Knowledge Transfer and Reading: Implications of the transactional theory of reading for research and practice

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ABSTRACT

Knowledge transfer literature treats the transfer of explicit knowledge 'embodied' in documents and the like as unproblematic. No empirical grounds are given for this assumption, and some authors have recently expressed reservations suggesting that complex cognitive and social process are involved. Reading theory and research is an obvious place to turn to for further insight. The transactional theory of reading, described here in some detail, presents reading as a process whereby someone constructs meaning from a text influenced by their situation, past experiences and prior knowledge, and the text. The view that reading is a complex process, and therefore that transfer of explicit knowledge is not simple nor easy, us supported. 'Transfer' of explicit knowledge is an inherently indeterminate process.

INTRODUCTION

The phrase 'knowledge transfer' is generally used in management literature to the idea that knowledge can be transferred from one organizational unit to another (Argote & Ingram, 2000; Garavelli et. al. 2002; Szulanski 2000).[1] This emphasis on inter-organizational transfers should not lead us to overlook the fact that knowledge transfer is also at the heart of Nonaka and Takeuchi's (1995) SECI model, and thus of knowledge management more generally.

It is widely acknowledged that knowledge transfer is a complex, time-consuming and difficult process (Bresman, et. al. 1999: 447; Garavelli et. al. 2002: 271; Szulanski 2000: 10; Simonin 1999: 596-7). While there are a number of models (e.g. Argote & Ingram 2000; Bhagat et. al. 2002; Bresman et. al. 1999) we appear to know little about how various organizational and individual level characteristics actually influence knowledge transfer. Knowledge transfer difficulties have been treated as anomalies (Szulanski 2000: 10), while Huber (2001) goes so far as to say that what we know about knowledge transfer is exceeded by what we do not know.

This literature uses a number of metaphors to suggest that knowledge transferred by or after being put into some kind of container. For example, knowledge is said to be "embedded" in "repositories" (individuals, roles and structure, organizational practices, culture, and the physical structure of the workplace) or "reservoirs"– organization members, tools, and tasks, and combinations of these three elements (Argote & Ingram 2000: 152-153; Teece 2001: 126-30). Garavelli and his colleagues (2002: 270) write of knowledge being "materialized" into "knowledge object[s]", such as documents. Despite the obvious significance of such processes for knowledge transfer these notions remain metaphors – the literature is silent on how 'embedding', and so on take place, and completely ignores the implied issue of 'dis-embedding'. As Simonin (1999) and others (e.g. Garavelli et. al. 2002) put it, little work has been carried done on the *processes* of knowledge transfer.

What we might call the container metaphor of knowledge transfer is underpinned by Shannon and Weaver's (1949) mathematical model of communication (Szulanski, 2000:11; Garavelli

et. al. 2002; Argote & Ingram, 2000: 160-63). This is the familiar view that communication involves someone encoding information into a message (i.e. a container) that is sent to someone else, who decodes it. Reliance on this model is surprising because it was not intended to apply to human communication, and is clearly inadequate for that purpose, as was pointed out long ago (Cherry 1966; Reddy 1979). Criticism of the model is now appearing in knowledge transfer literature. Garavelli et. al. (2002) argue that this model overlooks the centrality of human cognitive processes; Huber (2001) and Szulanski (2000) appear to be reaching similar conclusions.[2]

While the argument of this paper has important implications for the above issues, its focus is on the use of documents in knowledge transfer. Knowledge transfer writers generally distinguish between explicit or codifiable, and tacit or uncodifiable knowledge (e.g. Bresman et. al. 1999: 444; Argote and Ingram 2000: 153). Because tacit knowledge can only be 'embedded' in people and culture, for example, (Argote & Ingram, 2000,153, Bresman et al, 1999) its transfer is widely regarded as problematic (e.g. Teece 2001: 128; Wathne et. al. 1996). Explicit or codified knowledge can be 'embedded' in 'repositories' like documents and its transfer is seen as relatively unproblematic (Argote & Ingram 2000; Bhagat et. al. 2002; Bresman et. al. 1999; Simonin, 1999; Huber, 2001).

This view is surprising since there is no supporting evidence. Recently some reservations have been expressed. Garavelli and his colleagues (2001: 271) note that "when the object [into which knowledge has been materialized] has again to be translated in [sic] a competence, it can generate behaviors very different from those expected." Collins' studies of scientists' inability to replicate others' findings from published and written accounts (Collins 1974, 2001), supports the idea that there are important constraints on knowledge transfer through document. Garavelli et. al. (2001) suggest that knowledge transfer failures are attributable to either failures of codification, or failures of interpretation, two points at which a 'cognitive system'is involved in knowledge transfers. Like Huber (2001: 74) they suggest that where codifiers and interpreters share a cultural system and work processes, interpretation is likely to conform to the codifiers' expectations, and thus knowledge transfer will be successful. While there is much to be commended in this line of criticism their solution, that codifiers must investigate and thus code for the cognitive systems of the recipient/interpreter, is flawed, and inconsistent with their stress on the 'cognitive system' suggesting its role is under-theorized.

Lotman (1990:11-13) highlighted the depth of the problem arguing that natural language structures are "rather badly constructed" for knowledge transfer because:

> For a fairly complex message to be received with absolute identity, conditions are required which in naturally occurring situations are practically unobtainable: addressee and addresser have to have wholly identical codes, i.e. to be in fact semeiotically speaking a bifurcation of one and the same personality ... (Lotman 1990:13).

It is not enough that writer and reader use the same natural language. There must also be "a common linguistic experience", common memory, and common understanding of norms, references and pragmatics. As Lotman concluded, "the identity of the transmitted and received texts is relative." (Lotman 1990:13).

Garavelli et. al's suggestion raises two other difficulties: changes of circumstance, and the rules-regress problem. For the encoder to be able to code for the recipient in such a way that there are no 'translation' problems the former must be able to anticipate all the situations in which their objectified knowledge will be used. Even if this were possible, rules always have to be interpreted, and if the encoder aims to constrain the decoder by setting down further rules, those rules will also require interpreting. Logically this leads to an infinite regress as the encoder tries to anticipate all possible outcomes or interpretations, but the problem is not one of logic alone. In practical form it was faced by early rule-based forms of artificial intelligence (Clancey 1997).

The central problem for knowledge transfer theory, research and practice in respect of 'explicit knowledge' is that of how one person comes to acquire the functionally equivalent knowledge of another by reading something that one party (writer/encoder) has constructed independently of the other (reader/recipient/interpreter). While encoding is not inconsequential, the role of the reader is clearly more important since the consequences of their 'decoding' are always more important than what was written. This suggests that a better understanding of the process of reading might go some way towards resolving some of the difficulties of knowledge transfer research and practice. In particular, it would contribute to conceptualizing the process of knowledge transfer, and would also also flesh out that tantalising phrase 'cognitive system'.

THE TRANSACTIONAL THEORY OF READING

There are many models and theories of reading (Ruddell et. al. 1994; Smith 1994) but I propose to focus on one: the transactional theory of reading developed by Louise Rosenblatt. Some of the advantages of this approach are summed up by the following quotation:

> Instead of ... the dualistic, mechanistic, linear, interactional view, in which the text, ... and the personality of the reader ... can be separately analyzed, with the impact of one on the other studied in a vacuum, we need to see the reading act as an event involving a particular individual and a particular text, happening at a particular time, under particular circumstances, in a particular social and cultural setting, and as part of the ongoing life of the individual and the group. We can still distinguish the elements .. not as separate entities, but as aspects of phases of a dynamic process, in which all elements take on their character as part of the organically-interrelated situation. (Rosenblatt 1985:100).

Rosenblatt regarded theories that emphasise reading as decoding or that privilege the reader above the text as dualist (Rosenblatt 1998: 918) and rejected them to emphasise the situated *relationship* between a reader and a text as being critical for the outcome of reading. Reading is treated as an event (Rosenblatt 1994: 16), thus providing an approach consistent with the need to consider the *process* of knowledge transfer. Furthermore, the transactional approach links her theory to broader theories of behaviour and scientific method that emphasise the inter-connectedness of human activity. Before describing that theory, however, it is necessary to look in more detail and the notion of 'transaction'. It is not a particularly difficult idea but we tend to assimilate unfamiliar ideas to more familiar modes of thinking such that their import is lost (Rosenblatt 1985; Oyama et. al. 2001: 1).

Transaction

Rosenblatt took the term 'transaction' from Dewey and Bentley's *Knowing and the known*, (Dewey & Bentley 1949; Rosenblatt 1994:16-18). Dewey and Bentley argued that by the early 20th century, if not before, the word 'interaction' as used in scientific discourse was becoming ambiguous (see Oyama 2001). On the one hand it was typified by Newton's "system of interaction" (Dewey & Bentley 1949: 68) which emphasised finding interactions between forces viewing "thing balanced against thing in causal interconnection" (Dewey & Bentley 1949:108). On the other, it also indicated a "the mutual and reciprocal" relationship and the proposed to use 'transaction' for this kind of 'interaction' (Dewey & Bentley 1949:295-6). They illustrated the difference by contrasting two ways of studying billiards:

> If we confine ourselves to the problem of the balls on the billiard table, they can be profitably presented and studied interactionally. But a cultural account of the game in its full spread of social growth and human adaptations is already transactional. (Dewey & Bentley 1949: 133).

The transactional approach was evident in physics from the late nineteenth century and was consolidated by Einstein's work, and was typified in physiology/biology by the ecological perspective (Dewey & Bentley 1949: 106-7, 111-2, 126-8). As regards behaviour – "all of the adjustmental activities of organism-environment" (Dewey & Bentley 1949: 149) – a transactional approach is essential since "the subjectmatter of behavioral inquiries involves organism and environmental objects jointly at every instance of their occurrence, and in every portion of space they occupy." (Dewey & Bentley 1949: 130).

For Dewey, and implicitly for Rosenblatt, the primary import of the term 'transaction' is methodological. Dewey and Bentley (1949: 108). While their ideas, and terminology, were largely neglected, with a few exceptions (Pronko & Herman 1982; Ray & Delprato 1989) the idea seems to have been shared with others, including Von Bertalanffy (1968: 40), Piaget (1971:8) and Elias (van Kreiken 1997, 1998:75; Elias 1974). Valsiner and Leung's (1994: 207-8) "sociogenetic approach", and much of developmental systems theory (Oyama et. al. 2001) seem to belong to the same family of ideas as 'transaction'. Rather than 'transaction' perhaps being a philosophical dead-end, as it might be felt, Dewey and Bentley were attempting to describe an emerging, if still under-developed, theoretical approach of great importance for the behavioural sciences, if not more widely.

READING

The following account of Rosenblatt's transactional reading theory is drawn primarily from two publications (Rosenblatt 1994; 1998) supplemented by other materials (Rosenblatt 1938/1995; 1985, 1993). Some of her positions are re-stated in a way that strengthens the transactional aspect.

We have already seen that Rosenblatt emphasised the idea of regarding reading as a process involving a relationship between a reader and a text, situated in the reader's context. As she stressed on a number of occasions, "the actual reading process [is][3] a situation, an event at a

particular time and place in which each element conditions the other." (1994:16)[4]; it is a "dynamic, fluid process", "an interdependent relationship in time between a reader and part of the environment, a text." (1998: 887, 888; see also 1994: 17-19). In keeping with this approach, it is better to speak of *readings*, implying specific situations, and therefore times and places, than of 'reading' in general.

Readings are not confined to the space and time where reader and text confront each other. Readers 'bring' their present concerns to a reading (1994: 12, 81) and use cues provided by the way texts are stored and labelled, as well as their form, to choose what will become texts for them in the developing reading process (1994:72, 79). The temporal dimensions of any reading thus extend first to the immediate context, but can also be understood as reaching further back since any reader not only 'brings' their present concerns but also their whole past to the reading event (1994: 12). The reading event also continues after the physical link between reader and text exists as efforts to make sense, and thus to continue the transaction through recollecting the "evocation" of meaning the reader has generated, will continue after the face to face encounter (1998: 887-8).

Knowledge transfer writers treat reading as a process whereby the reader takes ('dis-embodies'?) knowledge from the text, thereby acquiring knowledge. For Rosenblatt, however, the results or consequences of a reading is an "experience shaped by the reader under the guidance of the text" (1994:12). She often used the term "poem" to refer to this outcome which was probably due to her primary concern with literature. Even so she wrote of 'the work' (1994:23) as something "progressively constituted" as an "aspect of the reading-effect or experience" (1998:887). 'The work', it is important to note, "exists neither "in" the text nor "in" the reader" (1998:888) but is evoked in and through a reader-text transaction. She further linked the notion of 'the work' with the meaning for the reader: "The work ... is the emerging meaning—that part of the stream of thought that is felt to be linked to the text." (1998:887; see also 1994: 11).

From artefact to text and from person to reader

 The transactional viewpoint does not take either the text, nor the reader, as existing, as it were, in themselves. Instead, both are formed through the reading process or transaction. This idea seems to fly in the face of common-sense, but both 'text' and 'reader' are used in special ways that help us to analyse the reading process more finely.

Rosenblatt wrote that 'text'

> designates a set or series of signs interpretable as linguistic symbols. ... [It] is not simply the inked marks on the page ... The visual ... signs become verbal symbols, become words, by virtue of their being potentially recognizable as pointing to something beyond themselves. ... in a reading situation "the text" may be thought of as the printed signs in their capacity to serve as symbols. (1994: 12).

Elsewhere she refers to text as "an object of paper and ink until some reader responds to the marks on the page as verbal symbols" (1994:23; see also p. ix) and "a pattern of signs" (1998:

901; see also 1994:11), and to the title of a work as simply marks on paper until interpreted as verbal symbols by someone (1994: 13). Rosenblatt thus makes the important distinction between a physical object or artefact (e.g. of paper with ink marks on it) which has the potential to become a text, and that artefact as a text when someone recognizes and gives significance to the marks it bears.

Just as the text is constituted by the transactions of person-with-paper-and-ink-artefact, so the person becomes a reader through those same transactions, and in so far as the artefact becomes a text.[5] The word 'reader' thus designates a transaction because a person only becomes (and remains) a reader "by virtue of his activity in relationship to a text, which he organizes as a set of verbal symbols." (1994:18) - no person-text transaction, no reader (and no text). This line of reasoning owes much to Peirce's semiotics which Rosenblatt saw as underpinning her approach (1994: 181-3; 1998: 890).

The reader's role

Rosenblatt distinguished two aspects to the reader's activity: what they 'bring to' the event in becoming a reader; and the choices or "stance" of the reader. While Rosenblatt wrote of the reader 'bringing' a "linguistic-experiential reservoir" of past experiences to a reading (1994: 12, 81; 1998:899-91) it would be more consistent with the transactional approach to think of the reader's past, and current purposes, entering the reading process in so far as they are activated by the reader↔text transaction. As she put it: "The reader's attention to the text activates certain elements in his past experience ... that have become linked with the verbal symbols." (1994:11; see Alexander et. al., 1991 for a similar idea). The reader thus actively constructs meaning by selectively attending to cues in the emerging text, and to responses that arise during reading (1994: 10-11, 13, 72, 75). Another way of expressing this is to say that the reader abductively generates "hypotheses to guide the selection of clues to focus on, the proportion of cognitive and affective aspects of meaning to attend to, and their organization into tentative frameworks for further selective attention and interpretation." (1998: 891-3).

Reader selectivity is linked with the concept of 'stance' or the "attitude of mind" the reader "adopts" during a reading (1994:27, 73, 75). Stance is important because, in Dewey's words, an organism is surrounded by "indefinitely numerous conditions which affect it" (Dewey 1928/1984:34) which cannot all be taken as stimuli (see e.g. Kastner et.al. 1998 for neurological confirmation of this insight). The word 'heart' will have particular associations for each reader, some due to the general use of the word; others to their own personal experience (1994:74-5). Which set of associations, or combination of sets, is activated or attended to in any particular reading event will depend on the stance or choice made by the reader. Choice is not necessarily "a conscious pondering of alternatives" (1994:77-9) but may be a habitual response to "cues set forth in the text" (1994:77). The categorization of books by the words in the title, for example, may induce an "automatic adjustment of stance" (1994:79) on the basis of prior experience. The setting of the reading event may also affect stance – someone confronted by a fire or seeking an antidote to poison is hardly likely to spend time reflecting on associations conjured up in the reading other than referents to relevant actions for the ongoing emergency (Rosenblatt 1994:78-79; 1998: 893-4).

Stance is not a unitary notion, but can be seen as falling along a continuum between two poles which Rosenblatt named aesthetic, and efferent (1994:23-5 78; 1998: 893). The two types of stance give rise to corresponding types of reading process – aesthetic reading, and efferent reading (1994:23-5). In an aesthetic or literary reading , the reader's primary concern is with the experience of reading itself (Rosenblatt 1938/1995: 292; 1994:24-7, 75; 1998: 894). The "particular pattern of linguistic symbols" (1994:75) – the words themselves, their sounds and rhythm, are important elements of aesthetic reading which are specifically attended to (1994:26-7, 29). In an aesthetic reading, "preponderant attention is given ... to the affective aspects" (1998:893). Thus an aesthetic reading can only happen for a particular reader with a particular text, and one text cannot be substituted for by another since the second text is a different one (Rosenblatt 1938/1995:33; 1994:86).

The word 'efferent', derived from the Latin 'to carry away', describes a stance in which the reader's primary concern is to take something from the reading process, into actions after or alongside the reading (1994:23-4, 73; 1998:893-4). While an aesthetic reading could be thought of as occupying only the reader's head, but the space of an efferent reading includes or even centres on those activities which the reading is instrumental in facilitating. The critical feature of an efferent reading is that personal feelings or associations of linguistic symbols are suppressed, and attention is focused on publicly verifiable or operational referents (1994: 27, 73, 75). This is not to deny an affective aspect (although little attention has been paid to the affective in "so-called nonliterary reading" – Rosenblatt, 1998:897) but simply to stress that "preponderant attention is given to the cognitive" (1998: 893). Indeed, Rosenblatt felt that any reading partakes in some degree of both stances, though one or the other is likely to predominate (1998:893-7).

The role of the text

The text is constructed by the person becoming a reader, and also plays an active role in the reading. A text provides "cues" relating to the appropriate stance. Some texts serve one purpose better than another, but on the whole a text offers both openness and constraint (1994:x, 81-3). Rosenblatt admitted to some difficulties in speaking of the constraints (1994:78) she suggested that a text acts as a stimulus to guide the focus of the reader's attention, noting that she did not mean 'stimulus' as in the traditional stimulus-response model (1994:11). Had she been aware of Piaget's *Biology and knowledge*, she might appropriately have cited his remarks on stimulus-response where he wrote: "we should at least write $S \leftrightarrow R$, or $S \rightarrow (A) \rightarrow R$ (where A stands for assimilation into a schema)" (Piaget 1971:8) since this seems to echo the transactional approach. Thus, like a musical score (Rosenblatt 1994:13-14) the words in a text provide a context additional to that within which the reader is acting that serve to guide the reader towards selection of appropriate responses (1994:75, 78). The set of linguistic signs that constitute a text provide a particularly important set of bounds to the evocation process because language "is at once basically social and intensely individual" (Rosenblatt 1994:20). The context, both 'external' and 'internal' to the text thus provides a constraint on the flexibility of individual words, thus 'stabilizing' their meaning (1994:75). The text is a necessary but not sufficient condition for evocation of a work (1994:23).

SOME CONCLUDING REMARKS

Rosenblatt's ideas were not developed through painstaking formal experimentation, but principally through reflections on the experience of teaching English over many years, beginning in the 1930s (Rosenblatt 1938/1995), drawing on philosophy (particularly Dewey), anthropology, and linguistics among other disciplines (Rosenblatt 1993:377-80; 1994 *passim*). Her views have received substantial support from experimental and practical studies of the reading process, and the teaching of reading, particularly from a psycholinguistic perspective (Goodman 1985, 1996; Smith 1994). Halliday (1973:24), from a sociolinguistic perspective, described learning words and the structures of language as learning their meaning potential, a view that fits well with Rosenblatt's perspective. Brent (1992) has also drawn attention to similarities between her positions and those of others studying the reading and writing processes and her basic ideas have been endorsed by Wells (1999:72-3). Lotman's views on the reader-text relationship (1990:80) also reflect the transactional viewpoint:

> Text and readership as it were seek mutual understanding. They 'adapt' to each other. A text behaves like a partner in dialogue: it re-orders itself (as far as its supply of structural indeterminacy allows) in the image of the readership.

A reading is, from this perspective, a series of at least the following interconnected transactions:

person↔artefact

proto-reader↔sign-bearing artefact

reader (1)↔linguistic signs

reader (2)↔the work

reader (3)↔meaning

All these transactions, and particularly those of reader (1) through (3), take place iteratively. They are also inseparable from the context or situation of the person/reader. With the reader (3) transaction, particularly in an efferent reading, the transactions include the wider situation of activity more explicitly as the reader is also implicitly primarily an actor in the wider situation from which they entered the reading transaction.

From the transactional perspective it makes no sense to regard written (or spoken) descriptions (or 'explicit knowledge' as knowledge management writers would say) as 'containers' of 'knowledge' that can be transferred to the reader/listener in some unproblematic and implicitly simple and controllable way. In an efferent reading, this entails acting within the constraints of the particular non-reading activities they are undertaking, as well as those of the emerging text they are creating. 'Gaps' in recipients' knowledge are not simply filled in as if 'knowledge transfer' was a matter of moving a substance from one

container to another. Instead the reader actively constructs what they make of and take from a reading.

Lotman argued that one function of texts is a dialogic one suggesting that in so far as the work the reader evokes is perceived by them to differ from what they were previously aware of, a tension is set up that stimulates further inquiry, reflection, and thereby the development of new (for that reader) ideas. In so far as this reader shares schemas (Piaget 1971) with others, a most likely and normal situation, then, especially in a particular context of some activity (other than the reading), and again depending on the reader's linguistic experiential reservoir, the reading may contribute towards the formation of functionally equivalent schemas. An observer noting that the person can now do something new, and using an established but ultimately misleading metaphor may well proclaim that knowledge has been transferred! The process, even as regards 'explicit knowledge', is thus far more complex, tentative, and indeterminate than phrases like 'knowledge transfer' or 'cognitive system' acknowledge#.

Garavelli and his colleagues suggested that control over knowledge recipients is an important motive for or element in knowledge transfer efforts. The transactional account of reading suggests strongly that this process is a very indeterminate one and certainly not one that could be controlled by the encoder/writer taking greater care in writing. No author can prevent the reader from constructing a different text from the one they intended although a greater degree of control is obviously possible where a tightly controlled language is used. Lack of control might not necessarily be a bad thing since it is likely that any 'knowledge' will have to be adapted to new circumstances. If it was impossible to interpret writings in local contexts it would not be possible to adapt and develop ideas, nor, in the extreme, for creativity and innovation to occur. While the latter may not always be required, adaptation to new situations is almost certainly necessary, and can probably only be done, or only done effectively, by those people capable of interpreting a received document.

One further issue implicit in this discussion is the importance of actually being engaged in some activity other than reading itself prior to and/or concurrently with the reading for knowledge 'transfer' to be possible. In so far as the reader has previously already engaged in the activities to which the ongoing reading pertains, their linguistic-experiential reservoir will contain action schemas (Piaget 1971) for/from that activity. In so far as the reader has names for significant aspects of that activity, and in reading evokes linguistic signs that are felt to correspond to those names, a reading may well evoke the appropriate action schemas. As Dewey wrote: "by means of symbols, whether gestures, words or more elaborate constructions, we act without acting" (Dewey 1929/1984:121). Words are our original virtual reality. On the other hand, of course, the reader may not yet have names for the activities, or may make mistakes in connecting words and activities. Someone who knows how to ride a bicycle may think they understand how to ride a motor-cycle after reading about the latter activity, but they may also be seriously mistaken. Mistaken evocations (i.e. mistaken in the sense that inappropriate action schemata have been evoked) seem in principle likely to range from completely to marginally mistaken. At the marginal end of this spectrum we may find that reading evokes what I have termed functionally equivalent schemata - they are not the *same* as those of the person seeking to describe their knowledge and so 'convey' it, but when the reader tries to act, their acts will be virtually indistinguishable from those of the writer.

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1 'Knowledge transfer' has also been used to refer to a knowledge-possessing unit applying its knowledge to a different situation (Szulanski 2000, 10, Argote & Ingram, 2000,151). This implicitly involves transfer of units themselves rather than transfer of *knowledge* between units. In this paper 'knowledge transfer' will be used exclusively to refer to 'between units' situations.

2 This difficulty is not one to be laid simply at the door of knowledge transfer writers. Reddy (1979) pointed out that the "conduit metaphor" is rooted in the English language which leads us to treat words as containers of meaning, or knowledge. Wells (1999: 94) also remarked that the tendency of treating documents as containers of knowledge is part of a general tendency (amongst English speakers at least) of treating semiotic objects as vehicles for transfer between minds.

3 The use of 'is' should not be taken to imply any notion of an 'essence' of reading, but is rather a shorthand for 'is best treated as', or 'is usefully regarded as'.

4 To facilitate readability and to save space, references to these works in the following sections do not always repeat her name unless it is necessary.

5 This process is of course not limited to documents, but is part of the more general process of semiosis.