lacking critical mass in key issue areas – that they are no more than a series of islands of activity in which the whole is less than the sum of the parts.

Like most institutions, universities erect walls and ceilings between different functional parts. Corporate partnership, research and commercial consultancy are often quite discrete levels of activity within a university's structure and potential synergies are rarely discussed or explored. This is certainly not to argue that research effort and resources should simply be determined by commercial opportunities or instrumental policy interests; but there should be a mutually beneficial exchange between these activities, and linkages built with the wider corporate dialogue that universities establish with partners in public policy and industry.

Ensuring an effective response across the whole university requires both proactive contact with partner organisations and the creation of new internal mechanisms for animation and horizontal coordination. As we will see in the case study below, some universities have provided a platform for the creation of ‘hybrid’ centres, committed to building synergies between research and the provision of practical assistance to policy makers or companies (see the case study below). The rationale for such centres is that while academics often lack the practical or communication skills needed to work closely with practitioners, individuals from backgrounds in practice can lack the wider overview and the ‘search space’ needed to generate rigorous solutions. By bringing together integrated teams of researchers and practitioners it should be possible to create new forms of collaboration, with mutual benefits for each side as well as for the partner organisations or companies. Researchers have to demonstrate at least some utility in their outputs to the practitioners, but gain access to high-quality data sources. Practitioners are accountable to researchers for the rigour of their methods and outcomes, but gain access to a wider knowledge base and to conceptually coherent models of change. In practice, of course, the creation of a common language and shared understanding can be painstaking and difficult, but the potential rewards are high.

Overall, universities are only rarely in the vanguard in developing or pioneering innovation in regional policy or workplace change. Innovations are generated from the new consultancies, the think tanks, arts organisations and private sector firms. Universities are certainly anxious to promote the wider dissemination of their expertise whether through publication or commercial exploitation. But where are the academics in innovation processes? Some will write articles for social science or policy journals based on current practice, but overwhelmingly these texts attempt little more than a detached analysis of a recent initiative or strategy, or perhaps seek to reify practice from one location into a policy ‘model’. Moreover much of this work exudes a sense of distance between academic and practitioner (and certainly policy practitioners speak with weariness of interviews by researchers, of the problems of characterising the struggle and ambiguity which inevitably accompany project development and implementation, of anticipated disappointment in reading the final article).

A number of individual academics will, of course, always be found in close collaboration with policy makers, change agents in companies, voluntary groups or business support organisations. Personal networks will become the locus of reflexivity and innovation; barriers between research and practical change will sometimes be broken down in informal workshop sessions or during after-work discussions in a pub. But where in the strategies of academic faculties and departments is this type of organic relationship between universities and the knowledge-based regeneration of cities and sectors reflected? Senior university representatives may often be asked to sit on the management boards of redevelopment agencies, but how does the collective expertise of their institutions actually seep into the design and implementation of policy?

Creating change in a regional economy demands the ability to engage with politics, to deploy knowledge as a means of building alliances, to compromise, but to refuse to accept that a report sitting on a shelf is a satisfactory outcome. It also means long-term engagement in learning and change rather than short-term consultancy. Do universities enjoy credibility in these types of activity? Indeed do they seriously want it?

Obstacles

Institutional barriers to innovation are easy to find. A report, which I prepared in 1999 for the Pro-Vice Chancellor (External Relations) of Nottingham Trent University, identified the following constraints to closer regional partnerships:

- a) inter-faculty and multidisciplinary approaches have been actively discouraged in the field of economic regeneration; this is a clear indication that new management cultures are required to encourage innovation rather than academic sectarianism;
- b) there has been no attempt to identify key areas where the university enjoys an actual or potential advantage in research, consultancy or policy development, or to target those areas with appropriate support;

- c) while strategy may be made at the centre, there is a lack of executive capacity to pursue corporate initiatives in a proactive way and to ensure effective coordination between different parts of the university;
- d) in fields such as economic regeneration, regional development or work organisation relevant expertise is likely to be spread across several faculties; informal networks may develop, but these are both unusual and difficult to sustain without top-down encouragement; this means that the university often fails to create the ‘critical mass’ of expertise required to make a serious impact on policy debates or potential clients;
- e) there has been no university-wide examination of the ways in which research funding could be used to boost commercial advantage, nor of the ways in which commercial activity generates a knowledge base which can be exploited to enhance research outputs; failure to achieve a synergy between research and consultancy undermines the unique competitive advantage which universities can enjoy in commercial markets;
- f) it is very hard to create space for teaching staff to invest time, build competence or develop knowledge required for commercial work; at the same time university recruitment policies are hardly conducive to attracting or retaining first-rate consultants or contract researchers.

There is no blueprint for overcoming such obstacles. Rather this presents universities with a classic organisational challenge, one which requires extensive dialogue with internal and external stakeholders, shared learning and, most crucially, the active participation of staff in the redesign of structures and work processes.

4.83 Universities as a locus for policy entrepreneurship?

A case study

In January 2005 Nottingham Trent University formally closed The Work Institute, thus ending a story of collaboration between academic knowledge and practice in the field of work organisation, the origins of which lay in the late 1980s.

As this chapter has argued, the scope for policy innovation within a local authority context had seriously diminished by the mid-late 1980s. As a senior member of the economic development department at Nottingham City Council (and later at Sheffield City Council) I had made sustained but unsuccessful attempts to introduce work organisation onto the policy agenda. The drivers for these attempts were diverse, deriving in part from some of the labour process debates taking place within, for example, the Conference of Socialist Economists (Hales, 1980) and in part from the experiments in teamworking undertaken by Peter Waldman of the Industrial Training Research Unit (ITRU). Experience of developing local sector strategies for industries such as textiles and clothing (Totterdill, 1992) taught that public subsidies for skills enhancement, management development, product development or marketing were unlikely to produce a return while manufacturing processes were rigidly geared towards the mass production of standardised goods for price sensitive markets in which the UK enjoyed no possible competitive advantage.

Traditional forms of work organisation based on tayloristic production lines could not deliver the versatility, innovation or quality required of higher value markets. Moreover working life in mass production factories was typically characterised by short cycles and piecemeal-driven targets, resulting in significant levels of repetitive strain injury and stress-related absence. High employee turnover and recruitment difficulties were endemic in the textiles and clothing industry, which nonetheless entrapped many thousands of women in jobs with a poor quality of working life. The sector fast became a fascinating case study of the failure of traditional approaches to management and work organisation.

In contrast, the ITRU experiments appeared to demonstrate the potential of team-based production systems to combine increased productivity and versatility on the one hand with enhanced quality of working life on the other. Supporting evidence was beginning to emerge from the introduction of teamworking on a large scale by major textiles and clothing companies such as Coats Viyella, and during the late 1980s the tripartite National Economic Development Council actively encouraged the adoption of such approaches through the organisation of seminars and the publication of a good practice guide.

Yet evidence suggested that implementation of such changes was difficult and the outcomes uncertain. Dissemination, especially amongst smaller firms was very limited. Between 1988-90 I developed the business case for a pilot project situated within the clothing sector designed to identify the practical measures needed at enterprise level to promote the development and dissemination of team-based approaches. By 1991 a portfolio of funding has been secured from the EU and from national and local sources to undertake further research and to carry out experimental work in two Nottinghamshire companies. A local authority platform for this work would have imposed too many constraints: compatibility with short-term performance measurement regimes, the line management structure, strict financial regulation and a decaying culture of innovation would not have been conducive to the type of learning-by-doing approach envisaged. Contacts at Nottingham Polytechnic (then about to become Nottingham Trent University) were receptive however, and a persuasive case emerged for the location of the project at that institution. The University would house the project, providing accommodation and accountancy services free of charge; in return academic staff would be free to draw on project data for research and publication. During 1991-1992 a virtual team (coordinated by me as an external advisor to the University) included social scientists (led by Chris Farrands from the Faculty of Humanities) and sectoral specialists (led by Professor Edward Newton from the Department of Fashion & Textiles) who delivered the initial phase. Activities included comparative research into practice elsewhere in Europe, a local feasibility study based on organisational audits of several textiles and clothing companies in Nottinghamshire, the trial installation of teamworking in one SME and the

enhancement of an existing teamworking system in a larger company. This initial growth phase was both exciting and productive in terms of the bridge created between higher education, businesses and their employees.

By the beginning of 1993 a three-year funding package had been secured from Nottinghamshire County Council, the local Training & Enterprise Councils, the European Regional Development Fund (ERDF) and the EU's New Opportunities for Women programme to employ a team of researchers and practitioners at the university. The three practitioners had come directly from positions in industry where they had each been responsible for the development and implementation of innovative approaches to teamworking. Their specific remit was to use this experience in advising companies on the implementation of team-based production, often using very 'hands on' methods. The role of the researchers was analyse lessons from emerging practice across the UK and Europe, to develop evidence-based learning resources and, drawing on these outcome, to shadow the practitioners as 'critical friends'. This last aspect was crucial. Experience during the developmental phase demonstrated clearly the difficulties inherent in using academic staff in designing and delivering change in the workplace. The inappropriateness of language, methods and materials, especially on the shopfloor, sometimes became very evident. But the decision to recruit advisors with recent industrial experience was far from unproblematic. While former managers could be found with relevant experience and an innate ability to communicate at all levels of an enterprise, there was a tendency to reify their own model of teamworking, imposing specific practices unreflectively on every client company. This could lead to particular tensions when advisors, working in pairs, fought over which had the 'right' approach to a particular aspect of organisational design!

In this context the role of the (relatively junior) researchers in informing practice was often hard to establish, and was initially mistrusted by the advisors. Over a period of two years or more both sides learned to adapt: the researchers needed to identify and communicate the practical consequences of their findings while the advisors had to acknowledge the boundaries of their personal backgrounds and experience. Above all the

dialogue between researchers and advisors created space for reflection, both informal and through collaboration in workshops, network meetings and other events. As a progress report argued in 1994, the project was working towards common language and common understanding between researchers and practitioners.

This convergence was considerably cemented in 1995 with the acquisition of national government funding to establish a 'Teamwork Users Group', essentially a soft benchmarking coalition of some 15 textiles and clothing firms. The operation of the group successfully blended the roles of advisers and practitioners seamlessly gathering, analysing and sharing data with the participating companies. At this stage some of the research team also began to play much more of a hands-on role in individual company change projects.

In parallel, the same contacts with local authorities and funders had led to important gains for other parts of the university, notably three-year ERDF grants to establish an integrated package of support for textiles and clothing companies including:

- an innovative IT-based fashion intelligence service
- technical services such as sample dyeing and textiles testing
- customised vocational education and training
- this package was to be delivered jointly through the Nottinghamshire International Clothing Centre, a County Council initiative in which the university was a key stakeholder and managing partner.

The 1993-1996 period was significant as a period of learning and development, delivering tangible outputs for companies and employees, and contributing to the base of 'actionable knowledge'. Significantly it was characterised by sustained dialogue and coalition building involving key actors: local authorities, economic development agencies, employers' organisations, trade unions and the wider university, all of whom were represented on the project steering group. In 1995 the project was incorporated as a

recognised university research centre – the Centre for Work and Technology (CWAT), later to become The Work Institute (TWI) – by then employing eleven staff.

In many ways this period exemplifies the potential role of a university in providing a platform for economic intervention which is both discursive and innovative. The conditions for the successful establishment of this platform can, with hindsight, be identified as:

- a university culture characterised by sufficient slack and willingness to experiment
- prior investment in building long-term relationships with key actors both inside the university and with partner organisations
- securing relatively long term core project funding (three years) which provided a degree of employment security and the ability to plan
- a multi-voiced approach based on close interaction and shared learning between researchers and practitioners - in contrast with the prevalent ‘knowledge transfer’ model which assumes a one-way flow between academic expertise and practice.

These conditions could, however, no longer be said to prevail after 1996. ERDF funding was no longer available, leading to the gradual erosion of all the university-based textiles and clothing initiatives funded in 1993. CWAT’s immediate survival was nonetheless assured through the creation of a wider portfolio of shorter-term projects from local, national and EU funding sources, plus income from client companies which accounted for circa 25 % of turnover. This substantially diversified the range of activities to include both intervention in workplaces well beyond the textiles and clothing sector and policy-related research (principally the European Work and Technology Consortium, in which CWAT led the creation of a 16 partner, ten country coalition to explore the policy implications for the EU of the divide between leading-edge practice and common practice in work organisation). Over the next few years the scope of activities was to include:

- research into leading-edge practice in work organisation
- future-oriented thinking about work
- public policy development
- establishment of regional employer learning networks
- developing innovative change methods and learning resources
- workplace-based consultancy
- contributions to university teaching and research.

The interdependence of these diverse activities became a source of strength. Staff engaged in high-level policy or research debates that were also able to cite current experiences of hands-on intervention in workplace projects could add weight and immediacy to their arguments. Likewise workplace projects benefited from the perspectives that this broader engagement could bring.

However diversification created its own problems. Funding-driven pragmatism continually threatened the coherence of CWAT's strategic objectives. Retaining knowledgeable, experienced staff beyond the life of a project could pose serious financial risks in a short-term funding environment. The university's management accountants continually called for staff to be employed on short-term contracts on a project-by-project basis, while CWAT pointed to the importance of accumulating experience within a well-integrated team. Although the Centre was to continue in different guises for another eight years, this tension did not disappear and eventually proved to be a significant factor in its demise.

This case study also needs to be set within the context of the university's wider approach to external relations in which the dominant narrative since the 1980s (in NTU as in many other UK universities) was the struggle to generate a third income stream. Although the university's strategy proclaimed its commitment to work with external partners in supporting the regeneration process, there were no corporate indicators against which

CWAT's contribution to these objectives could be measured. Financial performance remained the sole measure against which success could be judged.

A two-year secondment to the Pro-Vice Chancellor's office at Nottingham Trent during 1999-2001 appeared to offer me an opportunity to raise these fundamental issues within the university's corporate policy arena. The initial analysis (see Section 6 above) was well received by the University's Strategic Direction Group, which appeared to accept a 'stakeholder university' model based on 'third task' engagement with regional and industrial partners. Agreed actions resulting from this approach can be summarised as:

Building multilateral relationships with the policy community

The 1997 Labour government established 'shadow' Regional Development Agencies staffed largely by civil servants and secondees, preparing the ground for formal incorporation the following year. This twelve-month period offered fertile opportunities for academic influence on the emerging strategic framework, though in practice academic institutions were ill-equipped to respond. While formal consultative structures were established (involving the creation of an East Midlands University Association to represent all the HE institutions in the region) only a small number of academics were invited to make their expertise available to the detailed policy discussions covering a wide range of economic and policy dilemmas. From the RDA perspective the problem lay in identifying individuals able to make a relevant contribution; for the individual academic there was no system of brokerage able to provide appropriate signposting. The same issues were also evident in relationships with other public actors such as local authorities and regeneration agencies, as well as with national policy makers.

In brief, the immediate result of my secondment was a proposal to establish Economic Futures, a cross-faculty regional regeneration network including academics with expertise in the arts, business, economics, public policy, social inclusion and urban planning. This internal 'think tank' network would be used as the basis for dialogue with the RDA as well as for the instigation of proactive proposals and initiatives.

Sectors as focal points for inter-faculty collaboration

The new Labour government's flirtation with Michael Porter led to a renewed interest in sectoral policy, culminating in the Sainsbury report on 'clusters'. Clusters, groupings of enterprises whose perceived linkages could be defined in a wide variety of more-or-less tangible ways, were subsequently expected by government to constitute a key policy focus for RDAs in their interventions to enhance competitiveness and innovation. However that 'the world is not divided into faculty lines' posed further problems for university engagement. Even vocationally-focused academic departments such as Fashion and Textiles or Engineering did not contain a monopoly of expertise in those sectors, which was also to be found in science, social science and business school locations. It was therefore proposed to establish pilot multi-disciplinary groups for the textiles and clothing and food sectors. Each group would undertake a programme of knowledge sharing and team development, once again providing the basis for dialogue with policy makers as well as the direct instigation of proactive proposals and business support initiatives for the sector.

Specific initiatives

Networking with other local actors had already led to the identification of opportunities for collaboration, of which one of the most interesting was the Greater Nottingham Observatory (34). The lack of an integrated source of economic intelligence for the conurbation was identified as long ago as 1982 by the Nottingham Local Economy Project (previously mentioned in Section 1). Each public agency – including the district and county authorities, the Training and Enterprise Council (TEC) and labour market agencies – collected separate data with no mechanism to avoid duplication or to ensure integration. The Observatory, hosted by the University and supported financially through grants and secondments from other partners, was established as such a mechanism as well as to provide a bridge to academic expertise. However, its significance lies as much in the

(34) www.theobservatory.org.uk

processes which led to its creation as in its functions. Both the University and the TEC seconded senior staff to undertake the complex processes of concept development, networking and trust building, overcoming the territoriality and possessiveness of the different partners relating to ‘their’ data. Working beyond traditional job descriptions and lines of organisational accountability is indispensable to the creation of effective coalitions and partnerships.

Outcomes

This policy experiment met with mixed success. New relationships were established inside the university by creating resources and space for proactive networking. Economic Futures attracted the active involvement of more than thirty academics from across the university, provided an important reference group for the establishment of the Observatory and published Greater Nottingham in 2010, a contribution of essays designed to highlight key strategic choices for the conurbation. The sector groups undertook some useful work in mapping university expertise. However, both failed to win support for a more ambitious agenda from academic line managers driven by research and teaching targets.

The unexpected retirement of the Pro-Vice Chancellor for External Relations brought the third task agenda to an abrupt halt. An extended period of uncertainty followed, succeeded by a new structure designed with an explicit orientation towards ‘third income stream’ generation. The capacity for non-commercial ‘third task’ activity was explicitly restricted. A new Vice-Chancellor, appointed from the private sector in 2004, re-emphasised this approach by requiring externally-funded university centres to generate a 25 per cent financial surplus on turnover. As one university official remarked, ‘third task activities are OK if we can make money from them’.

In this context TWI with its near-exclusive focus on third task activity became an anachronism within the university, too far removed from mainstream targets.

4.84 Challenges and propositions

It will not be long before the English RDAs face a crisis of legitimacy. Lacking direct regional democratic accountability (RDA Board appointments are locally advertised but Ministerially approved) as well the ability to tie intervention and expenditure to the outcomes of local dialogue, future governments will be forced to question the extent to which the agencies add value either to regional economies or to regional social capital. Early soundings about local government-led ‘City Regions’ from Prescott’s Office of the Deputy Prime Minister may already auger the start of a long-term withdrawal from the regional agenda.

Nowhere is the emerging failure of RDAs more apparent than in their inability to address the third task role of universities. The problem can be summarised in terms of their:

- failure to conceptualise the third task properly, and in particular the failure to distinguish it from third income stream generation
- failure to deepen university engagement with the regional agenda by investing in the active engagement of front-line academic staff through proactive networking and dialogue
- failure to create funding regimes which support university innovation and involvement, and in which outcomes are measured by the creation of social and organisational capital rather than through crude quantitative indicators
- failure to address the national system of performance measurement which steers university culture and practice towards narrowly defined research and teaching activities.

There are few champions of a discursive approach to economic development in the current UK policy arena, and a declining number of academics able to practice in this way within current performance measurement regimes. Those that do so require the

strength and ability to act as ‘guerrillas in the bureaucracy’, sometimes tolerated but never in the mainstream.

Critical reflection and debate on the nature of regional development and its relationship to universities is long overdue in the UK.

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4.85 Bibliography

Brulin, G. (2004) The third task: a challenge for Swedish research and higher education. In Fricke, W.; Totterdill, P. *Action research in workplace innovation and regional development*. Amsterdam: John Benjamins Publishing.

DTLR - Department for Transport, Local Government and the Regions (2001) *Evaluation of RDA strategies and action plans* London: DTLR.

Greater London Council (1985) *London industrial strategy* London: GLC.

Hales, M. (1980) *Living thinkwork: where do labour processes come from?* London: CSE Books.

National Committee of Inquiry into Higher Education (1997) *Report of the National Committee* London: HMSO.

Offe, C. (1975) The theory of the capitalist state and the problems of policy formation. In Lindbergh, L. et al. *Stress and contradiction in modern capitalism* London: Heinemann.

Totterdill, P. ‘Local economic strategies as industrial policy: a critical review of British developments in the 1980s’. *Economy and Society*, 1989, Vol. 18, No 4.

Totterdill, P. 'The textiles and clothing industry: a laboratory of industrial policy'. In Benington, J.; Geddes, M. (Eds) (1992) *Restructuring the local economy*. Harlow: Longman.

Totterdill, P. 'Linking workplace innovation and regional development: towards new roles for the university sector'. In Fricke, W.; Totterdill, P. (2004) *Action research in workplace innovation and regional development*. Amsterdam: John Benjamins Publishing.

IV.5. The complexity of the different regional roles of the university *by James Karlsen*

4.86 *Introduction*

The relationship between university and region has gained increased attention from policy makers, at regional, national and global levels. They demand more co-operation between university and region. The demand is formulated as a norm for co-operation. The university has an obligation to co-operate and participate with actors in the region. In the Agder region there has been pressure from the region on the regional university college to participate more with regional actors. In an interview in the regional newspaper the regional director in NHO used this formulation:³⁵

Agder University College is operating in a market today, and is supposed to do that. ... Agder University College's task is to supply the market with the labour force it requires. Colleges and universities are supposed to encourage industry's competitive force. It is important to develop education and research that match the needs in the region (Fædrelandsvennen 01/07/2004).

Despite this attention, the relationship between university and region is treated as a black box (Karlsen 2007). There is a lack of theoretical discussions to elaborate the relationship in more detail. There is also a lack of concrete studies of the relationship between university and region, inside out and bottom-up. This implies that there is a need to conceptualise and discuss the relationship more specifically, and to do studies of the relationship between university and region. There is a need to open up the black box and study what it contains. My approach is to conceptualize the relationship between university and region as meetings in the regional agora. The *agora* is the public space

where ‘science meets the public’ (Nowotny, Scott, and Gibbons 2001). In the agora the relationship between university and region is played out in practice. There seems to be a belief that the university has a regional role in the agora, and that this is a new role for the university (Gibbons, Limoges, Nowotny, Schwartzmann, Scott, and Trow 1994; Etzkowitz and Leydesdorff 1997; Chatterton and Goddard 2000; Nowotny *et al.* 2001; Brulin 2004; Levin 2007).

My argument is that the university is playing different regional roles, and that the university creates different kinds of knowledge in the agora. The regional roles of the university are diverse and complex. To talk about only one regional role oversimplifies the complexity of the different roles of the university. I will discuss four different regional roles of university.³⁶ The roles are:

1. The university as a participative observer
2. The university as a theoretical knowledge constructor
3. The university as a change agent
4. The university in an experimental role

The first two roles are the more traditional regional roles of the university. They are well known, even they are not acknowledged in a regional context by other regional actors. The last two roles are less known because they are relatively new regional roles of the university. They are an extension of the former regional roles, which gives them a new dimension; the active and participative regional university. They are a result of a demand for a more active university in the region. They are the result of someone wanting to pay the university for its knowledge. The new regional roles of the university are more complex roles than the former regional roles of the university, because they demand that the university must participate actively with regional actors and their knowledge. In this

35 NHO is the abbreviation for the Confederation of Norwegian Business and Industry.

36 There can be argued that the university also plays other roles, such as a national role connected to education of the future work force and a global role as a knowledge creator in the knowledge society. However, in this article I will discuss four different regional roles of the university.

meeting they create new knowledge. In addition to theoretical knowledge, which all roles demand, the last two roles also demand knowing how to apply the knowledge in the agora. ‘Knowing how’ is knowledge in action; ie knowing how to behave, and which kind of action is appropriate in a given situation. In the agora, university knowledge meets the regional actors’ local knowledge, and new knowledge is created in this meeting.

My aim is to discuss the different roles of the university and especially the complexity of knowledge in relation to the last two roles. I will conceptualise the different regional roles of the university. My aim is not to give a clear-cut answer, but to emphasise some aspects with the regional roles of the university in relation with the knowledge concept. My thesis is that the university is asked to take an active role in regional development in its host region, and this creates a set of dilemmas. These dilemmas are caused by the fact that the university is a complex organisation. In the paper I will explore the following questions:

- Why does the university have different regional roles?
- What characterises the different regional roles of the university?

The outline of the article is as such. I start by presenting the agora concept. Then I present a typology with the four regional roles of the university. I present the demand for a more active regional role of the university before I present the complexity of knowledge and the new regional roles. I round off the discussion with a short conclusion.

4.87 *Agora*

The agora is an ancient Greek concept used by (Nowotny *et al.* 2001) to denote the meeting between university and society³⁷.

³⁷ The Agora was the heart of ancient Athens, the focus of political, commercial, administrative and social activity, the religious and cultural centre, and the seat of justice.

The agora is the public space in which ‘science meets the public’ and in which the public ‘speaks back to science’. It is the domain (in fact, many domains) in which contextualisation occurs and in which socially robust knowledge is continually subjected to testing while in the process it is becoming more robust. Neither state nor market, neither exclusively private nor exclusively public, the agora is the space in which societal and scientific problems are framed and defined, and where what will be accepted as a ‘solution’ is being negotiated (Nowotny *et al.* 2001: 247).

In the figure below I have illustrated the relationship as a meeting between university and region, with the agora concept. I have illustrated the agora with a darker colour to illustrate that the relationship is between university and the region is treated as a black box. I have made the lines slashed to illustrate that both the university and the region are changed as a result of the meeting in the agora. The borders between them are not watertight, but transgressive. The meeting changes both the university and the region.

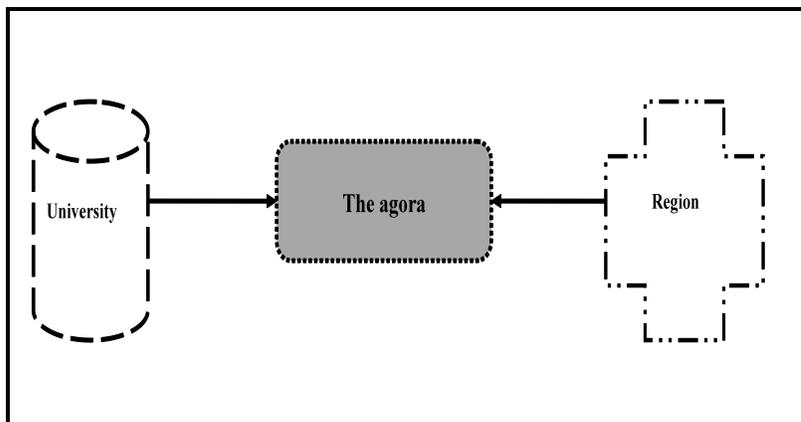


Figure 1: The regional agora between university and region.³⁸

The meeting in the agora is not on the premises of industry alone, or on the premises of university alone, but on common premises. If the meeting in the agora were on the premises of the industry alone, the university would have turned into an academic capitalist with the single aim of selling knowledge for the purpose of profit. If the

meeting in the agora were on the premises of the university, the agora would be dominated by theoretical knowledge creation. The regional role of the university is played out in the regional agora.

4.88 Different regional roles of the university

My assumption for the regional role of the university is that the agora is the foundation for knowledge creation in the university. Knowledge is created as a result of the meeting between university and regional actors in the regional agora. Theoretical knowledge can of course be generated without participating in the regional agora, but this is not the topic in this discussion. This implies that there can be other roles for the university, such as a global role or the national role of the university. I will limit the discussion to the regional roles of the university.

I further assume that the university is invited to participate in the regional agora by other regional actors. By invitation I mean that a regional actor, such as a county, a municipality, or representatives for industry in the region, asks the university to participate in a process. I assume that the university is invited to participate due to the theoretical knowledge the university has.

I will create a typology with two dimensions. The first dimension is the university as an analytical resource. In this dimension I differentiate between the university as an observer or spectator of processes in the region, and the university as a constructor of knowledge in abstract terms and language; ie as theoretical knowledge that can be used in different contexts. The second dimension is the university as a participant in the agora. As a participant, the university can have a passive or an active role in the agora. The combination of the two dimensions gives four different roles of university in the agora, cf the table below. The first two roles are the passive regional roles and the last two roles are the active regional role of university. I will start with the first two roles.

38 The figure is based on Karlsen (2007).

Table 1: Different regional roles of university in the agora

		University as participant	
		Passive	Active
University as an analytical resource	Observer and creator of data	I: Participative observer	III: Change agent - Participating in change processes
	Formulation of abstract concept and theory	II: Constructor of theoretical knowledge	IV: Experimental role - Testing implications of concepts and theories in real life situations in the region

4.89 Passive regional roles of university

The first two roles of the university are well known. They are the foundation for the university as an institution for knowledge (Delanty 2001). The first role is the university as a participant observer of processes in the agora. In this role the university generates data from processes in the region. It is a role that is thoroughly discussed in qualitative method books as well as in theory of science literature. In this role the university interprets data and information from participative processes, which can be used in reports to regional actors or for more theoretical purposes.

The second role is the university as a constructor of theoretical knowledge. In this role the university has contributed to what has been labelled the knowledge economy. The concept was coined by Bell (1974). His argument is that the use of information and theoretical knowledge has increased in the current economy, and has a more important function than in the industrial economy. Studies of the region have resulted in theories about regional development and regional innovation, such as the regional cluster concept (Porter 1998), or the regional innovation system model (Braczyk, Cooke, and Heidenreich 1998).

Both these roles demonstrate that the university has influence on its host region directly by delivering information and knowledge to decision making processes in the region, and indirectly by theories that are learned by students in university and by policy makers. As an educator of the future work force, the university has a considerable influence on the region.

In addition to the effects of participation comes the location effect of an institution as a university. By just being located in a region, an institution has a considerable direct and indirect effect on the regional and local economy. There is a consumer effect because of the money students and staff use in the region. The location effect implies stability in employment and taxes in the region. It has consequences for the local and regional labour market both in size and diversity. A university contributes to expand the social and cultural environment in the region. A university also has a strong symbolic effect. A university implies knowledge and status for a region, compared to other regions that do not have a university.

Despite these arguments, the myth of the university as an ivory tower is still alive. The myth describes a university that restricts itself to studying processes in the region. It is about a university that does not participate with actors in the region. It is a very strong myth that has guided many actors' belief and thoughts about university, also on the regional level. In the Agder region in 2004 and 2005 there was a heavy newspaper debate about the regional role of Agder University College (Karlsen 2007). In the debate Agder University College was characterised as an ivory tower that did not want to participate with the region, and contribute with knowledge to the industry so that the innovate capacity could be increased. A case study showed a lot of interaction between the region and the university college.

In the regional discourse there is the belief that AUC has not participated much with regional actors in knowledge creation processes. ... The problem is that this participation is not easy to observe and map exactly, because of its diversity and temporariness.

Despite the problem of mapping, my conclusion is that knowledge is created in many different processes between Agder University College and regional actors. There is a diversity of processes. The most extensive processes are between students and regional actors (Karlsen 2007: 172-3).

It is through the students' work with the Bachelor's projects and Master thesis that the interaction with the region is best measured in man years, number of students involved, credits and organisations and companies in the Agder region. The interaction is biggest with the public sector because of the professional programmes in nursing and teacher education, but there is also interaction between industry and Agder University College (Karlsen 2007). The aim with the students work is to train them to use their knowledge in real life situations, and to learn to generate data from processes with regional actors. Benefits for the regional actors from the co-operation are more diverse. In some cases the knowledge from the students seems to matter, and in other cases the knowledge is not used.

Despite these positive regional development effects, this is not longer sufficient in the knowledge economy. At present regional actors, such as industry and regional governments, demand a more active role of their host university.

4.90 The demand for an active regional university

The regional actors want the university to make an active contribution in regional development (Chatterton and Goddard 2000; Brulin 2001; Gustavsen 2003; Brulin 2004; Lantz and Totterdill 2004; Levin 2007). This active role of the university has been given different names, such as the universities' third role (Brulin 2001; Brulin 2004), the stakeholder university (Lantz and Totterdill 2004), the Mode-2 university (Nowotny *et al.* 2001), the regional responsibility role (Levin 2007) or the regional role of university (Karlsen 2007; Nilsson, Aarbo, Dahl, Dahlum, Edvarsdsson, Eskelinen, Nielsen, Uhlin,

and Ylinenpää 2007). The two ideal types of the active regional university are next on the agenda.

One common factor between the different concepts is that they denote an active relationship between the university and the region. Levin (2007) argues that the gap between university and region must be reduced, by increased participation and contributions to regional development processes in the region. Another common factor is that they denote that university must be useful for the region. By participating in regional development processes, a university can produce socially useful outcomes. Levin (2007) formulates the usefulness argument in this way:

Knowledge development at universities has to a very high degree become knowledge production for its own sake, and not the creation of knowledge applicable to solve important social problems. ... The gap between what counts as knowledge at universities and what is useful for practitioners is too large. It is obvious that universities need to reach out and integrate in regional construction networks (Levin 2007).

The usefulness argument is also connected to economic development and participation in innovation processes. One way for the university to contribute in innovation processes is to mediate knowledge to small and medium sized firms, because they have little capacity to interpret and understand how the external world around them is changing (Lantz and Totterdill 2004).

Active usefulness participation implies that research and education have to be created together with practitioners. This is in line with the Mode-2 argument coined by Gibbons, Limoges, Nowotny, Schwartzmann, Scott, and Trow (1994). In a follow-up book, Nowotny *et al.* (2001), the argument is further developed and connected to the role of the university. The Mode-2 argument has been one of the more discussed contributions to the current debate about the university. There seems to be an agreement that the authors have identified a significant change process for universities (Slaughter and Rhoades 2004;

Brandser 2006; Slagstad 2006). This represents a transformation of universities into service institutions where the main aims are to secure economic progress and increased opportunities for all (Brandser 2006).

The authors behind the Mode-2 argument argue that there has been a change in the production of knowledge in society, and in the economy, and that this change has consequences for both research and education in the university. The change affects all disciplines in university: science and technology as well as social science and the humanities. In Mode-2 knowledge is produced in a context of application. In Mode-2 the former distinction between knowledge creation and use of knowledge is dissolved; ie that the differentiation between basic research and applied research is integrated. The authors argue that knowledge is produced through intense dialogue between different constructors and the user of knowledge. The context of application describes the total environment in which scientific problems arise, methodologies are developed, outcomes are disseminated and uses are defined (Gibbons *et al.* 1994). The knowledge produced is 'transdisciplinary', 'transinstitutional' and 'transnational'. In Mode-2 scientific, technological and industrial creations become closely connected (Gibbons *et al.* 1994). The authors argue that Mode-2 is faster, more efficient and more specific for a useful economic purpose, than Mode-1 knowledge. Mode-1 is the traditional mode of producing knowledge, which the university mainly does (Gibbons *et al.* 1994). In this mode knowledge is produced in a disciplinary and homogeneous environment by disciplinary researchers. University knowledge is also more general and universal than Mode-2 knowledge. Nowotny *et al.* (2001) argue that university needs to open up and change, in line with the requirement of Mode-2 knowledge production. The traditional university that continues to produce knowledge in Mode-1 risks the fate of being outstripped by Mode-2 knowledge production. There will not be a market that will pay for general knowledge that needs to be transferred and then adapted to a context. A Mode-2 university is a university that is selling its knowledge; ie it is acting like a capitalist, an academic capitalist. The Mode-2 argument splits education and research. Research is seen as a Mode-2 activity and education as a Mode-1 activity, which implies that education can remain in the university. The authors argue that there is only a need for the

university in order to accredit higher education. This is a role where the university still can retain a monopoly situation (Nowotny *et al* 2001).

The above discussion has shown that the argument for a more active and useful university for the region is partly formulated as a normative obligation for universities to collaborate with regional actors, and partly because there seems to be a tendency that knowledge in society is produced in a new mode of knowledge production. However, one problem with the Mode-2 concept is that it black boxes the processes in the agora (Karlsen 2007). The concept does not discuss in any detail how knowledge is created in a context of application. Neither does the concept differentiate between different kinds of regional roles or dilemmas with the new regional roles of university. The ideal type of the active regional university offers a more detailed approach to the roles of the university in the regional agora, which is the next topic on the agenda.

4.91 Active regional roles of university

The active regional university consists of two roles; the university as a change agent, and the university in an experimental role; cf the typology above. As a change agent, knowledge is used to contribute to change a situation in a region, such as an environmental situation. The university can also work with gender and disability issues in the region, in a role as change agent. The university can also contribute with knowledge in innovation processes in industry. The main difference between this role and the second role is that as a change agent the contribution from the university makes a difference. In practice this distinction is not so easy to find and draw. One way to find the distinction is to look closer at the aim, with the invitation to the process, and the aim from the university to participate in the process. Is it just to be represented, or do the regional actors demand more from the university than just observation of a process? And does the university have higher ambitions or other intentions than just being an observer in a process? If the answer is no to these questions, then the university is just a participant observer. If the answer tends towards a yes, then the university is in a role of being a change agent.

The last role, the experimental role, has its analogy in the classical experiment. In the classical experiment the researcher can control all variables and test their effect one at a time. The classical experiment is done in simple context. However, to test out theory or ideas in the region is the opposite of a simple context; it is an experiment in a complex context, where you can not control all the variables, may be only a few of the variables can be controlled. This is the context for the last regional role of the university. In this role the aim is to test out a theory or a normative perspective in a real life situation in the regions. The need to test a theory and ideas can be initiated from actors outside the region, such as national authorities, but accepted from regional actors that they are interested to participate and use regional money in the programme. There is a tradition in Europe of testing out theories in real life situation, such as regional innovation policy for small and medium enterprises (Tödtling, Isaksen, Nauwelaers, and Asheim 2003). Also in Norway this is used by ministries and the Research Council. The active regional role of the university is not unproblematic. There is a rise in complexity when the university changes from a passive to an active role in the region. This complexity is not necessarily acknowledged by the actors involved in the process, neither in university nor by regional or national actors. The increased complexity can be discussed along several dimensions, such as the critical role of research, the complexity of designing a knowledge creation process, and the complexity of knowledge. I will concentrate on the complexity of knowledge.

4.92 Complexity of knowledge

In order to discuss complexity, I assume that the university is a complex organisation. A complex organisation consists of nets of collective action distinguished by artefacts and meaning related to that action (Czarniawska-Joerges 1992: 186). These nets of action go in many different directions, both within university and into the agora, where they meet actors from the region. As a complex organisation, the university can play different roles at the same time. In the regional agora the university can act as a participant observer, as a theoretical knowledge constructor, as a change agent, and in an experimental role. One

way of analysing the complexity is to ask simple, but basic questions. One such question is:

- Who is participating from the university in the agora; ie.who are the university actors?

The question can be divided into questions such as:

- a) Is it management or researchers who are participating in the agora?
- b) If it is researchers; which kind of faculty and department do they represent?
- c) What kind of academic knowledge do the researchers represent?
- d) Does some of the knowledge represent cutting edge knowledge, or is it more general basic academic knowledge?

The first two questions are relatively easy to answer compared to the other questions. However, even a mapping of the interaction with the region is connected with considerable work if one wants detailed information about whom the university interacts with whom in the region, and for what purpose. Data from a case study of Agder University College showed that some of the interaction is quite temporary, while some is more long lasting, some of the interaction is informal between one researcher and a regional actor, and other parts of the interaction are based on connections to educational purposes that involve the students and the university as a system (Karlsen 2007). The study also showed that the management in the university director's office have increased their interaction in the agora. The demand for a more active regional university is received by the management, and they try to answer the demand by participating more in the agora. The increased participation of management in the agora raises several interesting problems to be addressed, such as the relationship between management and researchers, and if management can persuade researchers to participate in the agora. Academic freedom and critical research versus management by aims in the regional agora is a topic that deserves more space than is possible to fulfil in this article. I will therefore not follow the topic, but I could not resist the temptation to mention the topic.

However, the demand from the region is not for management, and their knowledge, but for research knowledge. Question, c and d, are more complicated to answer because they need a more detailed analysis of both the researchers' knowledge and a discussion of the knowledge concept. This may sound paradoxical since the current time is labelled the knowledge economy. A closer look at the writings from authors such as Bell (1974) and Castells (2000), that have been important in coining the concept, shows that they have focused most on the quantitative aspects of the knowledge concept. They have demonstrated the enormous increase in the production and distribution of codified information and theoretical knowledge in society the last 30 to 40 years. The qualitative aspect of the knowledge concept is less discussed by these authors. Knowledge is more than codified information and theoretical knowledge. Knowledge is also connected to action, and the ability to do something in action, which is knowledge in action; ie knowing. Ryle (1949) distinguishes between 'knowing that' and 'knowing how'. 'Knowing that' is theoretical knowledge. 'Knowing how' is the ability to do something, to use knowledge in action. 'Knowing how' emerges through the application of knowledge in the agora. 'Knowing how' is possible to observe and identify in action. We all know when we see an expert in action. A part of this knowing is not possible to tell with words, but still it can be documented in action. Polanyi (1966) named this kind of knowledge 'tacit knowing'. 'Tacit knowing' is an integrated part of 'knowing how' (Tsoukas 2005).

Arguing for a distinct perspective or an action is not the same as doing the action, or showing that the action can be done. The arguments can be purely theoretical, abstract and general in form, which means that they are not necessarily applicable in a given context. 'Knowing how' is concrete and specific and connected to action, while theoretical knowledge is general and abstracted from action. 'Knowing how' can be differentiated in different kinds of actions.

Knowing how to build a wooden boat is different from knowing how to build a boat in steel. Knowing how to lead a project is another kind of knowing how than participating in a project as a team member.

Knowing how to do a research project is different from knowing how to teach. Knowing how to write an article for an academic journal is different from writing a newspaper article. The nuances may sound small for an outsider, but they matter for those who are doing the actions. In the knowledge society knowledge creation has become more and more complex. The challenge is to combine different kinds of knowing how in order to create a new technological device or new medicine. To make such combinations requires people with know how, and it requires people that have developed their knowing how in real situations (Karlsen 2007: 22).

In the regional agora, the university meets different kinds of demands of knowledge. The regional actors do not necessarily demand theoretical knowledge, but useful knowledge; ie knowledge that can contribute to solve a problem or to create an innovation. The demand for knowledge is often translated as a demand for theoretical knowledge and for the university to participate with its knowledge, but this is a too hasty conclusion. It is not necessary theoretical knowledge that is required, but knowing how. It is not necessarily the case that the university can offer this kind of knowledge. It is not possible for everyone to be a universal genius like Leonardo da Vinci. Some researchers can be excellent in several disciplines, and an expert in applying knowledge, while other researchers are good and proficient. In other topics they have not the same knowledge and the same brilliance when they are acting; ie applying theoretical knowledge in the agora.

The discussion between theoretical knowledge and ‘knowing how’ is, in the table below, connected to a typology with four ideal types of research knowledge. The first dimension in the typology is theoretical knowledge. In the typology I have illustrated this with the symbol N₁. The symbol also illustrates that there are different kind of theoretical knowledge, N₂, N₃, N₄ etc, such as information technology, biotechnology, economics, economic geography, actions research etc. The second dimension consists of ‘knowing how’; ie knowledge about how to apply knowledge in the agora. I assume that the

researcher has applied knowledge before in the agora, and as a result of this has developed expert knowledge in how to do this.

The first ideal type is the universal genius, cf. the discussion above. The second ideal type is the brilliant theoretical researcher that is not so good at applying the knowledge in the agora. In the university and the academic system his knowledge is highly valued, but in the regional agora he lacks “knowing how”. His knowledge is therefore not useful in the regional agora.

The third ideal type is the applied expert. He is not at the theoretical leading edge, but is lagging behind. Even if he is lagging behind, he is good at finding theoretical concepts that can be applied in the regional agora. The complexity of the concept is reduced. The nuances and the restrictions the brilliant researcher has used in describing the concept is not communicated to the regional actors by the applied expert. He knows them, but thinks they are too complicated to communicate to the region. Some concepts are easier than other to communicate to regional actors. Since the applied expert is good at communicating a message, and good at doing applied research in the agora, he is often used by regional actors because of his knowledge to talk in an uncomplicated way about a complex topic.

The last ideal type is the ordinary researcher. He masters the basic knowledge in his field and is mainly preoccupied by teaching students at Bachelor level. He does his teaching fairly well, and thinks it is fun to talk to students and guide them in studies. His spare time he tends to read new books in the field but not the latest articles in the international journals. He does not want to use his leisure time to do research and write papers for international publication, and lacks the desire to become a professor. He is satisfied by being an assistant professor.

Table 2: Kind of research knowledge

		Cutting edge theoretical knowledge in topic N ₁	
		Yes	No
Knowing how to apply knowledge in the agora	Yes	I. The universal genius	III: The applied expert
	No	II: The brilliant but clumsy researcher	IV: The classical researcher

The ideal types must be used with caution, but illustrate some important theoretical points. The typology illustrates that there are researchers with different kinds of knowledge. Within the university there is diversity in knowledge. The typology illustrates four ideal types of researchers. Between them there is a continuum, which implies that there can be infinite different kinds of research knowledge.

If the region wants useful cutting edge knowledge; ie the universal genius, this is only one of four types. The statistical chance of getting one of the other types is bigger. It is hard for a non-expert to see the difference at a first glance, but a second glance will probably unmask them. The interest from the region in the brilliant but clumsy researcher, and the classical researcher, is less, and the feeling may be reciprocal from the researchers. Even in a regional university the number of universal geniuses is probably restricted. The chances of meeting one of the other research types are bigger. Between the ideal types there is a continuum, which means that there are many researchers that are neither universal genius nor clumsy researchers, who still are competent both in knowing their field and applying their knowledge. Maybe most researchers in a regional university have the classical researcher characteristics, because their main objective is to educate students. The more time there is used on teaching, the less time there is for research and the less time there is to participate in the regional agora, which restricts their ability to develop ‘knowing how’ in applying knowledge in the agora.

This short and superficial discussion demonstrates a small piece of the complexity of knowledge. It demonstrates that knowledge and university knowledge is different, and that the university, in order to participate in the agora, has to have researchers with knowledge of applying knowledge. While theoretical knowledge is general and abstract, knowing how is concrete, and connected to specific processes and actions in the agora.

4.93 The active regional university in the agora

My argument is that the two active regional roles of the university are more complex roles to play than the two passive roles of the university, and that the experimental role is even more complex than the role as a change agent. The concrete meeting between the university and regional actor in the agora is a meeting between people with different kinds of knowledge. The heartland of the complexity is the meeting between people with different kind of knowledge.

To simplify the discussion I assume that the knowledge the regional actors have can be named 'local knowledge'. One part of this knowledge is explicitly formulated, such as aims and problem descriptions. Another part of this knowledge can be tacit, and can only be observed in action, as 'tacit knowing'. A third part of the knowledge is between the explicit formulated knowledge and tacit knowing. This in-between knowledge exists as local and regional shared knowledge, through the language and the words regional actors use to describe a phenomenon. This knowledge can be made explicit by using different kinds of methods, such as participative observation, interviews and dialogue conferences.

The meeting in the regional agora is a meeting between local knowledge and theoretical knowledge. This meeting requires 'knowing how' both from researchers and regional actors. There can be different kinds of 'knowing how' that is needed, depending on the problem to be addressed. One kind of 'knowing how' that is necessary is 'knowing how' to create knowledge together; i.e. to create new knowledge through a dialogue. One such method is democratic dialogue, developed by Gustavsen (1992). This is a method for linking actors to each other through a process of shared meanings and restructuring of language which encompasses those who have to understand the aims and the means of

the process. Local knowledge and theoretical knowledge is expressed, with words that have different meanings for the people involved in the process. The process of reaching to some kind of common understanding of the knowledge involved takes time, often more time than one expects from a rational perspective. The bigger the difference between the different kinds of knowledge involved, the longer time it takes to reach a point of common understanding of what the problem is, what the aim is, and what some of the means are. From a rational perspective, one often expects this process to take a short time, such as through a two hours discussion or a two days dialogue conference. When one realises that the expectations are not fulfilled, the frustration often increases from both the researchers and the regional actors involved. However, a knowledge creating process can be frustrating. It is not a linear process where one starts with aims, then discusses means, acts and then evaluates the results of the action. A knowledge creation process is dynamic and chaotic, and the result of the process is insecure. If one knew the solution from the beginning, why should regional actors bother to involve the university? Why not just do it? We acknowledge that a knowledge creation process between the university and regional actors is a complex process. We acknowledge that it takes time to reach a common ground of understanding between the involved participants. If the participants acknowledge this, they could lower their shoulders, breathe more freely, be less instrumental and maybe create new knowledge in a good atmosphere. One of the first steps in a complex process is to create aims.

The aims with the process separate the two different active roles of the university. As a change agent, the university is supposed to contribute to solving a regional problem, defined by regional actors. In the experimental role, the university, in participation with others, is supposed to test out an idea or a theory in a real life situation in the agora, and judge if the idea functions, and eventually how it functions. The outcome is more insecure with the latter role than the former role. The two roles differ from others with respect to the approach of the problem, the kind of knowledge involved, the organisational design of the process, and with respect to the outcome of the process.

As a change agent, it is the regional actors in participation with the university that define the problem or challenge to be addressed, the aims with the process, how the process

should be organised and they also finally defines if the result of the process is acceptable or not. When the regional actors and the university are satisfied with the outcome of the change process, the process is ended. From the university this role requires theoretical knowledge³⁹, but not necessarily cutting edge knowledge. The university can participate with more ordinary theoretical knowledge, but the participant from the university must have a proficient ‘knowing how’ in applying the theoretical knowledge. The applied expert, or more precisely applied experts, have the kind of knowledge that should be used in such a process in the agora. However, the type of knowledge can only be decided after an accurate analysis of the knowledge needed in the process, and through a dialogue between university and regional actors.

The experimental regional role raises a lot of dilemmas that the involved actors have to discuss, both in the beginning of the experiment, and during the experiment. An experiment needs continuous dialogue between the central actors on topics such as aims, means, preliminary effects, needs for change of aims, means and knowledge involved. The experiment also needs an understanding among the participants that the outcome can be a failure as well as a success, or something in-between. The experiment raises several questions, such as:

- what kind of research knowledge should be involved in the experiment? Must it be cutting edge knowledge, or is it satisfactory with ordinary research knowledge?
- what kind of “knowing how” is necessary in the experiment? Can the appropriate level of “knowing how” be decided in advance, or must it be decided during the process?
- who should manage the experiment? The university or a regional actor? If it is the university, who in the university should manage the experiment? Management or researcher?

³⁹ If theoretical knowledge is not necessary, the university has nothing to contribute to the process. It is the theoretical knowledge that separates the university from regional actors and their local knowledge.

- who decides what kind of knowledge should be involved in the experiment?
Management, researchers, rector or board in university or is it regional actors that decide it?
- who decides the acceptable outcome of the experiment?

Both the two active regional roles of the university are complex roles to play, compared to the former traditional regional roles of the university, because they require ‘knowing how’. What kind of ‘knowing how’ we know less about, because there is a lack of studies of knowledge creation between the university and region done from such an approach. One programme that can give this kind of knowledge in the near future is the Norwegian VRI programme (Funding Programme for Regional R&D and Innovation) launched by the Research Council in 2007. A total of over NOK 280 million will be invested in regional innovation over the next three years. The VRI programme can be characterised as an experiment in the regional agora. The main actors are regional universities, industry and the county administration.⁴⁰

While the experiment in the scale of VRI is a rather new phenomenon for Norwegian universities, the role as a change agent is a better-known phenomenon. It is a well-known phenomenon. Neither is the use of knowledge in change processes new. What is new is that university knowledge is demanded, and that the university, through the market, is connected to the processes; cf. the quotation in the introduction of the article. For universities in more liberal economies such as the American, Australian or UK this is a well-known role. It is known under the label of academic capitalist (Slaughter and Leslie 1997; Slaughter and Rhoades 2004). The university is participating in the processes as a capitalist; ie by selling its knowledge. Also in Norway, universities are supposed to increase their income from other sources than the state. One way of increasing the income is to sell knowledge to such as regional change processes. This creates several dilemmas for universities as an organisation, such as:

⁴⁰ The author is involved in the programme, for the time being, as a programme coordinator in the Agder region.

- who is given the authority to sell the knowledge? Is it the individual researcher, or management in the university?
- who decides what kind of university knowledge is going to be sold?
- who decides the price of the knowledge? Is the price a market price, or is the university selling its knowledge cheaper than other commercial knowledge organisations in the region?
- should the university compete with other knowledge institutions in the region?
- how can we balance between long term knowledge development and short term knowledge development?
- how is the dilemma between the role as a critical knowledge creator and the academic capitalist role to be handled?

I will briefly shortly touch on the first dilemma; the dilemma between the university as an organisation where the researchers work, and the individual researchers' freedom over their own knowledge. Many researchers have for a long time already been selling their knowledge. They have acted as individual academic capitalists within the system of the university (Karlsen 2007). They are selling their knowledge, either through their own firms or through firms they work part time in. The dilemma is that they are in a situation of competition with their own university. An active university, as an organisation, comes in a situation of competition with its own applied researchers in the agora. A management answer would probably be that the university should control its own researchers, and sell their knowledge through the university system. However, this is a current dilemma for Norwegian universities that has not yet been properly addressed and discussed. The dilemma involves such as wage setting for researchers and their freedom of their own minds and knowledge.

4.94 *Conclusion*

The questions I have discussed in the article are:

- Why does the university have different regional roles?

- What characterises the different regional roles of the university?

I have discussed four different regional roles of the university:

1. The university as a participative observer
2. The university as a theoretical knowledge constructor
3. The university as a change agent
4. The university in an experimental role

By just being located in a region, in a place, the university has a regional role. I have further argued that the regional role of the university is played out in the regional agora, in the meeting between the university and regional actors. The university is not located as an ivory tower without connection to its host region. The region is a source for data for researchers in the university. Researchers participate in the region with regional actors. One regional role is simply participating as an observer in the agora; to observe the meeting between different regional actors. The first two regional roles are the well known traditional roles of the university. By just being present as an observer, the university influences the other participants' behaviour. These observations can be used to create data, concepts, models and contributions to theory construction. The region can also be a source for theoretical constructions and theoretical contributions.

In the third role the university has changed from a participate observer to a change agent. In this role the university participates in change processes in the region, with other regional actors. The need for change is formulated by other regional actors, and the university is asked to contribute with its knowledge in change processes.

Ideas and theories diffuse and travel out from the university to the rest of the academic society and further to the global society. Ideas and theories that are developed in one region and in one university can inspire other researchers and regional actors, located in other regions, to test out the theories in real life situations. In the experimental role, the university is testing out theories and concepts in the region in co-operation with other regional actors.

The demand for a more active university in the region is one example of such an idea that travels from region to region. The demand pushes the university to become more active in the region and connects the university to the market economy. The university is paid for its knowledge. The university is paid to participate in change processes and experiments in the region, and to make a difference in regional development. The university as a participant observer and as a theoretical knowledge creator creates theoretical knowledge, while the other two roles in addition demand knowing how to apply the knowledge in the regional agora with the regional actors.

The two first roles emphasise free and critical knowledge creation, while the last two roles emphasise knowledge creation as together with regional participants. The two last roles raise a lot of dilemmas that have not been properly addressed in the discussion about the regional roles of the university, such as such as free and critical knowledge creation versus academic capitalism. Or who decides what kind of knowledge the university should sell, or which kind of knowledge should be used in change processes or experiments. The last questions are about management of the university; ie if researchers or management should manage the researchers that participate in the agora. The demand for a more active university in the region demands a discussion that addresses the complexity of participating in the regional agora with regional actors and behaving as an academic capitalist.

4.95 *References*

Bell, D. (1974) *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. London: Heinemann.

Braczyk, H.-J., Cooke, P., and Heidenreich, M. E. (Eds.) (1998) *Regional Innovation Systems*. London: UCL Press.

Brandser, G. C. (2006) *Humboldt Revisited: The Institutional Drama of Academic Identity*. [Bergen]: Department of Administration and Organization Theory, University of Bergen.

- Brulin, G. (2001) *The Third Task of Universities or How to Get Universities to Serve their Communities*. London: Sage.
- Brulin, G. (2004). 'The Third Task. A challenge for Swedish Research and Higher Education'. In W. Fricke and P. Totterdill (Eds) *Action Research in Workplace Innovation and Regional Development. Dialogues in Work and Innovation*: John Benjamins Publishing Company.
- Castells, M. (2000) *The Rise of the Network Society*.
- Chatterton, P., and Goddard, J. (2000) 'The Response of Higher Education Institutions to Regional Needs'. *European Journal of Education, Vol. 35, No. 4*.
- Czarniawska-Joerges, B. (1992) *Exploring Complex Organisations - A Cultural Perspective*: Sage
- Delanty, G. (2001) *Challenging Knowledge. The University in the Knowledge Society*. Buckingham: Open University Press:.
- Etzkowitz, H., and Leydesdorff, L. (1997) *Universities and the Global Knowledge Economy: A Triple Helix of University-Industry-Government Relations*. London: Pinter.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzmann, S., Scott, P., and Trow, M. (1994) *The New Production of Knowledge - The Dynamics of Science and Research in Contemporary Societies*. London: Sage.
- Gustavsen, B. (1992) *Dialogue and Development. Theory of communication, Action Research and the restructuring of working life*.: Assen: Van Gorcum. .
- Gustavsen, B. (2003) 'New Forms of Knowledge Production and the Role of Action Research'. *Action Research, Volume 1(2)*, 153-64.
- Karlsen, J. (2007) *The Regional Role of the University: A Study of Knowledge Creation in the Agora between Agder University College and Regional Actors in Agder, Norway*. Norwegian University of Science and Technology, Trondheim.
- Lantz, A., and Totterdill, P. (2004) 'Linking Workplace Innovation and Regional Development: Towards New Roles for the University Sector'. In Editors:, W. Fricke and

P. Totterdill (Eds.) *Action Research in Workplace Innovation and Regional Development*. Amsterdam: John Benjamins.

Levin, M. (2007) 'Knowledge and Technology Transfer. Can Universities Promote Regional Development'. In A. S. Alan Harding, Stephan Laske, and Christian Burtscher (Eds) *Bright Satanic Mills: Universities, Regional Development and the Knowledge Economy*. Aldershot , Hampshire: Ashgate Publishing Ltd.

Nilsson, J. E., Aarbo, P., Dahl, M. S., Dahlum, B., Edvardsdsson, I. R., Eskelinen, H., Nielsen, k., Uhlin, Å., and Ylinenpää, H. (2007) *The Role of Universities in Regional Innovation Systems - A Nordic Perspective*. Copenhagen Copenhagen Business School Press.

Nowotny, H., Scott, P., and Gibbons, M. (2001) *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty*. Cambridge: Polity Press.

Polanyi, M. (1966) *The Tacit Dimension*. New York: Doubleday.

Porter, M. (1998) *On Competition*. Boston: Harvard Business School Press.

Slagstad, R. (2006) *Kunnskapens hus: Fra Hansteen til Hanseid* (Expanded version from 2000 ed.): Pax.

Slaughter, S., and Leslie, L. L. (1997) *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Baltimore: Johns Hopkins University Press.

Slaughter, S., and Rhoades, G. (2004) *Academic Capitalism and the new Economy: Markets, State, and Higher Education*. Baltimore; London: Johns Hopkins University Press.

Tsoukas, H. (2005) *Complex Knowledge: Studies in Organizational Epistemology*. Oxford: Oxford University Press.

Tödting, F., Isaksen, A., Nauwelaers, C., and Asheim, B. T. (2003). *Regional innovation policy for small-medium enterprises*. Cheltenham: Edward Elgar.

v Concluding reflection – beyond integrated innovation *by Tor Claussen, Trond Haga and Richard Ennals*

5.96 *Integrated innovation - diversity of experiences on a common ground*

The current publication includes contributions from different experience, gathered in a variety of contexts by people with diverse skills and interest. The diversity of experience is partly due to the fact that contributions are collected in different contexts, both locally, regionally, nationally and internationally. There are three regional contexts in Norway where most of the contributions have been collected. The two Agder counties are regarded as comprising one such regional context. One contribution is located in a county in the northern part of Norway, Tromsø. Two counties, Hordaland and Rogaland, are closely linked to the experiences in the core chapter (II.1). Additionally there are accounts of comparable experience from regions in the Nordic countries and UK, which are presented in several of the contributions. These contexts and contributions are contextually defined and theoretically analysed, in ways that link them to the main issues addressed as integrated innovation in the core chapter.

There are contributions addressing the following issues;

- *Work organisation*, both in UK and the Norwegian context. Several of the cases in the core chapter focus specifically on changes and innovations in work organisation in single enterprises, facilitated by (action) research, networking, regional coalitions, as well as backing from the national level.
- The role of the *university* in the Triple Helix and the knowledge economy. Contributions from Agder and Kingston specifically address this role in regional innovation, both regarding knowledge production and research. The role of

universities in the knowledge economy is discussed and highlighted as something distinct apart from the role played by research institutes, which have been dominant in the two programmes ED 2000/VC 2010, as well as in other contexts throughout the Nordic countries and internationally. New roles played by the universities raise challenges and possibilities regarding how research and education can contribute and collaborate in regional development, where the potential of playing a significant role at this level is noteworthy.

- *The knowledge economy*. A critical examination of the concept of innovation and knowledge economy is presented in some of the contributions. Attention is given to a discussion on the dilemmas of innovation, and the possibility that concepts of innovation and knowledge economy are mere fashion fads.
- *Knowledge generation and diversity*, specifically regarding age differences, is addressed as a question of how ‘virtual links’ can facilitate diffusion and integration of competences, crosscutting senior/junior personnel in current work life.
- *Globalisation*. One contribution gives a specific critical account on globalisation processes including a discussion of a so-called Nordic model of work life. In a discussion based on a system perspective, emphasis is directed towards the possible benefits and drawbacks regarding a representative collaborative arrangement between employees and employers. Significant aspects of a collaborative structured arrangement between employee and employer is a distinctive characteristic of the Nordic countries. There is, on the other hand, considerable diversity between these countries regarding the practice of these arrangements.
- *Networks and coalitions* as collaborative efforts are issues of importance in all of the cases considered here. These collaborative efforts have been regarded as key enablers in most of the research conducted in the different contributions. A specific conceptualisation of network collaboration, the *solid* network structure, is presented both theoretically and empirically, in the core chapter. The solid

network structure illustrates how this collaborative structure can be regarded as a system.

Additionally two regional coalitions are presented, one from the Agder counties and one representing the counties of Hordaland and Rogaland. These coalitions have been challenging co-operative arrangements. They have for different reasons vanished. Among the Agder counties a new partnership is emerging in a new programme (the VRI programme). Although the current partnership is significantly different from the previous arrangements, at least regarding the initial phase, it is still too early to make any analysis of how this new partnership will evolve.

- *Action research* is a way that research has linked and integrated with the field. This specific type of research is present in different ways, and to different extents, in the contributions in the current publication. The practice of action research is also quite different regarding the research conducted by the different contributors. Some contributions are more evaluative with a lesser degree of action conducted. Others apply a high degree of action.
- Ways of *orchestrating* covers the initiation, implementation and running of change and innovation processes. Diverse ways of orchestrating are present in many of the contributions. The term itself is elaborated in the core (chapter II.1, see also Haga 2007).

In most of the contributions, ways of conducting innovation in a systematic way without hampering creativity is a core topic. All of the discussions are in some way linked to this topic. System and dialogue are essential in order to conduct innovation, and integrate differences into a common effort. Conducting innovation and integrating differences, regardless of the interests and contributions at stake, without hampering the dynamics of diversity inherently embedded in common efforts to innovate, is the major challenges discussed in the core chapter (II.1). In the core chapter, this has been discussed in relation to *participatory* innovation and change practices.

None of the contributions, nor the whole publication, is able to give definite guidelines, tools or solutions to the issues, dilemmas and critical reflections which are raised. This can be due to the fact that innovation, as pointed out in the core chapter (II.1), is an issue related to basic developmental processes in modern industrial society as such. Basic developmental processes governing modern industrial society are yet to be identified, understood and handled, both at the practical and theoretical level. Incidences of turmoil, at local as well as global level, are interlinked and occur in ways that remind us of the incompetences we still possess when it comes to structuring and systemising our own future change and innovation processes.

5.97 Experiences at IRIS

The project 'Integrated Innovation' at IRIS has been accomplished within a specific regional context; the west coast region in Norway. The region is highly industrialized compared to the rest of Norway. In the business environment heavy industries like petroleum and process industries dominate. Innovations in the region have depended on the dynamics of existing enterprises. Increased competition from the international globalised economy has nurtured uneasiness from national authorities concerning the industry's ability to innovate. Innovation in Norway is specifically important in order to make existing industry, and the local business environment, less dependent on oil and gas. The ambition has been to encourage new business opportunities within existing enterprises. By encouraging new business opportunities within existing enterprises, the aim have been to prevent industry from relying solely upon a single market and business option.

Concerns regarding the dependency on oil and gas, viewed as a single business opportunity, triggered the initiatives to launch the ED 2000 and VC 2010 programmes. Attention was directed to the issue of innovation in enterprises thoroughly embedded in the local business environment. Awareness was directed to the possibilities of creating supporting structures, such as networks and regional coalitions/partnerships, in order to facilitate change and innovation in collaborating enterprises. These processes were

facilitated and supported by (action) researchers, public agencies and social partners at local, regional and national level. Altogether these strategic and systemic practices constituted a structured system of change and innovation. It was to become the core of change and innovation processes, seen as essential in the action research conducted at IRIS.

These experiences gathered from the research conducted by IRIS were not unique. Comparable, and to some extent overlapping activities, took place in other regions, conducted through the same research programme, as is the case with Agder. Several of the contributions presented in this publication give accounts of similar and comparable activities and experiences. Additionally experiences from the UK (Kingston University and UKWON) and northern Norway supplement this know-how, as indicated by other contributions.

There are many contextual conditions of importance in a discussion on the conditions under which innovation takes place;

- the overall national context
- traditions for collaboration between the labour market parties
- general agreements regulating the collaboration between the parties nationally, regionally and locally
- arrangement of a public support system
- particular policy instruments implemented by the national authorities
- specific local and regional contextual conditions

The significance of different contexts, and the variety of conditions that innovation is occurring in, has been demonstrated by many contributions in this publication. Despite these differences, a discussion will now be raised regarding theoretical implications, and more general inferences that can be spotted following the discussions this far.

5.98 *Dialogues and systems as foundations for innovation*

Theories on communicative action were an important perspective in ED 2000 and VC 2010 (Gustavsen 2001 *et al*, Ennals and Gustavsen 1999, Gustavsen 1992). Dialogue was an important aspect in the different approaches aimed at balancing differences of interests, in order to produce common grounds for actions that would support change and innovation processes inside enterprises, as well as collaborative efforts between enterprises. In ED 2000 and VC 2010 IRIS participated actively and, as demonstrated in case material in this publication, relied heavily on dialogue based arrangements in order to promote common change and innovation processes.

Dialogue requires structures and guiding principles, both general and specific.

Organisations are systems, in the sense that they build upon certain general structures guiding any dialogue taking place in society. Some of these guiding principles have been formulated and argued as universal principles by Habermas in his version of discourse ethics (Habermas 1981). Efforts to make his principles applicable have been worked out in the context of work life and utilised in contexts of ED 2000 and VC 2010 (Gustavsen 1992).

Each organisation, as with any system, develops its own code of conduct and code of reference. Language and coding reflects the system's (organisation's) own self-perception. Self-perception is built on how the system interprets the impressions that the surrounding environment communicates back to the system. Mirroring of the interpreted impression, that the surroundings are *thought* to produce of a specific system/organisation, makes up an important aspect of the code of reference or language of the system/organisation. Code of conduct, when it comes to how one behaves as a 'we' in a system/organisation, is also an important aspect of the structure of the organisation as a system. Specific structure and system guidelines are constituted and constitutive. They make up important guiding principles specific to each system/organisation, and the context within which it is embedded.

There are then several guiding principles applied when dialogues are taking place within development and innovation processes, at different arenas and different levels. These guiding principles reflect differences between systems/organisations. Additionally there are functional systems, such as research and work life, that have their coding and language applied in the different dialogues taking place in change and innovation activities. Case material presented in the core chapter (II.1) is intended to illustrate some aspects of these complex dialogic requirements. This material is also intended to demonstrate that change and innovation activities can take place according to the same guiding principles that are applied in dialogues. Dialogue and practice are here structured by the same systemic guiding principles on different levels and arenas.

Involvement in improvement and innovation projects has the potential to create new opportunities for participants. Simultaneously these opportunities create the possibilities of stress in ordinary daily operative activities. Attention can be moved away from ordinary production, towards improvement and innovation processes. Accordingly these projects can be isolated and spontaneous performances, within a limited period of time, in their struggle for attention among key actors. In order for facilitators to defend their positions within the organisation, immediate feedback on results can be essential as a way to attract attention to change and innovation activities.

An impossible dilemma can occur. Strategic long-term improvement and innovation activities can require both immediate feedback of results, as well as long lasting changes and innovative outcomes. This is one of the dilemmas facing change and innovation activities that is intended to be integrated into an organisation, where competition for attention with daily operational activities is vital. Here is a dilemma that has essentially the same features as the dilemma between organising change and innovation processes in a separate development organisation (as with the development organisation, see Palshaugen in Gustavsen and Toulmin 1996), or on the other hand embedding these processes within the daily operational activities of an enterprise. In the first case there is a risk of losing significance and linkage to the basic needs of the operational organisation. On the other hand, the second option risks the possibility that too close linkages to daily

operational activities produces lack of essential creative and innovative possibilities and outcomes, which are necessary in order to produce new business and market possibilities in a competitive environment (see Claussen 2000a for an in-depth discussion on this dilemma).

In order to create space for change and innovation, there is a need for structured arenas, strategic decisions, and systematic dedication of resources committed by the organisation to be utilised in these processes. The organisational system itself has to develop guiding principles and self-consciousness in its self-reflective capacity on these issues.

Organisational code and conduct has to be developed in order to handle change and innovation processes. Some of the ways to develop these organisational competences for change have been exemplified in the case material in the core chapter (II.1). Further research and reflections are necessary in order to make these experiences and preliminary analyses in this publication, into specific guidelines at different system levels.

Utilizing dialogue-based approaches has revealed several challenges facing efforts to take projects from dialogues to specific solutions and their implementation. When projects are hampered by the daily operations and/or lack of fulfilling expectations, a vicious cycle can appear; projects create a lot of energy taking focus away from daily operation – projects are hampered by daily operations making results hard to achieve – projects are finished without making the targeted results will not be followed up by new ones, due to the failures. Lack of ability to change and innovate can be the outcome. This can in the long run prevent enterprises from making necessary steps in order to defend and even strengthen their competitive advantages. In the case material from the experiences at IRIS in the ED 2000 and VC 2010 programme a mass of empirical material points to these dilemmas and possible vicious cycles.

5.99 System approach to innovation

Luhmann has introduced a system theory with perspectives on the overall development of society, representing new ways of grasping essential aspects of innovation. In his system

theory, Luhmann highlights the dynamics of systems. He develops the concepts of variation (expansion of possibilities), selection (strategic choices and decisions) and incorporation in order to point at the dynamics of innovation, as well as the incorporation of new achievements into the existing structure, in order to make the system reproduce. Both change and continuity are articulated in his system approach. These seem, according to the research at IRIS, to be necessary requirements to reflect upon. From this research they seem to be necessary requirements adding important features to wider experience in conducting dialogue based processes.

Systematic approaches add some necessary guiding features to the dialogue based approaches used in ED2000 and VC2010. Communicative action and dialogue based collaborative arrangements can become key ‘un-lockers’ of potentials for improvement and innovation, when guiding structures are developed as necessary competences within organisations. This is what learning, networking, coalitions and national supportive resources have been all about, in the research conducted at IRIS in ED 2000 and VC 2010. Dialogue based approaches need guiding systems and structures, such as solid network and coalitions, in order not to experience the destiny of becoming temporary and incidental points of actions. Thorough strategic and conscious considerations, as well as decision-making, are essential aspects of change and innovation. Language and knowledge competences, built into organisational structures aimed at fulfilling these requirements, seem to be needed according to the experiences of IRIS research. What specific competence and knowledge requirements need to be developed is not yet part of the body of experience and scientific reflection conducted in this research. Experiences and critical reflections so far point to the guiding structures and systems that seem to be the necessary arrangements for prolonged involvement and legitimacy for improvement and innovation in and between enterprises, as demonstrated in several of cases presented in the core chapter.

5.100 Some reflections beyond integrated innovation

Guiding structures can differ from country to country, region to region, as well as from context to context. There are differences between public support systems, and the collaboration between the labour market parties and the regional governance systems, both in the way they are structured and functioning in different countries. This will influence how guiding systems are evolved. Comparisons between experiences country wide, across regions, research communities, etc. is vital in order to make some general as well as specific inputs to what structures and system requirements are necessary, in order to make change and innovation happen. Specifically this is so if action research in close collaboration with the field is conducted. In order to gain legitimacy, things can not be left just to happen. Science has to be able to give sound and solid support to these processes. This is required in order not to be trapped by providing innovation as something incidental, as previously pointed to as one aspect of the innovation dilemma discussed in the core chapter (II.1).

Definite guidelines, tools or solutions to issues, dilemmas and critical reflections made here are challenges that may be impossible to specify. Basic developmental processes in modern industrial society are involved in such efforts. There can be inherent obstacles in the way modern industrial society operates, that prevents science in its current state from producing any definite solutions to the many dilemmas and challenges facing this society. Evidence of these difficulties appears at an international and global level. Turmoil in the overall economic development seems to take place, regardless of efforts made by actors in enterprise, local, regional and national contexts to position themselves. There seem to be basic controlling forces which escape efforts made by actors in all arenas to improve, change and innovate for the future, in order to avoid destructive turmoil.