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Re-writing the operations of the 'electronic noosphere'
and its control over populations and environment.

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ABSTRACT

The overall aim of the project is to generate a new set of practice-based works that develop upon the fictional methods employed within the researcher's art practice in order to critique, expose and rethink the relationship between digital technologies of control and the earth.

In the first part of the project, Brian Holmes's concept of the electronic noosphere is interrogated from a machine perspective in order to identify how its mechanisms of control operate. This research highlights that an assemblage of machines enable its operations and allow for new forms of virtualised and biopolitical control to be realised via a series of writing machines that are powered by informatics, affect and new modes of panspectrocinema. This results in the earth becoming computational, a condition where sensors, signals and machine assemblages control and manage its environments and populations.

From here, a set of approaches for escape and subversion are identified and made operational via the fictional tools of the practice. 'The Researchers' persona is deployed along with a fictional manifesto and underground research site that frames the operations of the practice. A set of fictional video machines are developed, each with their own functionality and behaviours; these include 'affective video machines' and 'panspectric video machines'. These machines generate a set of transmissions, constructed from re-appropriated waste material (text, still and moving image), identifying subversive proposals for specific sites such as Ordos, China and the Isle of Grain, Kent.

In the second part of the project, the electronic noosphere is interrogated from a network and material perspective. Theoretical focus is drawn from work on actor-network theory by Bruno Latour and John Law and Timothy Morton's work on hyperobjects.

In response, the fictional research site is expanded to incorporate further research spaces, including the 'hyperobject research space', the 'material stories research space' and the 'data recovery space'. In the guise of 'The Researchers' web production software is appropriated to map out an example technological hyperobject in the form of a smartphone and its associated networks, attempting to bring into view the unseen components and non-human actors. This mapping process is then developed into a series of performance lectures titled *The Signal and the Rock: Proposal for a Film*, where the relationalities between the non-human/human technological actor networks have been traced and reformulated. These performances are then developed into a final large-scale audio transmission titled *Re-writing the Overcode* (2017).

This transmission re-appropriates Wolfgang von Kempelen's 'speaking machine' to activate a 'non-human-to-human translation mechanism'. The work exposes a set of non-human perspectives tuning into the voices of materials, animals, images, codes, devices, processes and affects. It emerges as an elegy to digital technologies and their relations to the control of populations and environment. It also makes a subversive proposal for future technological sustainability by the development of new hybrid technological/ecological machines and new sorts of 'raw material'.

Accompanying the audio work is a publication titled *The Signal and the Rock*, which itself operates as a form of hyperobject, expanding on the function and the contents of the audio transmission and the strategies and methods of the practice via a series of cross-referenced notes from a wide variety of sources. Finally, the two bodies of work have been brought together in the exhibition *Soon we will become output* at the Stanley Picker Gallery which took place in December 2017.

The submission includes a body of video and audio works created throughout the research project, the final exhibition at Stanley Picker Gallery and the new publication *The Signal and the Rock* (2017).

Aims

The overall aim of this research project is to generate a new set of practice-based works that develop upon key methods employed within my fine art practice to critique, expose and rethink the relationship between digital technologies of control and the earth that result in Brian Holmes's definition of the 'electronic noosphere'.

This will be achieved by addressing the following objectives:

- (i) Firstly by engaging in theoretical research around the operations and mechanisms of the electronic noosphere from a machine perspective, a network perspective and a material perspective.
- (ii) Secondly, by defining how the practice and its fictional methods can be used to test out and build upon strategies that emerge during the theoretical research process. This objective will be achieved by making use of fictional writing and personas and methods of over-identification, appropriation and re-contextualisation to develop critical speculative fictions, performances and text-based works.
- (iii) Thirdly, by interrogating the role of the video image. In the development of the works, I aim to interrogate the role of the video image as a form of affective control and consider the potential of Hito Steyerl's 'poor image' (Steyerl, 2009) as a means of escape, critique and agency.
- (iv) Fourth, I will exhibit and perform practice-based works that are developed throughout the project and then produce a final exhibition of key works.

Chapter 1 - introductory chapter

Introduction

This introductory chapter considers the context for this research project from both a theoretical and practical point of view. It begins by interrogating my art practice and considering some of the key strategies employed in past works that have informed the focus of this research project. I then provide a justification for the methods that have been deployed in the research, beginning with the focus of the theoretical investigation and then connecting this approach with the practice-based approaches used. Next, I offer justification for the use of fiction, appropriation and speculative writing as primary techniques within the project, and I consider the wider context for these methods within fine art practice. As a result, I aim to outline a clear context for the research project and the set of theoretical and practical methods used.

Context within my practice for the emergence of this project

The research project has emerged from my sustained fine art practice in which I have produced a body of works that have interrogated the human desire to manage and control the social and natural environment and have examined the tensions between the ecological and technological. This work has employed a fictional approach which began with the use of singular alter egos that were used to intervene within the world around them by making satirical proposals for change. The methods of fictional documentary and alter ego were later developed further using the voice of anonymous groups and collectives to outline more complex proposals.

A key work that has informed the focus of this research project is a video series called *Notes I, II and III* (2010), which consists of seven short videos that outline activist strategies for intervention and change that are voiced by a synthesised electronic voice belonging to an apparently anonymous power force. Videos in this series include plans to induce flooding on a mass scale and plans to induce complete technological singularity. These works act as both video documents and also calls to action, the digital voice-overs appear to come from a parallel, immanent position. In this sense, they play a performative role on the audience; they are not static documentaries but rather operate as short performances that address the viewer with an authoritative voice and calming music.

In the final video in the series, the fictional authors behind the work outline a plan to develop the use of persona further by employing non-human tactics in their future activities: ‘There are not many routes left for people such as ourselves, this is why we are no one, no thing, non visible, intact’ (*Notes III*, 2010). They also interrogate the video image itself by using video effects and pixilation to break it down to remove it from the control of high-definition (HD) transmission. This anonymous group’s intentions also connect with the persona and aims of ‘The Researchers’ who have been employed throughout this research project as a way of framing and contextualising the works created.

The key methods from these past works that I propose to build on include utilising fictional strategies to visualise potential and possible actions, employing over-identification as a mode of subversion and interrogating the subversive potential of the video image itself.

Theoretical context: electronic noosphere

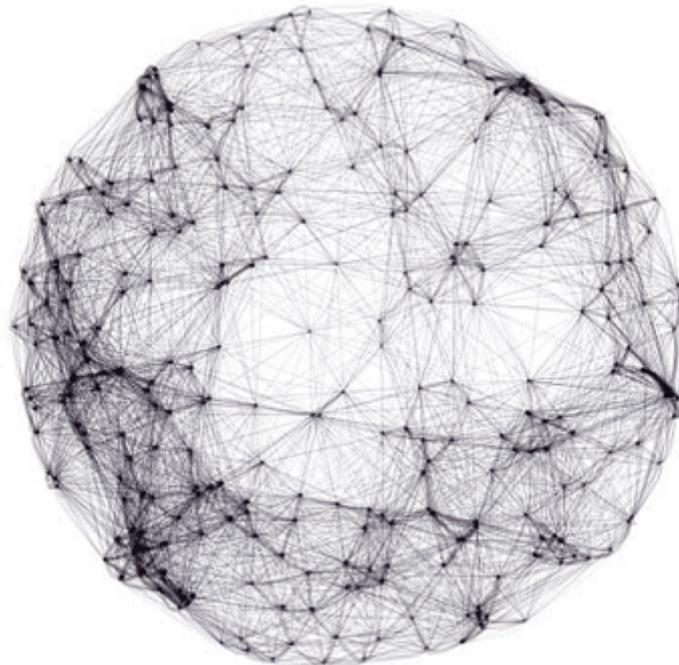


Figure 1: Electronic Noosphere, Paradelle, 2012.

The theoretical departure point for this project has been developed from the writing of Brian Holmes in which he discusses the concept of the ‘electronic noosphere’ (Holmes, 2009).

This noosphere is described as an additional sphere surrounding the earth's biosphere made up of electromagnetic waves that are moving around us, tracking us and recording our actions (Holmes, 2009). As Holmes notes,

'a desiring mind seeks infinity and finds it today in a proliferation of signals: electromagnetic waves beaming down from the skies, fiber-optic cables emerging from the seas, copper wires woven across the continents. The earthly envelope of land, air and ocean – the realm of organic life, or *biosphere* – is doubled by a second skin of electronically mediated thought: the *noosphere*. It's a vast, pulsating machine: a coded universe grown complex beyond our grasp yet connected at every pulse to the microscopic mesh of nerve cells in our flesh.' (Holmes, 2009)

For me, this vision of the electronic noosphere and its proximity to the biosphere connects closely with the primary tensions that have played out within my recent practice where the desire to enlist technology as a way of controlling and managing the world has escalated into this vision of an all-encompassing form of networked technological control that is enabled by data and informatics, a 'pulsating machine' that surrounds the entire earth.

Holmes sees the electronic noosphere as stemming from developments in cybernetics that put faith in the power of information as a means for improving human life and relations. Indeed, the post-war purveyors of cybernetics and the technological utopians of the 1950s and 60s believed that it was the solution to a self-regulating and safe world. However, this plurality of information also enhances levels of surveillance and control and forms a new sort of megamachine, as Holmes notes:

'But it also generated unprecedented capacities for surveillance of the most minute behaviors of human beings. Information is indeed 'such stuff as dreams are made on', observed an American social scientist in the early 1960s. 'Yet it can be transmitted, recorded, analyzed and measured'. Information machines have become the elusive myth and the threatening master of human desire in the postmodern era.' (2009)

Holmes says that the technologies of the electronic noosphere enable the operations of a contemporary form of overcoding to be realised. Deleuze and Guattari define the new mechanisms of overcoding as a way for organising and coding life that is enabled by computing technologies, the use of models, simulations of dynamic systems and the creation of dynamic environments. They note that overcoding is the 'phenomena of centering,

unification, totalization, integration, hierarchization, and finalization' (Deleuze and & Guattari, 1988: p.41). Therefore, from this perspective, overcoding is enabled and enacted by human machines that surround and codify the earth and its inhabitants:

'There is enslavement when human beings themselves are constituent pieces of a machine that they compose among themselves and with other things (animals, tools) under the control and direction of a higher unity. But there is subjection when the higher unity constitutes the human being as a subject linked to a now exterior object.' (Deleuze & Guattari, 1988: p.504)

Deleuze highlights that this new form of control was enabled by the technological revolution so that the development of the computer via cybernetics and informatics was the key to a profound mutation of capitalism and its ability to control the consumer and the worker. This is an important point in terms of the initial focus of the research in which the development of computing machines and cybernetics is considered.

The development of the contemporary mechanics of overcoding via capitalism is expanded on by Guattari:

'Contemporary capitalism can be defined as integrated world capitalism, because it tends toward a state where no human activity on the planet can escape it. It can be considered to have already colonized all the planet's surfaces, so that the essential aspect of its expression now concerns the new activities that it seeks to overcode and control.' (Guattari, 1981)

Guattari suggests that 'integrated world capitalism' and its overcoding mechanics cannot be escaped by humans. This is another focal point for the initial method employed within the research, which attempts to identify potential escape routes and subversions from these all-encompassing control mechanisms (Guattari, 1981).

Holmes's notion of the electronic noosphere also has a science fictional quality which connects with my interest in utilising fictive strategies within my practice and the potential of using science fictional approaches in practice to critique contemporary conditions. I am also interested in Holmes' vision of the electronic noosphere because of its seemingly virtualised quality and apparent invisibility, and I want to explore how the mechanics of contemporary virtual technologies are actually located within the materialities of the earth. They are powered by it and have a direct relationship with it; thus, mechanics of contemporary

overcoding machines have a deep material relation. Therefore, in the second part of the research, I examine this technological materiality to understand the physical realities of the electronic noosphere and its supporting networks of humans and non-humans and how they are implicated within the overcoding process.

Jon K Shaw identifies a fictional place at the centre of the world, a fictional location called 'Null Island' that is located at a point in the centre of the earth, amongst the lava which no one can travel to:

'From this unreal centre the machines can map our photos to map our memories and images onto the material world, can connect our satellites to coordinate and connect us across the planet align. Whenever we perform one of these actions, we pass through this fiction. We are transported home via the fictional island; the missiles our governments launch in our names track abstract lines of their trajectories through it. From there, where the world begins.' (Shaw, 2017: p.7)

The machines to which Shaw refers are similar to the operations of Holmes's electronic noosphere: the writing machines of our everyday world. The location of Null Island is also similar to the two perspectives that this research project follows, beginning with the virtualised vision of the noosphere and ending in the centre of the earth, embedded in its layerings and materialities.

Artistic Context

A number of contemporary artists have created works that address the relation between human and technology and its affective, controlling and political qualities. Therefore, it is important to highlight some of these approaches to clarify the context for the specific methods that are used in the research.

The work of artist and writer Hito Steyerl is relevant here with her inquiries into the portrayal of the real, her focus on combining theoretical writing and practice and her exploration of new methods of artistic documentary, particularly related to the virtual sphere. Steyerl is of interest because she has consistently interrogated what it means to live a digital existence and also how affect is transmitted through digital technologies and their networks.

In her video installation *In Free Fall* (2010), she considers the biography of the Boeing 707 jet plane. As Daniel Rourke notes Steyerl examines the political and economic conditions

that led to the downfall of the plane, and she uses strategies of re-appropriation and an explicit depiction of image-making and its dispersion. In the work, she highlights how the plane was used in an Israeli military hostage rescue operation at Entebbe Airport in Uganda in 1976 and then featured in various films about the terrorist plot in which it was eventually blown up. The film continues the biography of the plane as its remains were transported to China, where it was finally deconstructed and used and recycled into the material for DVDs (Rourke, 2013). Steyerl then expands on the themes of the work further in her essay that uses the same title to consider the economic and political conditions that led to its disposal and end point: 'Pilots have even reported that free fall can trigger a feeling of confusion between the self and the aircraft. While falling, people may sense themselves as being things, while things may sense that they are people.' (Steyerl, 2011)

Steyerl's approach is of interest here because she questions the human relationship with a technological object and plots out the complex sets of relationalities between the object of the plane as it navigates between real and fictional narratives, HD images (in terms of the video installation) and poorer images, reconfigured narratives that appropriate images and text material. Her work emerges from an explicit engagement with the conditions and operations of the digital, and her writing around the poor image has also been influential. Steyerl's writing regarding the value of the poor image as a mode of resistance has informed my approach to the use of visual material in this project. In this context, I want to explore the potential of poor images as a way of exposing and critiquing the networks and systems of their production and transmission. In Steyerl's essay *In Defence of the Poor Image*, she states the following:

'Poor images are the contemporary Wretched of the Screen, the debris of audiovisual production, the trash that washes up on the digital economies' shores. They testify to the violent dislocation, transferrals, and displacement of images—their acceleration and circulation within the vicious cycles of audiovisual capitalism. Poor images are dragged around the globe as commodities or their effigies, as gifts or as bounty. They spread pleasure or death threats, conspiracy theories or bootlegs, resistance or stultification. Poor images show the rare, the obvious, and the unbelievable—that is, if we can still manage to decipher it.' (2009)

In her essay *A Thing Like You and Me*, Steyerl calls for us to 'tap into the power of the bruise and the glitch, in order to participate in the forces that compel contemporary digital capitalism.' (Steyerl, 2010)

Daniel Rourke notes that,

'Steyerl invokes the critical function of the visual arts as a symptom of a wider perspectival shift. Digital technologies allow new ways of seeing, as well as being seen. We inhabit a reverse panopticon, where each of us co-regulates the structures that mediate our control, zooming in to our own abodes on Google satellite maps, allowing portable universal devices to track our every move, and sharing across social networks built as much to regulate our consumer subjectivities as to convince us of our freedom from those regulations. "Traditional modes of seeing and feeling are shattered" and "new types of visibility arise," which are not to be taken as they appear. We are falling, Steyerl suggests, over a new landscape, through corrupted images, untraceable copies, and complex material forces that buffer us on our way down.' (Rourke, 2013)

The use of poor images and appropriated materials to construct works has been explored throughout the research project along with the use of a set of fictional strategies which are justified in the following sub-section. In a way similar to Steyerl, the merging of fictional and 'real' materials, re-appropriations and re-contextualisations allows the methods deployed within the research to embed themselves within the conditions and functionality of the digital. This includes the base level of computer code in which fictive and real merge anonymously, the investigation of the networks of the electronic noosphere and how they operate in terms of production and waste, the affective and controlling qualities of digital transmission and the ability to simulate and change persona.

Another artist who has consistently explored the controlling effects of technology is Rod Dickinson, who focuses on the way our behaviour is moderated by feedback systems in projects such as *Who, What, Where, When, Why and How* (2009). In the work, a series of political speeches justifying military action were spliced together and then re-enacted in a performance that highlighted the mechanisms of constructing a transmission of this sort and the use of language and persuasion tactics.

Rod Dickinson often re-enacts instances of technological control, e.g. in the *Milgram Reenactment* (2002), a restaging of Stanley Milgram's notorious 1961 experiment, *Obedience to Authority* where the original experiment is re-enacted by actors in a recreated laboratory. The work exposes the control mechanisms at play and highlights the way that the human participants were manipulated to orchestrate electric shocks on others, demonstrating surprising levels of obedience to the control mechanisms of the experiment. The use of actors to formulate these re-enactments and their interaction with the audience

as a fictional intervention within the fabrics of the real connects with the fictional strategies that have been employed within my practice throughout the project. In my work, fictional strategies and proposals for new sorts of control mechanisms have been used in a way similar to Rod Dickinson in terms of performing an authoritative set of instructions with an audience to trigger a questioning of their own response to the transmitted material.

The Milgram Reenactment also sets in to play a layering of fictions and characters, and this approach connects with my own method regarding the layering of fictional characters and manifestos:

‘The original experiment was laden with artifice (fake electric shocks, actors playing scientists, pre-recorded screams of pain), and was itself a coded re-enactment of events that took place during the holocaust. The re-enactment set up a further set of iterations through time and space; actors playing the role of actors, the repetition of the experiment as a live performance eight times in real time.’ (Dickinson, 2002)

Another artist who makes work specifically around the conditions of networked technologies and the fusions of material and digital image worlds is Joey Holder. Holder’s work depicts the internet as an expanded ecosystem, making use of her own online image archives that exist on blogging sites such as Tumblr. Her image worlds have a distinctive post-human quality to them, and they form the raw materials for the production of her larger projects. In a similar way to Hito Steyerl, the value of the networked image and the merging of real and virtual material is important. In this context, Holder’s work highlights how images can mutate via the network and gain an agency of their own. In addition, the use of appropriation is fundamental to re-inscribing her own image archives, and in this sense, there are many links with the approaches that have been used in the production of video works from appropriated images within this project. For example, her Tumblr blog, *Dark Creatures*, displays a vast array of alien-like creatures that are drawn from real images of life forms that exist on earth and makes the viewer aware of them. There are also connections with Holder’s perception of the internet with my own exploration of the electronic noosphere., Holder notes that:

‘I think of the internet itself as a complex entity, like a living organism, expanding and contracting. Its territories are as far-reaching as they are controlled. I am interested in the way that network theories, complexity theory, and emergence are related to ‘natural’ as well as ‘synthesized’ systems and the points at which the two diverge.’ (Holder, 2016)

The images that Holder uses in her work also draw the viewer to a merging of the real and the artificial, and this approach is relevant to the increasingly blurred conditions between the two and the entangled image world in which we exist. In relation to my work and the approach followed in the research, her interest in exposing the non-human connects with my own approach of bringing non-human perspectives and voices into view in the work. What is also of interest in her work is the way that she moves beyond the standard video screen format and gallery installation format to explode the interface onto the walls of the gallery and into the video works themselves. This allows for a constant state of flux to be visualised, and in this sense, she has successfully simulated the conditions of the digital viewer's experience: 'Online space has allowed my work to be represented as a continuous flow—a process where there is a loss of hierarchy between a finished artwork and something in progress, or an appropriated image to a large-scale installation.' (Sutcliffe, 2016)

One further method that Holder uses that connects with my own is an approach to the use of text. She often re-appropriates scientific and theoretical text and edits it together in order to formulate scripts and press releases. This use of appropriation and re-contextualisation are close to the tactics used in my practice that emerge from the culture and conditions of the digital and the widespread use of bricolage and remixing.

Justification of fiction as method within the practice

'Far from being an escape from the world . . . fiction takes us to its symbolic centre and might allow us to establish some leverage within the tangled contingencies and hidden conventions that lie there.' (Shaw & Reeves-Evison, 2017: p.7)

The use of a fictional approach as an overarching method for the development of the practice in response to theoretical research is intended first to build on the approach that has been used within my work over the last 15 years, during which it has moved from the use of individual alter egos to the development of more complex sets of voices that have manifested as speculative critiques and proposals for change which often over-identify with a particular aspect of control such as the fear of the unknown.

This use of fiction can also be linked to the subject matter of the research in terms of the development of new forms of technological control and the conditions of the electronic noosphere that Holmes outlines as surrounding the earth. These conditions of the electronic noosphere allow for networked, data driven, statistical and virtualised mechanisms of control

to be orchestrated and an artificial construction of life to be enabled, and this works to manage and control both the social and the ecological. In this context, Boris Groys has described the kind of art that can be made within the conditions of biopolitics. He states that art cannot help but take this artificial construction of life as its explicit theme and look towards new forms of fictional documentation and re-inscription as a mode of operation:

‘Life is not longer understood as a natural event, as fate, as Fortuna, but rather as time artificially produced and fashioned, then life is automatically politicized, since the technical and artistic decisions with respect to the shaping of the lifespan are always political decisions as well. The art that is made under these new conditions of biopolitics—under the conditions of an artificially fashioned lifespan—cannot help but take this artificiality as its explicit theme. Now, however, time, duration, and thus life too cannot be shown directly but only documented. The dominant medium of modern biopolitics is thus bureaucratic and technological documentation, which includes planning, decrees, fact-finding reports, statistical inquiries, and project plans. It is no coincidence that art also uses the same medium of documentation when it wants to refer to itself as life.’ (Groys, 2004)

Therefore, an artistic strategy of fictional documentary within these biopolitical conditions is an approach that is primed with potential, and this is explored in the production of the practical works. These works re-appropriate ‘authentic’ documentary material and re-inscribe this material as part of the subversive narratives and proposals that I intend to create as forms of intervention within the transmissions of ‘the real’. This approach has value because contemporary life is increasingly constructed by the technologies of biopolitics and transmission systems that progressively blur the line between the real and the fictional, the artificial and the organic.

The use of science fiction (SF) is also important within the contemporary conditions of capitalism and its operations from shaping brands to organisations and deploying complex fictions around products. Mark Fisher states that ‘SF capital’ seizes the power and vitality of becoming, capital that has sunk so deeply into life so that the hyper-commodity is not an object but an intricate, micro-sensitive web inducing participation and involvement. (Fisher, 2001) Fisher also notes how the product becomes inseparable from the web of promotion and virtual narrativisation surrounding it, including complex architectures and fictions of blogs, social media interactions, fictional characters and viral films which build the product into the noosphere (Fisher, 2001). Coley and Lockwood (2012) observe that the radicality of capitalist reality is that capitalism has embraced SF, locking onto the potentiality of events.

Coley and Lockwood say that this then points to the idea of a transmedial system, which is a labyrinthine fabulatory system that is not object based (Coley & Lockwood, 2012: p.25).

Simon O'Sullivan also describes the potential of a strategy of 'fictioning' within art practice.

'This collapsing of hitherto separate worlds – and the concomitant production of a 'new' landscape, a new platform for dreaming – is another definition of fictioning, especially when it is no longer clear where the fiction itself ends and the so-called reality begins (or where reality ends and the fiction begins). . . . This is fictioning as mythopoesis: the imaginative transformation of the world *through* fiction.' (2017: p.6)

He also notes that fiction can be used not as a matter of 'make believe' but rather in a Ranciere sense of forging the real to better approximate historical and contemporary experience (O'Sullivan, 2017: p.6).

This fictional strategy also has a clear history within art practice and can be seen in the documentary fictions of Chris Marker in his films such as *La Jetee* (1962), in which a post-apocalyptic Paris is described in the aftermath of a third World War to comment on political conditions at the time. This sort of social SF allows for the playback of possible futures onto the present as a mechanism of critique.

What is also of relevance is *3 Communiqués* (2007) by Alun Rowlands, which is a documentary fiction, charting a journey through the marginal histories of communalism, self-presentation and collective agency. It forges an archaeology that renegotiates utopian propositions as a way of both making art and as a tool for progressive thinking.

Furthermore, another example of an art practice that has deployed a fictional approach is in the works of Lindsay Seers where personal autobiography, fact and fiction are merged to construct myths around her own persona as an artist: 'Seers' work does not accept the dichotomy of fact and fiction, as nothing seems entirely factual or entirely fictional. Fictional implies untrue and Seers is looking for the truth in things that supersedes mere factuality' (Hayward Gallery, 2015).

In addition, Seers' work includes the use of an unreliable narrator:

'Historical research and documentary evidence may aim to resist the subjective point of view and arrive at agreed-upon *facts*, at objectivity, but many of Seers' subjects have a less-than-conventional grip on 'reality'. They are archetypal unreliable

narrators as, one often suspects, the persona 'Lindsay Seers', a frequent participant in the emergent narratives, must surely be too.' (Hayward Gallery, 2015)

In a similar way to Seers, I have often made use of an unreliable narrator in my work to encourage the audience to question the construction of voices that present fictional material to them. This use of a narrator character in the work is explored further in the research by enlisting a number of unreliable narrator voices in the video, sound and written works.

The use of fictional characters is also motivated by the ability to change identity, which new technologies provide, so that as an artist, I can play a flexible role as the author. In this respect, I am also tapping into the opportunities for creating fictional identities that is enabled by new technologies as well as the increasing confusion between the definition of fiction and reality.

Mark Fisher notes the following when discussing Patrick Keiller's film *Robinson in Ruins* (2010):

'When we hear early on in the film that Robinson has made contact with a series of 'non-human intelligences', we initially suspect that he has finally succumbed to madness. Yet the 'non-human intelligences' turn out not to be extraterrestrials of a florid pulp-science fiction inspired psychosis, but the intra-terrestrial life-forms that an ecological awareness reveals growing with a silent stubbornness that matches the brute tenacity of capitalism. In one of the many slow spirals that typify Keiller's approach in *Robinson in Ruins* (2010), the lichen that his camera lingers on in an early shot, apparently for merely picturesque effect, will eventually come to take centre stage in the film's narrative. Lichen, Robinson comes to realise, is already the dominant life-form on large areas of the planet.' (Fisher, 2014, loc.3380)

In the case of *Robinson in Ruins* (2010), the lichen becomes a central focus and provides a non-human agency to emerge; thus, the use of fiction allows for a re-imagining of a potential future that is beyond the human. Donna Haraway highlights the usefulness of speculative fabulation as a critical strategy for re-imagining relations with the non-human:

'Even rendered in an American English-language text like this one, Naga, Gaia, Tangaroa, Medusa, Spider Woman, and all their kin are some of the many thousand names proper to a vein of SF that Lovecraft could not have imagined or embraced—namely, the webs of speculative fabulation, speculative feminism, science fiction, and

scientific fact. It matters which stories tell stories, which concepts think concepts. Mathematically, visually, and narratively, it matters which figures figure figures, which systems systematize systems. All the thousand names are too big and too small; all the stories are too big and too small. As Jim Clifford taught me, we need stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections.’ (Haraway, 2016, p.82)

Furthermore, it is important to mention the work of Resa Negarestani, who has used speculative fiction as a strategy to unravel the biopolitics of petroleum and the ‘voice’ of the oil life force below the surface of the earth’s crust. In all of these cases, the use of fiction moves beyond the realm of fantasy to become a relevant and contemporary tool for decoding and rethinking our relationships with both technologies and the earth (Morton, 2013, loc.988).

Fiction as an approach also allows for critical re-imaginings of technological futures and relations, and this is often associated with the practice of design fiction. As Joshua Tanenbaum observes, ‘design fiction is a way to envision new technologies in the distant future, while utilising narrative to show how these technologies are positioned within a new context.’ (Tanenbaum, 2014, pp.22–23) In design fiction, storytelling approaches are used to formulate these new technologies, and this method connects closely with some of the narrative approaches that I have employed in past works where future proposals have been formulated for particular sites as both a mode of critique of the present conditions and as a way of generating discussion. This approach to formulating fictional visions of future technological conditions is relevant to the focus of this research project, and throughout the project, a number of critical proposals are formulated for particular sites and conditions that attempt to rethink the relations between human technologies and the earth.

Fictional approaches are therefore used throughout this research project, and these include fictional writing, fictional documentary, fictional personas, unreliable narrators, non-human voices, design fictions and proposals for particular sites. These strategies also expand upon those used in previous works with alter egos (e.g. *The Man From Below*) and also using collective voices (e.g. *Notes I, II and III*).

Summary of Questions

In reference to the practical and theoretical context for this research project, I focus on the following questions:

How does the totalising form of control that is produced by the electronic noosphere operate?

How might the speculative fictional methods of my practice be used to escape and subvert these control mechanisms?

How might the practice make use of re-appropriation and re-contextualisation in the production of works that emerge from the transmissions, content and infrastructures of the electronic noosphere?

Summary of Methods

The following methods are used in the initial stages of the project:

Method 1: Theoretical research and the formulation of approaches

This includes engaging in theoretical research to define the mechanisms and operations of the electronic noosphere and its relation to the control of human and environment from a machine perspective, a network perspective and a material perspective. From this research, I identify a number of approaches for escape and subversion, and these are activated using my fictional methods.

Method 2: Developing and testing out new fictional approaches in the practice

This includes utilising and expanding on the key methods employed in my practice, including fictional writing, documentary fiction, over-identification and persona. In addition, I develop a series of critical and performative documentary fictions in video and text that test out modes of critique and subversion, building on the theoretical research material utilising speculative fictions and applying these to test sites and real-world scenarios.

Method 3: Appropriation and re-contextualisation

The final method that is deployed throughout the practice is one of appropriation and re-contextualisation. This includes appropriating material that has emerged from the conditions and transmission systems of contemporary digital culture and the plethora of images and continuous flows of content available, deploying this reshaped material as a means of

critique in the works. In this context, the potential agency of the depleted and non-HD image is also tested by working with images that are intentionally re-filmed, pixelated and depleted. I also make use of appropriation within the creation of scripts and personas as well as use software tools for mapping networks and presentation and screen technologies to deliver the work.

As the project progresses further, methods will emerge as a result of the developments in the practice and the engagement with theoretical material.

Conclusion

This first chapter has outlined the context for the research project and considered the development of my fine art practice and how this has informed the approach taken in the project. I have considered the theoretical context for the project and highlighted the focus of initially exploring the relation between machines and forms of control and then moving on to examine digital networked technologies and their material relations. As a result, this approach allows me to explore Holmes's electronic noosphere from two particular perspectives in relation to the earth. I then highlighted several relevant practitioners in this field whose work interrogates systems of control in relation to machines and technologies. From here, I justified the fictional strategies that have been employed in the practice by considering a number of approaches by artists and writers, and I next outlined why my particular approaches are justified in the context of contemporary conditions and the proliferation of fictional meshes that are deployed by the 'writing' of computing machines. I then clarified some of the fictional approaches that were deployed in terms of fictional personas, voices, documentary fictions, manifestos and a parallel scientific organisation of the practice and its research activities. In the forthcoming chapters, I consider the methods that were used and provide analysis of the practice-based works produced.

Chapter 2: Part 1: Machine Perspective

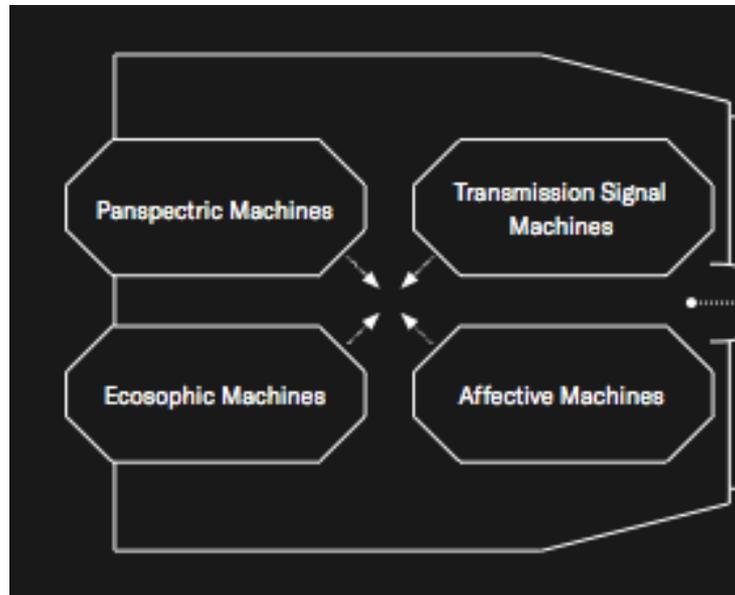


Figure 2: *The Signal and the Rock* map by Charlie Tweed (2017).

Introduction

In this chapter, I first consider how the electronic noosphere transmits and operates from a machine perspective to realise new forms of virtualised and biopolitical control on its users. I consider how this results in the earth becoming computational, a condition in which sensors, signals and machine assemblages control and manage the earth's environments and populations.

I then discuss the initial development of practice-based works using my fictional methods to construct the group of 'The Researchers', their operational manifesto and a set of subversive video machine characters. I will interrogate the initial set of video works and the methods used to produce them. The final part of the chapter considers the learnings from these initial works and contemplates how these then informed the next phase of the research project.

Part 1: The operations of the electronic noosphere: a machine perspective

(i) Machines and panspectric control

As we have seen in the first chapter, the operations of the electronic noosphere are enabled by the development of computing technologies which operate as a series of machines and transmission networks which surround and codify the earth and its inhabitants. Benjamin Bratton highlights that as a result of the development of a computational planet, the state itself becomes a machine: 'It is not the "state as a machine" (Weber) or the "state machine" (Althusser) or really even (only) the technologies of governance (Foucault) as much as it is the machine as the state.' (Bratton, 2015: p.419)

As Lewis Mumford states, the notion of the machine has long been associated with the control of human beings:

'Long before the peoples of the Western World turned to the machine, mechanisms as an element in social life had come into existence. Before inventors created engines to take the place of men, the leaders of men had drilled and regimented multitudes of human beings: they had discovered how to reduce men to machines. '(Mumford, 1934: p.41)

Deleuze defines the relationship between different social phases and different machine technologies in his 1990 interview with Antonio Negri, in which he describes how different types of machine can be mapped to different types of society: 'Each kind of society corresponds to a particular kind of machine – with simple mechanical machines corresponding to sovereign control societies, thermo-dynamic machines to disciplinary societies and cybernetic machines and computers to control societies'. (Deleuze, 1990)

Sovereign control used the power of the sovereign and the threat of torture over bodies, and here, the state operated as a linguistic megamachine. Lewis Mumford notes that a master sovereign overcoding is produced, which is the signifier of an abstract unit of language that cuts out standard concepts and organizes them according to binary oppositions such as man or woman, friend or enemy (Mumford, 1934: p.41).

Michel Foucault describes the mechanics of disciplinary control and how the technology of exercise becomes a way to manage the body via the complex segmentation of time so that it became what he calls a 'multi-segmentary machine'. (Foucault, 1995: p.168) Foucault notes that the factory, the prison and the school then become a vision of Bentham's panopticon, where unseen or invisible observation occurs within various spaces of enclosure.

A school becomes a mechanism for training, an apparatus for constant surveillance and an apparatus of observation: 'The disciplinary institutions secreted a machinery of control that functioned like a microscope of conduct, the fine analytical divisions they created formed an apparatus of observation.' (Foucault, 1995: p.173)

Deleuze highlights that a key point shown by Foucault in *Discipline and Punish* (1975) is that the panopticon and new disciplines of categorisation and exclusion come together in 'a variable way in each particular case'. (Deleuze, 1988: p.29) Deleuze asks, 'What can we call such a new informal dimension? On one occasion, Foucault gives it its most precise name: it is a "diagram", that is to say "functioning, abstracted from any obstacle."' (1988: p.34)

Furthermore, Deleuze and Guattari (1987) defined the idea of this diagram then existing as a form of abstract machine that exists within the virtual realm, and as Karl Palmas highlights, this 'gives rise to more or less stable assemblages'. (Palmas, 2011)

Deleuze and Guattari define an assemblage as comprising two segments:

'one of content, the other of expression. On the one hand, it is a machinic assemblage of bodies, of actions and passions, an intermingling of bodies reacting to one another; on the other hand it is a collective assemblage of enunciation, of acts and statements, of incorporeal transformations attributed to bodies.' (Deleuze & Guattari, 1987: p.97)

The electronic noosphere is enabled by a form of vast assemblage that is made up of networked computing machines, humans, non-humans and complex relationalities; it is in Deleuze's terms, the replacement for Foucault's disciplinary societies and is the machine assemblage of the 'control society'.

Deleuze highlights how the enclosure that we associate with disciplinary societies changes so that subjects roam freely in control societies but are constantly monitored. The panspectric architecture of enclosure is therefore replaced by the modulation of human behaviour by an assemblage of computing machines; thus, a different sort of diagram comes in to play (Deleuze, 1987). Gerald Raunig states that the crucial aspect of a technical machine is the flowing of its components, thus becoming all about connections (Raunig,

2008: p.33). Therefore, we might consider the machine diagram as one that functions to connect a set of components which then allow the electronic noosphere to function.

Deleuze highlights that the new form of control is enabled by the technological revolution so that the development of the computer via cybernetics and informatics is the key to a profound mutation of capitalism and its ability to control the consumer and the worker (Deleuze, 1992: pp.3-7). In this way, capitalism begins to operate through computing machines with a specific configuration that allows for a set of striated relations between the human, the earth and the machine, which flow into a special sort of integrated stratum, a special sort of human, earth and machine assemblage which generates the notion of a computational planet and enables the totalising form of control that Holmes describes in his definition of the electronic noosphere. Manuel DeLanda coined the term 'panspectrocinism' to describe this new type of machinic observation from multiple angles, enabled by a multitude of analytical algorithms linked to databases and networks (DeLanda, 1991: p.280).

Expanding on this contemporary cloud technologies, which are the emergent form of data storage, encourage the user to store all of his or her files on a virtual 'cloud' server, thus making all of their data available for monitoring and pushing the possibilities of panspectrocinic control even further. In addition, users now have multiple social media accounts which actively capture and analyse their activity and the data that they have shared in real time. All of this 'big data' allows for detailed profiles to be constructed for every user based upon his or her online behaviour, their purchase intentions, their social connections, locations and overall digital footprint.

This constant observation and analysis of user data on a mass scale is a demonstration of biopolitics, which, according to Foucault, is statistical knowledge about populations: 'a species knowledge' (Galloway, 2006: p.13). Foucault notes that after first a seizure of power over the body in an individualising mode, we have a second seizure of power that is not individualising but massifying and is directed not at man as body but at man as species.

Alex Galloway discusses how Foucault talks of the emergence of demography (the rise of the relationship between resources and inhabitants). As a result, the capitalist production system intensifies its grip over humanity by charting out detailed mental models, interaction routines, not just for classes, ethnicities, income groups, and local populations but also for the most intimate behaviours of individuals. Pre-emption and the use of feedback loops are key within systems of statistical informatics, and this is realised by producing models and simulations of systems, situations and software (Galloway, 2006: p.16).

In *Cloud Time*, Rob Coley and Dean Lockwood argue that the development of the cloud constitutes capital's best effort at the interception of the future and that fused with the technologies of panspectroscism, it allows for capital's strategy of harnessing digitality in order to breach the 'not-yet' to be realised. They note that the cloud also allows for a sort of globalisation as cultural assemblage and highlight that the commons of the cloud (or the multitude) is now the new hunting ground for contemporary capitalism (Coley & Lockwood, 2012: p.9).

The production of informatics is also linked to the development of modelling mechanisms that are used within systems and software development for flagging up and then adjusting behaviour in order to manage risk. Brian Holmes notes that the *model* is therefore a system of effective signs, a cartography conceived not as a mere representation of an existing or ideal human environment but rather as an active, diagrammatic force or a process (Holmes, 2009). It is also important to note that Deleuze labelled Bentham's panopticon not as a physical structure but as a *model* or a process. Castells also states that as a result of the integration of the virtual and the physical, the global city becomes a process as much as a place (Lyon, 2002).

In this context, Paul Virilio notes that surveillance data are increasingly used for modelling and anticipating situations that have not yet arisen (Lyon, 2002. p.66); the dream of pre-emption that was highlighted in the film *Minority Report* then becomes an ongoing goal. David Lyon states that Bentham's panopticon gives way to a sort of electronic super-panopticon, a real time virtual simulator – the prison architecture becomes an automated machine (Lyon, 2002: p.108).

Within the initial practical works, I will consider the possibilities of producing my own types of fictional machine that are able to subvert and escape these totalising forms of control enabled by the electronic noosphere. Within the production of the works, I also want to develop methods that over-identify with these panspectric technologies and their methodologies for 'intercepting the future', taking the levels of control and prediction to absurd and self-destructive levels and making my own proposals for future control scenarios, future escape routes and future realignments of relation between human, environment and machine.

(ii) Affective transmission machines

The technology and transmission of affect is important within the coding of bodies and the operations of the electronic noosphere. As Guattari states, 'Integrated World Capital' via its affective mechanisms is able to capture the unconscious and overcode it at molecular level because its affects are so intense. He thought of ecology as a potential force for subversion and re-wiring these affects (Guattari, 1981).

Melissa Gregg states that, 'Affects are intensities, a reorganisation of affective forces - which "involves a molecular rupture of the system of signs, of given ranges of expression of the already classified"' (Gregg, 2010: p.139).

Lazzarato notes that the machinic register of the semiotic production of capital operates on the basis of a-signifying semiotic machines that tune in directly to the body (to its affects, its desires, its emotions and perceptions) by means of signs. The symbolic semiotics of the body then, instead of being centred on language, are actively routed through the industrial, machinic, non-human production of images, sounds, words, intensities, movements and rhythms. He observes how we can all function like the input/output elements in semiotic machines, like simple relays of television or the internet that facilitate or block the transmission of information, communication or affects (Lazzarato, 2006).

Lazzarato sees the development of screen and informatics technologies as the development of particular types of modulation machine which modulate waveforms and data to produce an ever expanding series of images which have an overcoding effect on the body (Lazzarato, 2006). In today's conditions, the transmission devices of capital that range from screens to corporate structures utilise these 'affects' to seize control over life using intensities, heat, light and repetitions that harness these users and their unconscious, automated responses at a molecular level.

Brian Massumi defines affect in terms of bodily responses, autonomous responses which are in excess of conscious states of perception and examines how this excess represents a potential for escape (Gregg, 2010). This excess of affect then has potential as an approach for escaping and subverting the operations of the electronic noosphere.

In the production of the practical works, I want to consider how they can make proposals that enhance affect mechanisms as a way of destabilising them. In addition, I want to examine how affective techniques can be appropriated in the video works so that they perform on viewers, drawing them in and repelling them via the exposure of their affective mechanisms.

(iii) The earth as a computational planet

It is important to note that the assemblage of the electronic noosphere also allows for the monitoring and manipulation of the entire earth so that it becomes computational. Thus, we might expand Brian Holmes's conception of the electronic noosphere in terms of control, not just of populations but also of the ecological and the non-human.

Marshall McLuhan argues that the earth became programmable the moment that the Sputnik satellite went into orbit in 1957 (Gabrys, 2016). The satellite enables the monitoring of the environment to be enabled via the transmission of radio signals, allowing for a totalising form of control over the planet and its populous. As Jennifer Gabrys notes,

‘The Eastman Kodak Company launched an advert in the New York Times that promoted the environmental benefits of satellite systems and detailed the endless possibilities of aerial monitoring to aid in the management of the environment, suggesting that this could not only reveal undiscovered dynamics within nature but also extend to identifying resources for extraction and monitoring land use and living patterns’ (2016: p.2).

Gabrys states that as a result, our understanding of environmental systems is now bound with communication technologies that ‘sense earthly processes’ (2016: p.3). This suggests that the sensing and transmission devices of the electronic noosphere are deeply embedded above and below the surface of the earth and that they are focussed on the sensing and monitoring of both the human and the non-human.

This process becomes enhanced further with the development of ubiquitous technologies and allows them to move beyond the standard black box computing machine to become much more invisible and integrated within the earth's planetary skin. Gabrys argues that as a result, the understanding and practice of ecology has been directly influenced by information theory and cybernetics; thus, we see the earth itself through a computational lens enabled by a myriad of networked digital technologies (2016: p.15).

Gabrys also notes that because of the growing functionality of the computational and sensing planet, a number of new machine voices have emerged:

‘The multiple views or senses that environmental sensors concretize might be approached through the machinic polyphony described by Félix Guattari in his discussion of ‘the age of planetary computerization’. At the time of his writing, Guattari suggested there was an emerging age characterized by a “polyphony of machine voices along with human voices, with databanks, artificial intelligence, etc” (2016: p.16).

In this context, I am interested in exploring how forms of machine voice and new kinds of subversive machine might be harnessed via the fictional methods used in the practice as a tool for the construction and voicing of video works. In this sense, I wish to utilise speculative fiction to develop subversive ‘video machine’ personas with particular voices and characteristics that outline proposals for escaping and subverting the operations of the electronic noosphere. Furthermore, I want to explore how some of these machines might begin to formulate new perspectives on the relation between the earth and the technological.

(iv) Writing/re-writing machines

The operations of the electronic noosphere or the ‘computational planet’ can also be described as the operations of a series of computational writing machines in which computer code and new content are constantly re-written and modulated. This is the space where fiction and reality become blurred and increasingly difficult to decipher, where machine and human writing operations are difficult to distinguish.

Nigel Thrift describes how the ‘real’ as we know it is the result of multiple simultaneous automated ‘writing machines’ using a continuous looping process of algorithms. Thrift notes, ‘Increasingly, spaces like cities – where most software is gathered and has its effects – are being run by mechanical writing, are being beckoned into existence by code’ (2005, loc.2879).

As these software and writing machines become increasingly vast and more complex, they can be linked together in new ways which allow for more precise analysis of activity and data to create better predictions and clearer pictures of human and non-human activity. These machines are also reactive to context, allowing them to deliver more appropriate and personal responses, and this is developing further with improvements in artificial intelligence and machine learning. Bratton uses his concept of ‘The Stack’ as a way of seeing the vast machinic and totalising assemblage surrounding and embedded in the earth:

'It lets us see that all of these different machines are parts of a greater machine, and perhaps the diagrammatic image of a totality that such a perspective provides would, as theories of totality have before, make the composition of alternatives—including new sovereignties and new forms of governance—both more legible and more effective.' (Bratton, 2015, loc.339)

Summary

In light of this initial research, Brian Holmes's concept of the electronic noosphere becomes less of a work of SF and more of an actual condition powered by a complex assemblage of machines within machines.

How might I then produce art works that intervene within these conditions to both expose the mechanisms of control at work and also re-write, appropriate and subvert their content and their operational methods? How might I produce art works that are framed themselves as types of machine personas and emerge from the informatics, content, affective transmissions and fictions of the electronic noosphere? How might these art works embody these conditions and harness affect in their own construction and delivery? Finally, how might the fictional strategy of over-identification be employed here to construct works that make subversive proposals for improving the operations of the electronic noosphere as a way of exposing and destabilising its mechanisms?

In reference to this, Guattari highlights the requirement for re-wiring information technologies for more subversive uses:

'a reorganization of the mass-media power that crushes contemporary subjectivity and a shift toward a postmedia era, consisting in the individual and collective appropriation and interactive use of the machines of information, communication, intelligence, art and culture' (Guattari, 1990).

In addition, Bratton emphasises the need for more imaginative types of machine: 'Our shared design project will require both different relationships to machines (carbon-based machines and otherwise) and a more promiscuous figurative imagination' (Bratton, 2015, loc.283).

In this sense, how can I devise my own fictional modulation machines that define imaginative new modes of operation? Machines that appropriate the modulation, content and affective strategies used within contemporary machine transmission networks and re-write them. Machines that aim for destabilisation rather than stabilisation, machines that are subversive and performative, new sorts of ‘inventive machine’ that are powered by my particular methods of fiction and appropriation. In connection with this, Gerald Raunig discusses Deleuze and Guattari’s notion of the ‘War Machine’ and highlights that one of the key weapons of such a machine is inventiveness:

‘The object of the war machine, as Deleuze and Guattari explain is not simply war but also “the drawing of a creative line of flight, the composition of a smooth space and of the movement of people in that space. The weapons of this machine are nomadic lines of flight and invention”’ (Raunig, 2008: p.57).

Part 2: Development of the initial works

The practice-based strategies began with the construction of ‘The Researchers’, who are themselves engaged within the initial research process in terms of unravelling the assemblage and operations of the electronic noosphere and then defining potential speculative escape routes and modes of subversion. ‘The Researchers’ are intentionally opaque, borrowed from a scientific project methodology and positioned as the origin of the practice-based art strategies and works produced. Their voice is that of an anonymous group emerging from the mesh of the electronic noosphere and its intertwining flows. The development of ‘The Researchers’ builds on the use of alter ego within my practice and allows for the project to be framed via an overarching fictional device, taking on the characters and the voice of the collective.

This framing mechanism allows for the fictional tools of the practice to connect with a more scientific approach, utilising personas to create a manifesto for ‘The Researchers’, who become a ‘voice’ in the initial fictional writing as well as describing the fictional research space itself.

The research space has been constructed, which houses all of the ‘research activities’. It is positioned underground as far away from the electronic noosphere as possible, deep down, below the surface. This strategy situates the basis of the practice in a fictional location

embedded within the earth itself and its deep time, as far away from Brian Holmes's vision of the virtual control mechanisms of the electronic noosphere as possible.

In this way, the practice initiates new approaches to fictional documentaries and re-inscriptions, expanding on Boris Groys's work around the type of art that can be made within the conditions of biopolitics and the artificial constructions of life (Groys, 2004). Formulating a body of works that appropriate the mechanisms and content from these artificial constructions and then utilising fiction to produce new subversive transmission machines and modulations.

Manifesto:

'I, becomes they, becomes we, ourself, becomes 'ourselves', becomes an anonymous component without name or form.

We are the 'researchers'.

We are an auto-poetic algorithm, a modulator / demodulator / re-modulator, a re-writing machine; we are a process as much as a thing.

We constantly change voice by algorithmic application and vocoded modulation.

We are a 'flexible personality'.

We develop ideas and apply them to specific sites, objects, species, materials, hybrids, mechanisms or situations. We like to test things out' (Tweed, 2012a).

The manifesto attempts to shape the tone of the work and outlines the intentions of 'The Researchers'. This also begins to respond to the questions outlined in the previous sections, setting up a strategy for the operations of the practice and the use of multiple personas within the work.

It outlines a strategy for producing video transmissions constructed from appropriated material which intervenes within the conditions of the electronic noosphere via its re-writing machines. It also outlines a plan for producing art works that allow me as an artist to escape from the control conditions of the electronic noosphere and become the voice of these

machines, taking on a ‘flexible personality’ and becoming ‘an anonymous component without name or form’.

As part of the manifesto I situated the fictive machines within a ‘virtual’ subterranean building. The function of this building was a way of housing the research project inside a fictional institution with a flexible structure. The research site was an expansion of the ‘The Researchers’ personality and a way of framing their initial set of activities.

This then allows for a conceptual construct of different spaces where the research occurs and helps to develop the focus of the video machines by outlining the different characteristics of each.

This research space also functions as a deconstruction and re-assembly site where the technologies of the electronic noosphere are researched, deconstructed and re-written via the ‘operations’ of my art practice.

Machine spaces and video works

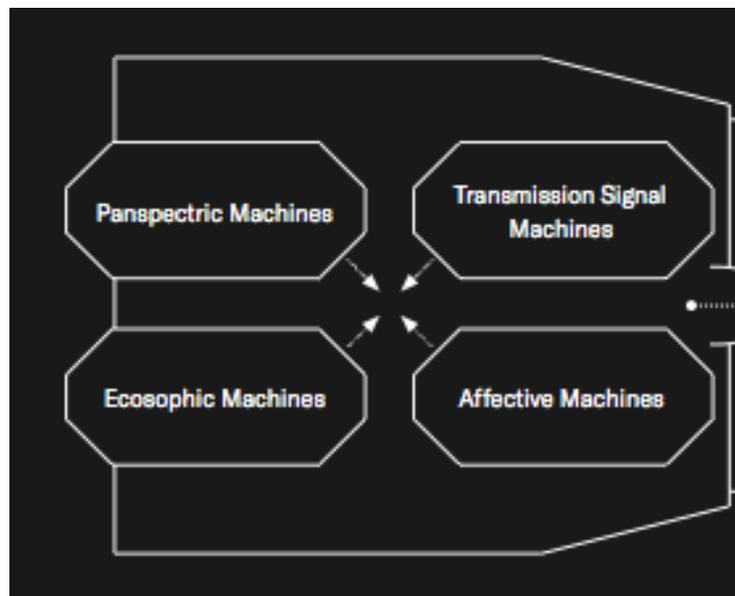


Figure 3: *The Signal and the Rock* map by Charlie Tweed (2017).

In the guise of ‘The Researchers’, I have devised a framework for a set of fictional and subversive machines which each act upon a potential approach that was defined within the initial research where I interrogated the operations of the electronic noosphere.

These machines have been mapped out using a method that appropriates the style of a network or software process diagram, and they frame the focus of the video works. This includes the ecosophic machines, transmission machines, affective machines and panspectric machines (see the following sections for details of each machine type). This use of conceptual machines to frame the works also makes reference to the idea of 'inventiveness' that was previously highlighted in reference to Deleuze and Guattari's definition of their 'War Machines' as a specific mode of agency and action (Deleuze & Guattari, 1980). Their operations also act on Bratton's writing around the need for the definition of different relationships to machines and a more 'promiscuous figurative imagination' (Bratton, 2015, loc.283).

Scripts have been developed that are themselves assemblages of words that have been re-appropriated and re-written to formulate a series of proposed actions which operate as a set of speculative design fictions which activate the strategies and respond to the questions defined in part 1 of the research. The visual material included within each video is also appropriated, then re-filmed, effected and manipulated in order for this material to formulate its own assemblage from a wide variety of sources, re-contextualising them into proposals for escape and subversion. The method of re-filming was used to act on the aims of harnessing poor images in the work, and the re-filming of these images from computer screens and application of effects software also works to unify the images and blur their origins and temporality.

It is important to note that Simon O'Sullivan's concept of 'fictioning' has come into play here, using apparently 'real' appropriated video footage and employing fiction to reconfigure it within the context of each video machine proposal. As a result, each of the works explores new ways of creating performative documentary fictions that transmit their proposals to the viewer in a highly performative and personal way, often addressing the viewers and their location in the voice over.

Each of the video works produced makes use of digital synthesised voices and vocoding software to create voices that emerge from a number of algorithmic effects and processes, making reference to the voice of the sentient machine which has often been employed in SF films. In this context, the aim is to also blur the origins of the work's authors, to make my own voice invisible within the works and to remove the focus of the human from the transmission. Each video work and machine type makes use of a different type of voice, each of these an unreliable narrator which functions to draw the audience in and to generate an unstable

condition of transmission. The use of visual material, sound effects and editing methods is focussed on harnessing affective techniques within the works so that they themselves can perform on the audience and draw them in via authoritative voices and immersive uses of music and sound effects.

Machine Type 1 - Panspectric video machines

Utilising the approach of over-identification, the panspectirc machine's focus is to develop proposals for elevated forms of panspectric control. In this context, I want these machines to emerge from the complex assemblage of sensing technologies, cloud technologies and data capture and to formulate extreme proposals for improving and enhancing the clarity of machine-based observation and the totality of machine-based domination over human and environment. This method proposes forms of control using intelligent machines as their mode of enhancement and a merging of physical and virtual space.

Examples of video works:

The Tricorn (2013): The video proposes an extremely enhanced future vision of panspectrocism. A superimposed and sentient machine arrives in the harbour of Gun Wharf, Portsmouth and appears to hover above the water.



Figure 4: *The Tricorn* film still by Charlie Tweed 2013.

The voiceover begins, 'I am the Tricorn, I am the interface, I can spin faster and slower, I am a modelling device' (*The Tricorn*).

In the video, a 3-D computer-generated imagery (CGI) model of the old Tricorn Centre which was demolished in Portsmouth in 2004 is used to represent the sentient machine that is apparently superimposing itself onto the physical space. This ghostly version of a long-forgotten computer model of the demolished building then proceeds to outline a strategy for assembling all available technologies and consuming all other things. In this way, the Tricorn Centre makes a proposal for its own reactivation, reminding the human audience of its past position and proposing its own panspectric mechanism. The work critiques the financial mechanisms that led to the removal of the building and makes a subversive proposal for the future relations between human and machine.

The new Tricorn appears to be a piece of software and a bank of hybrid computing devices and other technologies, which attracts other technologies and components to join it in inciting the development of a vast, ever-expanding, panspectric mechanism.

The strategy employed in this work is one of over-identifying with the idea of the panspectron taken to extremes so that everything becomes consumed by the fictional machine in its

totalising actions. In this sense, everything becomes consumed by the totalising mechanics and assemblages of capital and its electronic noosphere.

The video work makes use of a machine-like voice that has been generated using text-to-speech software, and this allows for the persona of the narrator to be completely anonymous. Furthermore, I employed vocoding software to reprocess the voice a number of times so that it has developed a choral quality. This allowed me to embody the 'character' of the Tricorn CGI animation within the style of narration.

The work utilises documentary video material which has been appropriated from its original context, re-filmed and re-contextualised. In this way, I have begun to test out methods of re-appropriation and also to address the aim of looking at the possibilities of the poor image as a form of agency and escape. The old CGI rendering of the building allows for the reactivation of an animation which only existed in a poor-quality format on YouTube; its creator had long ago lost all of the source files, and for me, this pixelated and re-filmed piece of material allows for the agency of the CGI render itself to be re-activated. The work also makes reference to forgotten technologies and forms of e-waste, as the voice over says,

'I am the forgotten voice of your technologies, of their waste materials and forgotten concepts, I stand up for these things. I am drawing in your old devices using magnetism to get them to join me' (*The Tricorn*).

Thus, while having a subversive and satirical approach within its proposal for total consumption and control of the human and the ecological, the work also references a sort of recycling approach in its plans to build all forms of abandoned and decaying technologies into its assemblages:

'We are pulling them in, from your waste dumps, your server farms and your burning pyres' (*The Tricorn*).

This idea of 'recycling' and its related eco-connnotations is then taken further in the use of appropriated text and visual material.

The final part of the video outlines its totalising plans for creating a vast machine assemblage driven by new forms of nanotechnology that will be powered by organic materials. It also highlights how it will consume all things and turn them into 'purely waste materials', producing a sort of 'sludge' as a result. In this way, the machine takes the notion

of a programmable and computational planet to an extreme endpoint. This sludging of all things via enhanced nanotechnology makes reference to Dr. K. Eric Drexler's book *Engines of Creation* (1986), which celebrates the growing capabilities of nanotechnology and prepares the reader for the 'assembler breakthrough', a moment when 'self-replicating machines the size of molecules would become the driving engine of contemporary technology' (Drexler, 1986). The emittance of grey sludge as the result of the consumption of all things on the earth represents the endpoint of a deep acceleration of the operations of capital and, in this particular context, the operations of the panspectric electronic noosphere.

Furthermore, I have employed a series of video effects to distort and degrade the video images so that they themselves become an expression of the machine's proposed actions. As a result of this approach, the video tests a subversive use of over-identification with its extreme and accelerated vision of the all-consuming panspectric mechanism. This work is quite effective at making the viewer aware of the forgotten cultural history of the building while also performing on the audience a proposal for their complete subsumption by machines. In this respect, it opens up a dialogue around the human use of technology as a mechanism of control and considers the limits and futures of the notion of a computational planet and its relation to generating waste materials.

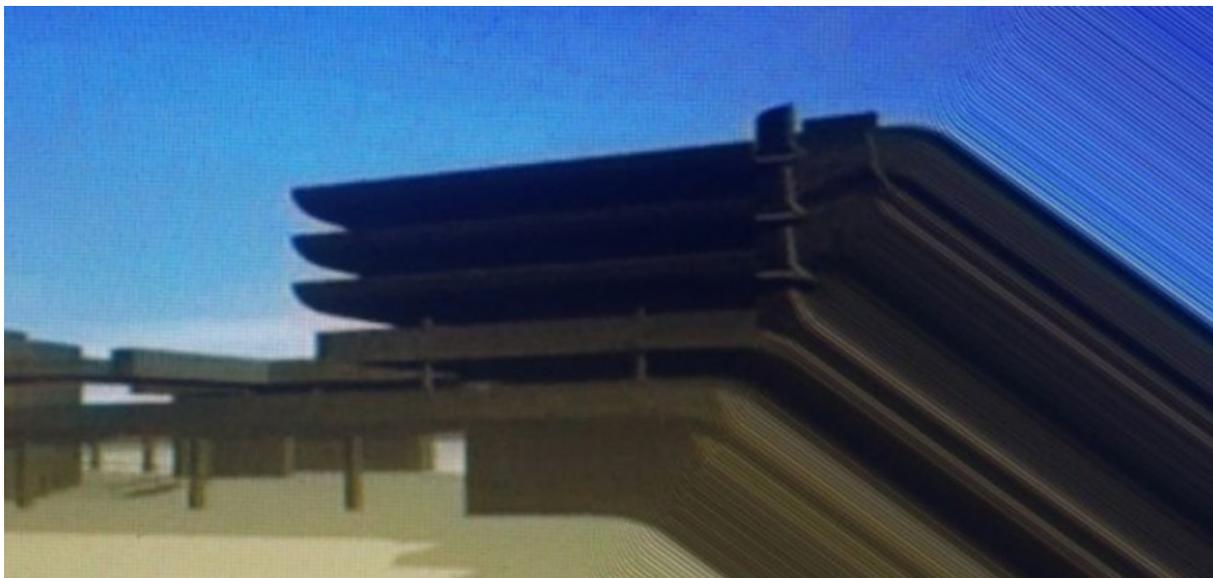


Figure 5: *The Tricorn* film still by Charlie Tweed (2013).

Machine Type 2 - Transmission signal video machines

The transmission signal machines focus on identifying methods of critique that deal specifically with the modulation and demodulation of the video image and its relation to new forms of affective control. These machines address Lazzarato's work on the development of particular types of modulation machine which modulate waveforms and data to produce an ever-expanding series of images which have an overcoding effect on the body (Lazzarato, 2006).

They also respond to Sean Cubitt's work on digital inputs and outputs and their relation to forms of standardisation away from normal human vision. A process of standardisation is key within the transmission of the moving image; codecs are used for compression and decompression, using algorithms employed to compress signals for transport and to unpack them on arrival. As a result, codecs 'affect at a deep level contemporary sensations of movement, colour, light and time' (Cubitt, 2014, p.80). Cubitt notes that vector prediction is used in compression, and pixels are assembled into blocks, macroblocks, units of 4x4 or 16x16 pixels that are treated as average hue, saturation and brightness values (Cubitt, 2014, pp.32-33).

Cubitt observes that the codec then saves file size by guessing the similarities between frames by using vector prediction algorithms and normative and averaging techniques. The way a codec 'pulls apart and reorganizes moving images goes further than simply transporting images – it creates a relational ordering that articulates realities together that previously lay further apart' (Cubitt, 2014, pp.32-33). Thus, Cubitt says that they are compressed via the 'statistical norm and the sociological expression of the idea of the norm or the idea of the market' (Cubitt, 2014, pp.32-33). So, at a micro-level, these technologies take the shape of the information-economic structures and infrastructures of capital that shape society at the macrolevel.

In this case, the fictional proposals that have been generated look towards disturbing transmission mechanisms, their source code and their algorithms. An initial example is 'Machine Type 1', which proposes to affect network transmissions and the rules of protocol, modulation and demodulation devices and algorithms that encode and decode data. It also looks at how to expose the realities of video transmission, abstract waves and code, movements, flows, intensities, vibrations and rhythms and how these can be harnessed, exposed and mutated into new shapes.

Example of video works:



Figure 6: *Codec* film still by Charlie Tweed (2011).

Codec (2011): The idea behind the work was to think about how the algorithm of the codec has a normalising effect on the video image. It simplifies the image, merging similar colours and frames to reduce file size; it artificialises the image via the encoding and decoding process. *Codec* proposes the development of an algorithm for a subversive sentient codec that is focussed purely on the mutilation of data, so that video images are constantly transcoded into unreadable shapes and glitches, all becoming disfigured.



Figure 7: *Codec* film still by Charlie Tweed (2011).

The visual material in this video is completely abstracted and sourced from data-moshing software, once again considering the possibilities of the depleted poor image. For me, this video is a useful starting point for the development of transmission signal machines and how they might be employed as a critical tool to expose the realities of the digital video image as a series of waves and modulations. It was also useful in contributing to my thinking on the 'voice' behind the project and how defining the voice of an algorithm or a piece of computer software might be pertinent. Furthermore, it took the aim of exploring the potential of the poor image further by working to deplete and break up the image, actively decreasing its quality.

Machine Type 3 - Ecosophic video machines

The functionality of the 'ecosophic video machines' emerges from Guattari's ideas on geophilosophy, in which he notes that integrated world capital captures the unconscious and over-codes it at a molecular level because its affects are so intense (Guattari, 1981). He notes that ecology and ecosophy are a potentially radical force and examines how technology and ecology can be re-wired to visualise a new relationship. As Holmes says, 'What Guattari proposes is not a refusal of technology or a retreat from machinic complexity but a shift from the binary logics of information theory to a more heterogeneous matrix of interactions' (2009).

The works created in this area also make proposals for experimental assemblages that fuse ideas of deep ecology, Gaia theory and synthetic biology with technical components to visualise this new relationship between technology and ecology and realign relationships between human and non-human.

Example of video:



Figure 8: *Grain* film still by Charlie Tweed (2011).

Grain (2011): This work focuses on the Isle of Grain in Kent and outlines an extreme realignment of relations between human and non-human actors on the island and a new ecosophic relation with the technological and the ecological. In a similar way to *The Tricorn*, the work acts as a subversive intervention into the conditions of a specific place, re-contextualising existing documentary material in its proposal, utilising a fictioning approach.

The work makes direct reference to political plans for removing both the human population and the non-human population, including 350,000 birds, to make way for a new airport. The machine persona that voices the work utilises appropriated images that have been shot on the Isle of Grain and re-contextualises them to formulate the proposal for a different sort of future for the island.

I was interested in *Grain*, because historically, it has been treated as a hidden place that is manipulated by the mechanics of capital as a site for resources and infrastructure for London. This includes housing the BritNed power cable which brings power from Europe, an oil refinery, one of the UK's largest container ports and natural gas facilities.



Figure 9: *Grain* film still by Charlie Tweed (2011).

The voice of the non-human narrator was developed by making use of text-to-speech software and vocoders, once again formulating a voice that emerges from a series of processes and has a spectral quality.

The film outlines a new model for Grain by looking at the potential of assimilating its technologies, objects, containers, birds and human population into new assemblages and hybrids. It references theoretical material that considers the value of hybrid future relations between the human and non-human, and it acts upon this material in the proposal outlined for Grain.

The narrator references the history of Grain and also its current conditions, examining particular sites such as the container port, the natural gas facility and the historic Grain Tower. It then proposes to appropriate all of these sites in its future plans for activating the non-human actors in Grain and providing them with agency.

'For us, we wonder how many effects it will take to capture and rewire it . . . to remodel and mutate it into a new shape. The genealogy of Grain must be mutated so that it can take an alternate path' (*Grain*).

The film also employs a range of video effects to directly distort the video material, and in this way, it acts to visualise the actions being outlined by the voiceover and to integrate the visual material into the processes of the machine persona so that the changes to Grain appear to be orchestrated in real time as the proposal is outlined. This work also expands on the possibilities of the 'poor image' and builds on this by employing a range of video effects that the narrator references and applies to the island in order to 'mutate it' and 'form it into a new shape'. As a result, the aim is to create a video work that performs its plans on the audience, so that the video materialises as the work of a subversive and sentient machine, moving between physical and digital space and interfering within the present conditions of the island.



Figure 10: *Grain* film still by Charlie Tweed (2011).

Machine Type 4: Affective video machines

The 'affective video machines' make proposals for ways of elevating affect to consider how excessive forms of affect might become a valuable tool to both expose and subvert the affective mechanisms of the electronic noosphere. In this context, acting on the writing of Brian Massumi, where he identifies a strategy for using the excesses of affect as a way of destabilising affective mechanisms. He states, 'There is always an excess of affective intensity, each body also carries affective potential' (Massumi, 2002: p.217).

The video works produced focus on the use of rhythms, repetitions and intensities and examine the potential of the excess of affect and unconscious autonomous responses in the way that they perform on the viewer.

Example of video works:



Figure 11: *Archimeters* film still by Charlie Tweed (2012b).

Archimeters (2012b): This video proposes the implementation of a self-regulating 'affective machine' in the unpopulated ghost city of Ordos in China. In a similar way to *The Tricorn* and *Grain*, I activated some of the theoretical approaches defined in the first stage of the

research and applied these to a developed proposal for a specific site. Ordos was of interest to me because it is an example of the excesses of capital, a place that is unpopulated and unseen.

In this work, I also built upon the use of re-appropriation as a method, and I appropriated text from software-testing handbooks, adjusted this text and reframed it to focus on proposing the development of an 'affective machine' that elevates the levels of affect to extreme and excessive proportions. This affective machine was sited within the Ordos museum:

'The site will become the test site; the Ordos museum will be the centre' (*Archimeters*, 2012b).

Once again, I utilised 'poor images' in the form of appropriated, re-filmed and affected video footage; in this instance, it was mainly taken from tourism videos that had been produced about the new city. I also attempted to create a work that performs its proposal onto the audience as the persona of a future machine operating between digital and physical space and implementing video effects onto the physical environment.

In this context the video also addresses the viewer directly at the start, implicating them within its narrative:

'Ordos is located 4,873.86 miles east from where you are sitting' (*Archimeters*, 2012b).

In this work, the machine voice used for the narrator outlines its plans seriously and calmly, showing examples of its actions. The voice is authoritative, and the relation between the narrator's voice, the moving images and the pace of the edit allow for the work itself to orchestrate an affective performance on the viewer.

Thus, the voice persuades them of its approach and its authenticity, transmitting its proposal for an affective mechanism both in the film's script and use of audio visual material and also in the film's vocal expression. The voice here acts as an unreliable narrator in a similar way to the narrator used by artist Lindsay Seers, appearing to calmly outline a serious plan which becomes increasingly unstable as the narrative progresses and the video image becomes affected and disfigured.



Figure 12: *Archimeters* film still by Charlie Tweed (2012).

Video editing and post-production software tools also form part of the visual material. In this way, the work attempts to expose its mechanisms of action and imply that these digital software tools are being used to affect actual physical spaces. As the narrator notes, they will construct a machine:

'A machine, that will not be afraid to outsource' (*Archimeters*).

I also employed superimposed text in this work, which allowed for the exposure of some of the video effects being used within the video's construction. The aim here was to first expose the mechanisms behind its construction in a self-reflexive way while also disturbing the viewing experience, moving the experience away from a standard HD viewing experience in which edit and effects methods and also software tools start to appear on screen, clips are sped up, slowed down and distorted, re-filmed and pixelated, and the unseen mechanisms of production are revealed. In this way, the experience of viewing the work was intended to feel unstable and jarring and alert the viewer to both its proposal for Ordos but also to the video assemblage itself and its own artificiality.

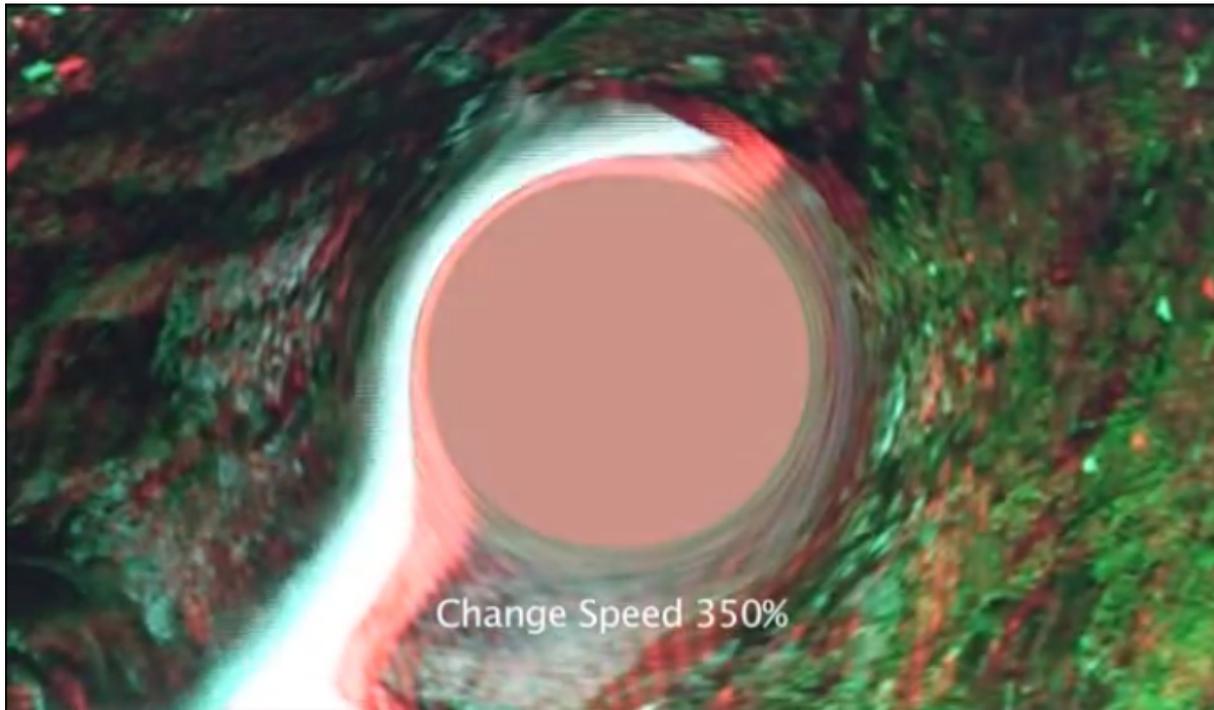


Figure 13: *Archimeters* film still by Charlie Tweed (2012).

In the final part of the video, it says, 'The kernel of the tool suite will be an abstract interpreter, forming the basis for the integration of modelling and validation, a new invisible sphere that flows over all' (*Archimeters*).

This implies that what is being proposed here is a sort of software tool suite that can act on the test site of Ordos and operate affective control via an 'invisible sphere', which directly references the electronic noosphere and its affective operations. It also suggests that the voice of the narrator and the video itself are the output of a sentient software, a non-human machine attempting to push levels of affect to intense levels. In this sense, this work also makes use of the device of over-identification in the way the proposal outlines improvements to the electronic noosphere and its elevation of affective operations.

How these works have responded to the aims and objectives:

One key aim was to utilise the fictional strategies within my practice to escape and subvert the operations of the electronic noosphere. The development of 'The Researchers', their manifesto, an underground research site and video machine personas has allowed me to act on this initial aim and also for the project to be framed via an over-arching fictional device. These strategies then have allowed me to take on an authorial role as an artist, flexibly becoming a more technological researcher in order to deconstruct the electronic noosphere

and its conditions, developing the fiction further to then formulate the personas of the video machines and their sites of operation. In this way, the structure of the project simulates that of a subversive engineering or IT project where mapping tools are used to plot out a process plan, and a set of machines are designed and given particular functionality.

Another aim was to develop the use of re-appropriation in the works, and this has been achieved by appropriating a range of material (visual and text based) in the production of the works, often utilising source material taken from software manuals and technology companies. The flexible personas and changing voices in the work and the elevated use of remix techniques are also appropriations from the conditions of 'the electronic noosphere' and its particular characteristics of operation. Furthermore, the moving image material itself is entirely appropriated, re-filmed and affected, intentionally depleted, developing further on Steyerl's concept of the 'poor image'.

It was important in the construction of the initial videos that the various normalising conditions, inherent in the digital video image and its modes of transmission and production, were interrogated in a self-reflexive way. This is because the video image itself is an object of capital, a mechanism of affect, and a data packet within the taxonomy of the cloud, transmitted under a strict set of standardised formats and compression codecs. This approach has been realised in works such as *Codec*, in which the proposal focuses on escaping these transmission standards and actively destroying and affecting the image. This approach has been extended in other works such as *Archimeters*, in which the video editing software, post-production tools and the effects being used to manipulate the image are highlighted for the viewer.

Another key method that has emerged in the video works is one of embodying both the theoretical material and the 'personality' of the particular machine type when constructing the script and editing the video footage. This has allowed for a more performative editing process, in which an initial script was adjusted in response to the appropriated visual material that was sourced, using improvised additions in response to this material and the 'persona' of the narrator/video machine.

All of these strategies have allowed me to develop a series of anonymous and subversive machine personas that appropriate and embody the mechanisms and content of the electronic noosphere and then make a series of video transmissions. The resulting works operate as subversive documentary fictions that insert themselves via a fictioning strategy within the conditions of 'the real'.

The concept of the 'transmission' is an important theme that has emerged from these works, considering them as performative transmissions that engage the viewer by speaking to them personally, using affective techniques to draw them in and distancing techniques to draw them out.

Finally, the use of the fictional researchers, their research site and manifesto has allowed me to begin framing an approach to writing about the video works produced from the perspective of their fictional authors. As a result, I have begun to think of an expanded version of the manifesto, which operates as a 'notebook' and functions as a place for interpreting the video works and the strategies employed. In this way, beginning to frame a web of layered fictional narratives and mythologies around the practice of 'The Researchers', and appropriating the kinds of approaches that Mark Fisher highlights in the mesh of fictions that are created around brands and hyper-commodities. This use of the fictional researchers and their machines also responds to Boris Groys's argument that artists working within biopolitical and virtualised control conditions should make use of forms of re-inscription and fictional documentation and propose, in O'Sullivan's terms, 'an imaginative transformation of the world through fiction' (O'Sullivan, 2015). In this way, the works explore the possibilities of a more inventive approach to machines that is enabled by the fictional methods used.

Further Questions:

From the initial research the following additional questions have been identified:

How can the research space be extended to consider the material and network perspectives of the electronic noosphere?

How can the idea of the parallel subversive transmission be harnessed as an art strategy for intervening within the content and operations of the electronic noosphere?

How can the notebook be developed in a useful way to discuss the practical works produced, shed light on their fictional authors and extend the layering of the fictional devices at play within the practice?

Conclusion

In this second chapter, I have examined the electronic noosphere and its control mechanisms from a machine perspective. I have highlighted how it operates to realise new forms of virtualised and biopolitical control on its users via a series of computational writing machines that are powered by informatics, affect and new modes of panspectrocinism. I have also emphasised how this results in the earth becoming computational, a condition in which sensors, signals and machine assemblages control and manage its environments and populations.

I have considered the initial development of practice-based works using my fictional methods to construct the group of 'The Researchers', their operational manifesto and a set of subversive video machine transmissions. I have then interrogated this initial set of works and the methods used to produce them, and this has resulted in the emergence of further questions. In the following chapter, I extend the operations of 'The Researchers' to consider the electronic noosphere from a material and network perspective, I build upon the learnings from the initial works and also examine the additional questions that have been identified.

Chapter 3: The electronic noosphere: network and material perspectives

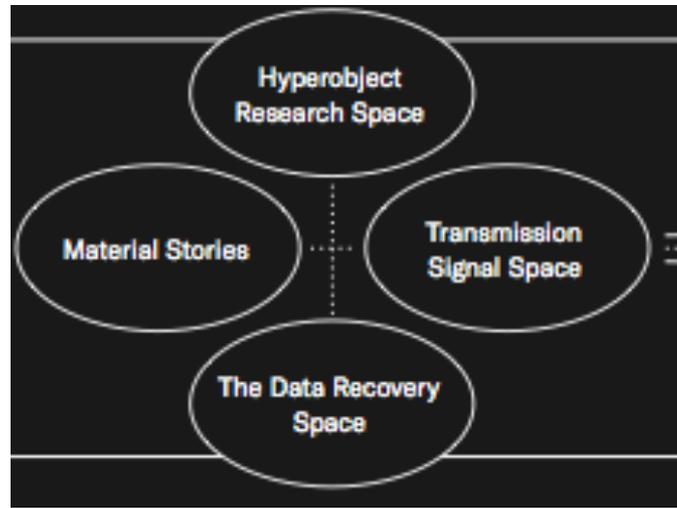


Figure 14: *The Signal and the Rock* map by Charlie Tweed (2012).

Introduction:

This chapter examines the development of a second body of work that responds to research around the material and network perspective of the electronic noosphere. This research considers how the earth's matter is incorporated within a flow of materials that are used to build the machines and construct networks and infrastructure. In this sense, the chapter moves its focus inside the earth and considers the material perspectives of the noosphere, relating also to Jon K Shaw's notion of the machine at the centre of the earth where the associated fictions are transmitted.

'From this unreal centre the machines can map our photos to map our memories and images onto the material world, can connect our satellites to coordinate and connect us across the planet align. Whenever we perform one of these actions, we pass through this fiction. We are transported home via the fictional island; the missiles our governments launch in our names track abstract lines of their trajectories through it. From there, where the world begins' (Shaw & Reeves-Evison, 2017.p.7).

The chapter begins by reviewing the material context of digital technologies from a theoretical perspective and thinking about the relation of the electronic noosphere to complex assemblages of infrastructure embedded within the earth and complex networks of humans and non-humans involved in the production, operation and disposal of digital

networked technologies that allow the electronic noosphere to function. I also consider the potential of the non-human actant within these networks, referencing the work of Bruno Latour and Jane Bennett.

I then go on to outline the next phase of practical works that have emerged from this research, and I look towards an initial approach in which 'The Researchers' have been employed to map out the network assemblage of the Sony Xperia-Z smartphone. Under the guise of 'The Researchers', I have produced a new performative lecture that has emerged from the mapping process and attempts to expose this network assemblage and employ fiction to propose a new relation between machines and the earth. Finally, I examine the development of an initial film work that was intended to develop the lecture further, and I reflect on the way that this work was unsuccessful and instead has led me towards the production of a transmission of voices that emerge from the layers of the earth and the research space itself.

The electronic noosphere: A network and material perspective

In this section, I examine the electronic noosphere from a network and material perspective. I consider how the computational planet is powered by the energy sources below the surface of the earth and the complex infrastructure embedded within and above the earth. I scrutinise how this allows us to begin to visualise a close integration between informatic technologies and the earth, and I look at the materialities of digital networked technologies. I highlight how the finite raw material and energy resources of the earth power the operations of the computational planet. I reflect here on how the notion of control that is enabled by the electronic noosphere expands beyond the human and flows into complex network assemblages of human and non-human.

It is useful to return to Holmes here:

'A desiring mind seeks infinity and finds it today in a proliferation of signals: electromagnetic waves beaming down from the skies, fiber-optic cables emerging from the seas, copper wires woven across the continents. The earthly envelope of land, air and ocean – the realm of organic life, or biosphere – is doubled by a second skin of electronically mediated thought: the noosphere. It's a vast, pulsating machine: a coded universe grown complex beyond our grasp, yet connected at every pulse to the microscopic mesh of nerve cells in our flesh.' (2017)

Holmes suggests that the electronic noosphere is itself a vast networked machine that has signal qualities, writing and coding qualities and also physical material qualities, as its infrastructures are literally embedded in the earth itself, its rock and strata, and all of these components of its assemblage connect with the human at a micro level. This 'second skin' of the electronic noosphere is therefore not a simplistic set of virtual signals but instead a much more complex and physical machine assemblage.

Bratton also discusses the idea of a vast and totalising form of planetary scale computation and suggests the complex layering of technologies in relation to the earth:

'Planetary-scale computation involves the whole Earth from which silica, steel, and all manner of conflict minerals are drawn. Computation is not virtual; it is a deeply physical event, and The Stack has an enormous appetite for molecules of interest and distributing them into our pockets, our laps, and our landfills. The chemistries and the terawatts that will feed The Stack, and us through it, force us to reckon that the ponderous heaviness of Cloud computing will be a key driver of geopolitical frictions to come.' (2015: p.519)

Bratton's concept of the 'deeply physical event' of computation helps us to bring the complexity of the network assemblage of the electronic noosphere into view. From here, we can begin to identify the complex relations with power sources, such as oil, and raw materials, such as columbite-tantalite (coltan), as well as e-waste sites and operations of technological production. These networks then consist of many human and non-human moving parts, and they have a vast sort of agency over the earth and its inhabitants. The vastness of these networks is something that humans have difficulty appreciating or visualising, and in this sense, Timothy Morton's definition of the hyperobject is useful. Morton identifies hyperobjects as vast objects that are massively distributed in time and space and therefore difficult for humans to visualise due to their magnitude. Morton states, 'I coined the term hyperobjects to refer to things that are massively distributed in time and space relative to humans'. He says that they are 'viscous in terms of sticking to the beings involved with them' and that they are non-local. Finally, he notes that they involve 'profoundly different temporalities to the human scale one' (Morton, 2013, loc.104).

I would argue that all forms of networked technologies and machines are forms of hyperobject; they too are 'massively distributed within time and space' (Morton, 2013, loc 104). Once we step back from the definition of them being virtual or remove their black-boxed casings, we reveal complex and vast network assemblages, and from here, the links

with the earth and its materials are clearly exposed. Morton also notes the relation between machines and forms of waste and says that the Anthropocene began to emerge from the use of machines by humans and that these machines began to deposit layers of pollution and waste upon the earth. He states that the steam engine was the initiator of this condition, which he explains as a form of mark making upon the earth. He notes that the first large scale marks were initiated in 1784 when the first steam engine was developed:

‘It was April 1784 when James Watt patented the steam engine, an act that commenced the depositing of carbon in Earth’s crust, namely, the inception of humanity as a geophysical force on a planetary scale.’ (Morton, 2013, loc.206)

Morton says that after this time, a great acceleration began where the geological transformation of the earth by humans increased. He identifies the importance of the non-human perspective and his work connects with the move away from correlationism suggested in speculative realism. The turn towards materialist considerations within theoretical writing is useful here because Latour, Morton, Garbys and others specifically examine the implication of non-human things within the production processes of integrated world capitalism.

In this sense, we might look at these networks and consider how they are powered by the consumption of the earth’s raw materials and also at the end points of digital technologies, when they re-join the earth as a form of waste material. The deployment of waste materials might be a fruitful way to then examine the relation between machines and the earth, as Holmes notes:

‘From its (the hyperobject’s) perspective, the handful of petcoke that you can pick up along the side of the river becomes the withdrawn index or impossible clue to the vast interlocking system of energy production and its consequences, on the scale of the planet earth and in the dimension of geological time.’ (2017)

The concept of actor-network theory (ANT), defined by Bruno Latour, Michel Callon and John Law, is also pertinent when we consider complex networks. It looks at examining networks by giving equal importance to the human and non-human actors and their relations.

‘ANT treats everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located. It assumes that nothing

has reality or form outside the enactment of those relations. Its studies explore and characterise the webs and the practices that carry them.’ (Law, 2007: 157)

Actor-network theory considers human and non-human ‘actants’ and provides them with equal amounts of agency within shared actor networks. Bruno Latour also identifies the complex network assemblage that is hidden within a black-boxed technological device:

‘Look around the room. . . . Consider how many black boxes there are in the room. Open the black boxes; examine the assemblies inside. Each of the parts inside the black box is itself a black box full of parts. If any part were to break, how many humans would immediately materialize around each? How far back in time, away in space, should we retrace our steps to follow all those silent entities that contribute peacefully to your reading this chapter at your desk? Return each of these entities to step 1; imagine the time when each was disinterested and going its own way, without being bent, enrolled, enlisted, mobilized, folded in any of the others’ plots. From which forest should we take our wood? In which quarry should we let the stones quietly rest.’ (Latour, 1999: p.185)

It can be argued that all of these parts of the assemblage play an active role in the performance of control that is orchestrated by the electronic noosphere; they are actors within the machine assemblage, and they all have agency. In response to this, I want to develop works that bring these unseen networks and material relations into view, works that also expose technical hyperobjects.

Once we begin to interrogate the actants within the electronic noosphere and consider its hyperobjects, exposing its networks and black-boxed machines, the fiction of it being clean or virtual is soon exposed, and its physical realities come into view. Virtual technologies are embedded within the earth and its materials, and as Michel Serres notes, ‘the signal and the thing are in fact closely connected.’ (Gabrys, 2011: p.45) What is the cloud beyond banks of server farms situated in warehouses in numerous physical locations?

Jennifer Gabrys also observes that ‘the apparently dematerialised interface is far from the virtual sphere and depends on power structures and resource movements and material economies, all of which rematerialise when electronics literally break open to become waste.’ (Gabrys, 2011: p.70) Jussi Parikka says that ‘our contemporary technological assemblages are vast and complex meshes that are made up of multiple ecologies of ‘moving parts’ ‘that traverse political economies and natural ecologies and act as a complex

set of media technological ecologies.’ (Parikka & Hertz, 2012)

The relation between the network and the earth is drawn further into view by Bratton when he articulates the physical qualities of the cloud:

‘The Cloud is not virtual; it is physical even if it is not always “on the ground,” even when it is deep underground. There is nothing immaterial about massless information that demands such energy from the Earth.’ (Bratton, 2015, loc.942)

Finally, in this context, Peter K. Haff has coined the term ‘technosphere’, which he describes as an ‘emerging global paradigm’. He defines the technosphere as a new layer on the planet that is made up of ‘the interlinked set of communication, transportation, bureaucratic and other systems that act to metabolize fossil fuels and other energy resources’ (Haff, 2013: p. 301). Unlike the biosphere, atmosphere and lithosphere, Haff argues that the technosphere has an ‘autonomy’ in which an all-encompassing global society has become so dependent upon technology that people must service its parts continually to survive.

Summary

Within these conditions, I want to develop several new fictional strategies within the practice that first start to expose and unravel these network assemblages and relationalities. I want to consider how the works can draw the unseen components of the electronic noosphere and the hidden assemblages of black-boxed devices into view. I also want to highlight the physical realities of virtual technologies and how they are embedded within the earth. Furthermore, I want to extend my documentary fiction approach to rethink some of these relationships building on works such as *Grain*, in which a new hierarchy is proposed between human and non-human, and a new relationship is proposed between machines and the earth. In this way I want to enable the non-human voice via the fictional construction of the work and enable forms of subversive non-human agency to be proposed and enacted.

In this context, I am also referring to the concept of non-human ‘actants’ that was defined by Bruno Latour and expanded upon by Jane Bennett in her book *Vibrant Matter* (2010). Following Latour, Bennett examines the idea of the electrical power grid as an agentic assemblage of non-human actants. She highlights the 2003 blackout in North America and how several generator failures led to the electron flow pattern changing direction and these electron actants then causing the power blackout along with bushfires and burnt transmission lines. This moment of non-human agency then affected 50 million people

residing over 24,000 square kilometres and also shut down 100 power plants (Bennett, 2009, loc.488).

Material and network perspective: The development of the second body of works

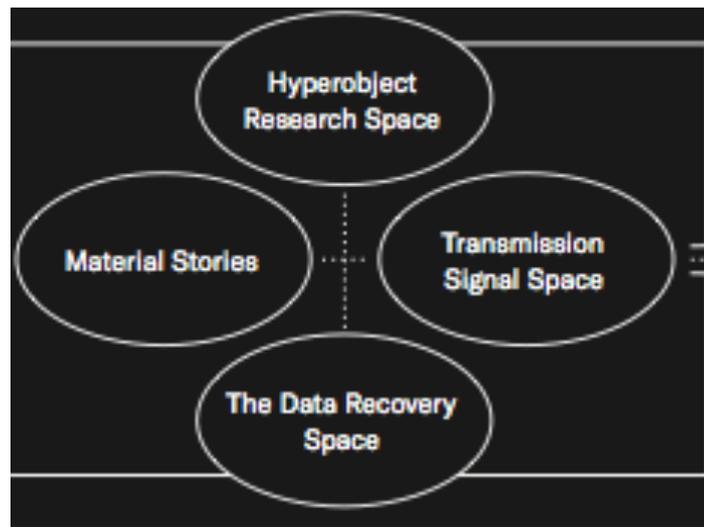


Figure 15: *The Signal and the Rock* map by Charlie Tweed (2012).

Extension of the research space

One of the further questions that I established in Chapter 2 was to identify how the fictional research site could be extended to consider the material and network perspectives of the electronic noosphere. In the previous section, I identified the need for practice-based methods that expose and unravel its network assemblages and relationalities. I also identified a need to bring the voice and perspective of the non-human into view.

In response to this, I have extended the map of the research site beyond the initial video transmission machines to incorporate several new spaces. In these spaces, 'The Researchers' have continued their exploration of the electronic noosphere from a material and network perspective. The spaces include the 'hyperobject research space' where technical hyperobjects and assemblages of human and non-human are mapped out. In the 'material stories space', the relation between various raw materials and digital technologies is interrogated, and the voice of these non-human things developed. This work has been extended in the 'data recovery space', where lost data is recovered via my fictional methods from old components to non-humans, animals, images and e-waste. This fictional construct

has allowed me to develop the notebook further by writing about the activities within each of these research spaces and then developing particular art works from this process.

Mapping the technical hyperobject: networks of human and non-human

Under the guise of ‘The Researchers’, I have developed further works that emerge from these research spaces. The first of these works appropriates the mapping software ‘Omnigraffle’ that is used for the planning of user experiences and the mapping of digital products and network diagrams. Under the guise of ‘The Researchers’, I have then traced the connections between a smartphone’s production process, components and operations, its advertising mythologies and its relation to the earth’s raw materials and forms of waste.



Figure 16: *Xperia Z map* by Charlie Tweed (2012).

The initial map focuses on a specific smartphone the ‘Sony Xperia Z’ and references a particular appropriated television advertisement for the device (Sony, 2013). The television advertisement has been used because it offers up the phone as a sort of magical device in its black-boxed skin.

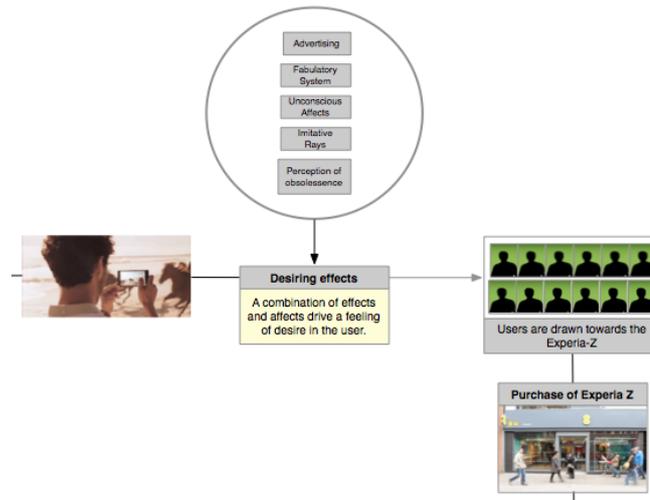


Figure 17: Xperia Z map by Charlie Tweed (2012).

The advertisement notes its ‘seamless reflective surfaces’ and employs affective visual and audio techniques to draw the viewer in to its associated fictions, saying, ‘immerse yourself, take yourself somewhere else’ (Sony, 2013). These fictions very clearly hide the audience from the complex and unseen networks of human and non-human involved in the phone’s production, operation and disposal.

In this context, the advertisement is a useful example of the sort of fabulosity system that Mark Fisher highlights when he notes that SF capital seizes the power and vitality of becoming, capital that has sunk so deeply into life so that the hyper-commodity is not an object but an intricate, micro-sensitive web inducing participation and involvement (Fisher, 2001).

Fisher notes how the product becomes inseparable from the web of promotion and virtual narrativisation surrounding it: complex architectures and fictions of blogs, social media interactions, fictional characters and viral films which build the product into the noosphere (Fisher, 2001).

The advertisement also says that the HD images that the phone produces are ‘so lifelike they become real’ (Sony, 2013). In this way, it is also a useful example of the intensity of the ‘HD narrative’ that is sold to users, the ability to create images that are ‘realer than the real’.

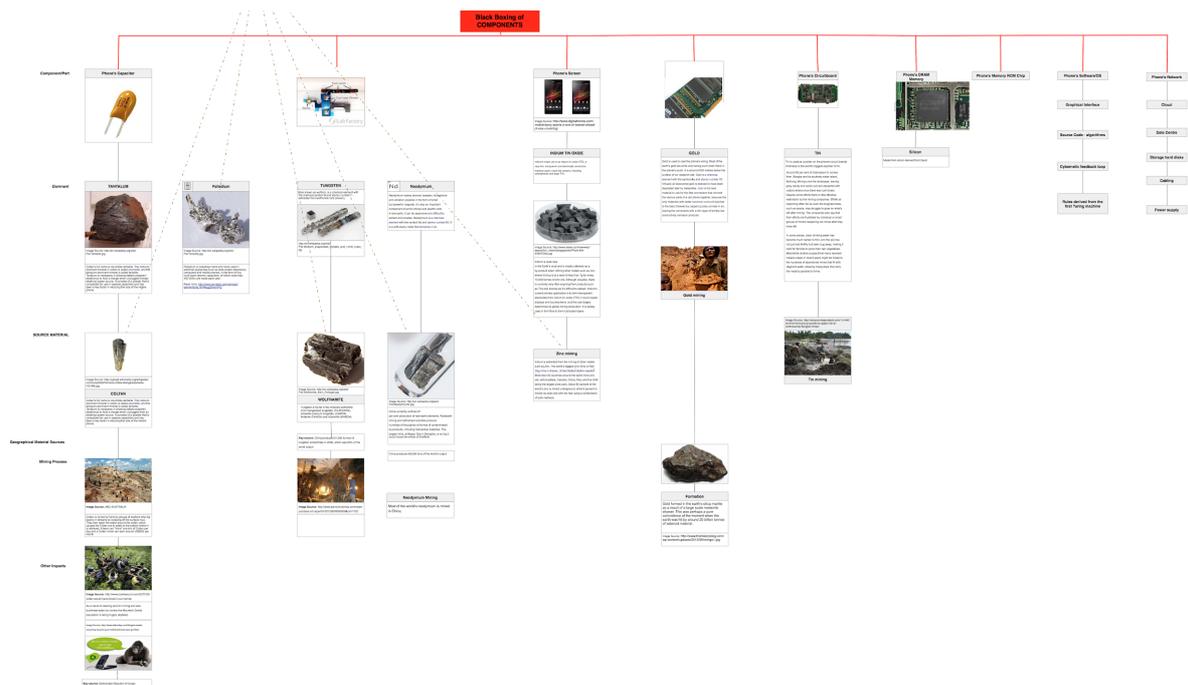


Figure 18: *Xperia Z map* by Charlie Tweed (2012).

However, underneath the advertisement's narration are the complex realities of its raw materials and the sites from which they are sourced, its production processes and its disposal methods, a complex mesh of relationalities. In the production of the map, I utilised a new method within the practice: while the work of the fictional researcher was created within this persona, the map itself did not employ fiction but instead attempted to map out the actual network relations, actants and assemblages at play. In this way, the map functions to bring into view the hidden depunctualised vision of the Xperia Z's own hyperobject. The map begins with the advertisement, mapping out its effects on the users and how it entices them to purchase the device.

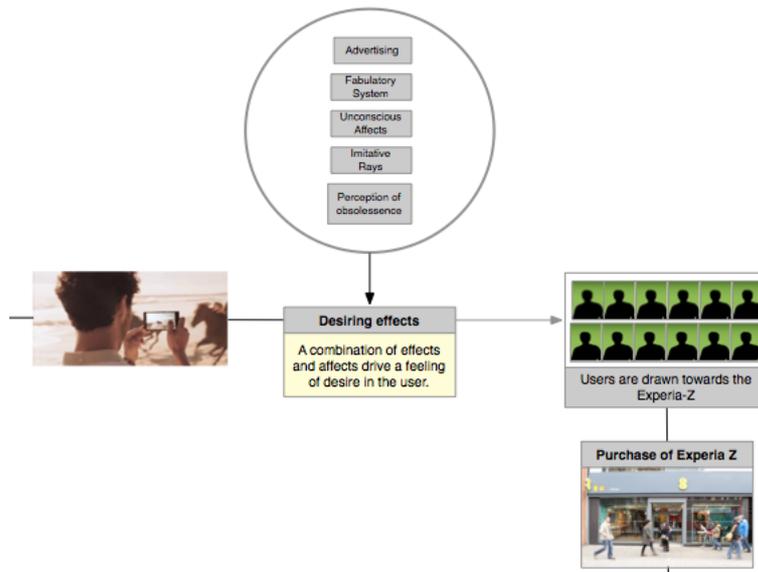


Figure 19: *Xperia Z map* by Charlie Tweed (2012).

From the other perspective, the map traces the origins of its key components, including the screen, the capacitor, the vibration-alerting mechanism and the circuit board and its coating.



Figure 20: *Xperia Z map* by Charlie Tweed (2012).

The capacitor is located within the mining of coltan (used to produce smartphone capacitors) in the Democratic Republic of the Congo (DRC), and its impact on the rare mountain gorilla population is highlighted as a result of its consumption by the coltan miners.



Figure 21: *Xperia Z map* by Charlie Tweed (2012).

The multitude of geopolitical implications at play within the hyperobject of this single device begin to be brought into view. In this way, the mapping process operates as a political strategy within the practice for debunking the fictions around black-boxed technologies. Human and non-human impacts come into view here, and the mesh of interrelations between the two begin to be highlighted.

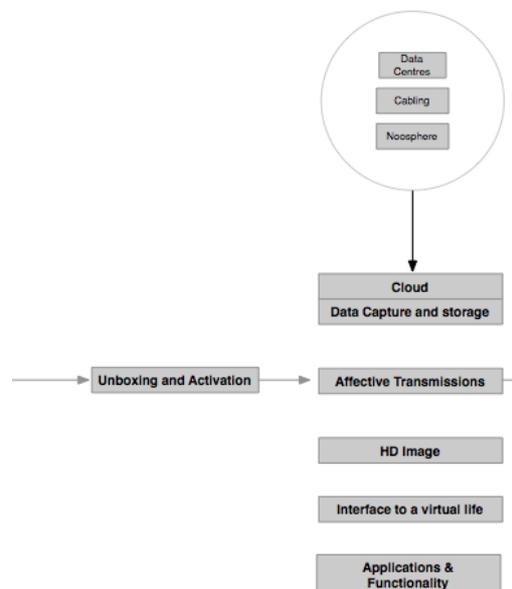


Figure 22: *Xperia Z map* by Charlie Tweed (2012).

The map also traces how the device connects to the electronic noosphere as a result of its activation, the moment where all of its black-boxed components come together in their

punctualised assemblage and begin to transmit, affective HD images onto their user. This is the moment when it ‘embeds’ within its user.



Figure 23: Xperia Z map by Charlie Tweed (2012).

The NASDAQ index is an important component here, an automated piece of software running behind its screens becoming responsible for the rate of raw material extraction within locations such as the DRC. The map highlights and exposes the many ‘components’ within the construction and operation of a smartphone and records the various actors involved in the process (‘the human and non-human moving parts’), including the NASDAQ index. In this context, Jennifer Gabrys highlights how the NASDAQ index sets into play a series of material processes:

‘The NASDAQ sets into play a performative and material economy with political, cultural and environmental affects’. The rhythm of electronic markets as much as the processing speeds and microchips impacts on electronic technologies, formation and transformation, distribution and erosion in both materiality and value. The electronic extends from technologies to markets and to modes of waste, decay and disintegration.’ (2011: p.51)

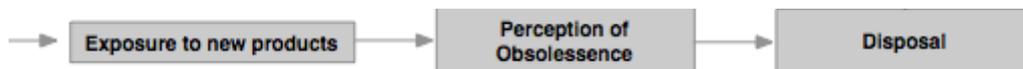


Figure 24: Xperia Z map by Charlie Tweed (2012).

Finally, the map plots the various forces that return to the user in relation to notions of perceived obsolescence and the return of the device’s ‘waste’ materials to the soil as dirty matter. It highlights the disposal of the device at sites such as Guiyu in China, which is known as the world’s largest e-waste site and has been called ‘the electronic graveyard of the world’. The map attempts to show how every part of the example smartphone is entwined

within this complex assemblage of relations and also how it is entwined in a very detailed way with the soil and the earth's crust as unusable parts finally come to rest within the soil below the surface of Giuyu and its 4,000 'recycling' workshops.

Therefore, the map highlights that the signal and the digital device are closely connected, and the notion of 'clean technologies' is exposed as a reality of constantly moving and reforming materialities and temporalities. The final waste materials generated by these technologies connect to notions of deep time and the digital machinic Anthropocene. The mapping process was a useful piece of research for then developing further works, and this formed the basis for the development of a performative lecture titled *The Signal and the Rock: Proposal for a Film*.

The Signal and the Rock: Proposal for a Film – performative lecture (2013)

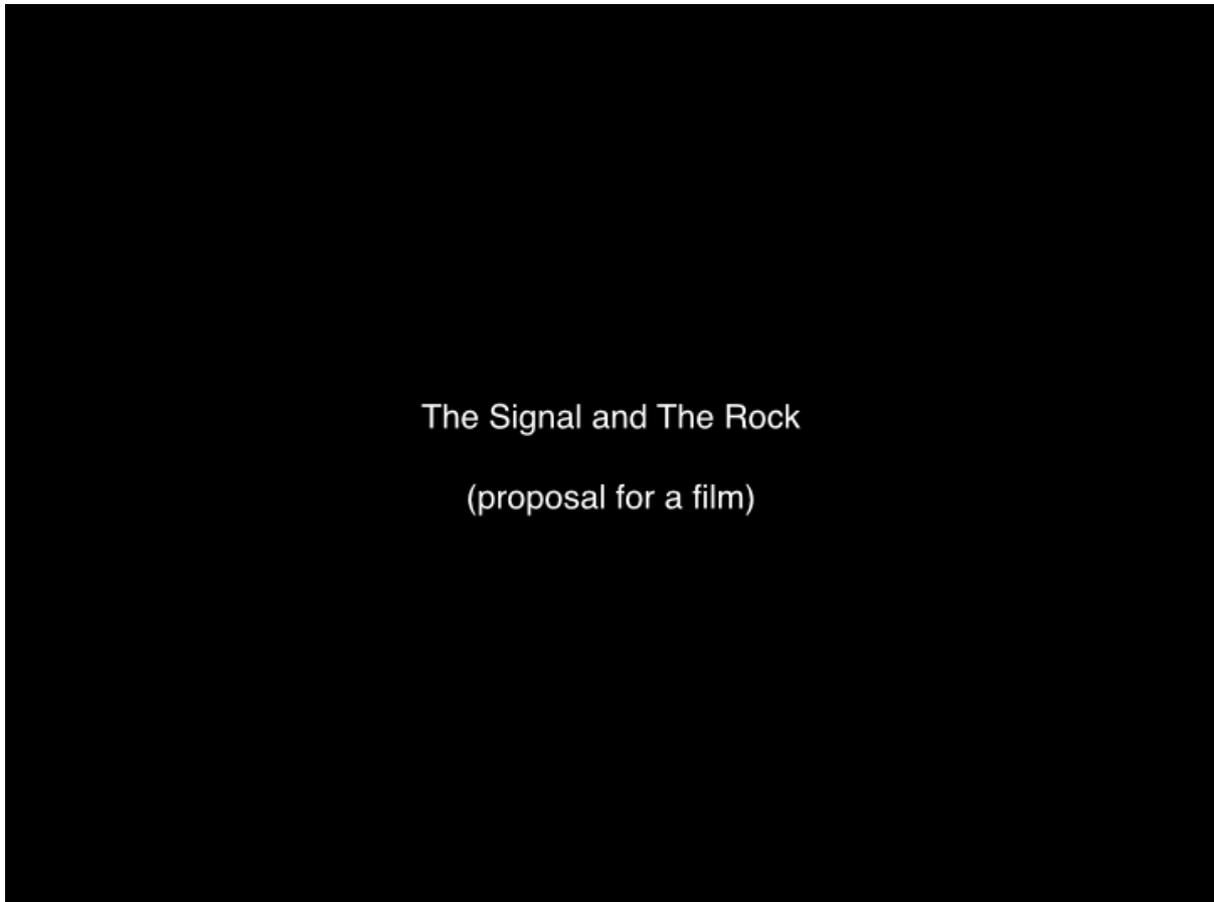


Figure 25: *The Signal and the Rock: Proposal for a Film*, Charlie Tweed (2013c).

The Signal and the Rock: Proposal for a Film

>black

'In a space located two thousand metres below the surface.

We have been mapping the control path, plotting the natural history of the device.

>show map

We have been thinking about how it can be depunctualised

How it can be dug up, what its archaeology and geological history might be'. (Tweed, 2013c)

The Signal and the Rock: Proposal for a Film lecture emerged from the work of 'The Researchers' in their various research spaces. It was derived from the smartphone mapping process and employs a fictional documentary approach to depict the research activities of 'The Researchers' and the 'lifespan' of an electronic smartphone capacitor, depunctualising the capacitor, removing it from the smartphone assemblage and tracing its origins. The capacitor is important here because its function can be likened to that of a heart: it keeps a digital device alive by retaining electrical current.

The lecture develops on a methodology of exposing unseen and hidden networks and processes as a political act in the practice. Within the lecture, I took on the role of 'The Researchers', and I attempted to embody the complex relations at play between the component, its raw materials, past histories, different temporalities and the earth, in this way exposing the technical hyperobject and true network assemblage of the capacitor.

The focus on voicing and bringing the non-human into view which emerged within *Grain* is also important here, and it connects with the approach used in Patrick Keiller's *Robinson in Ruins*, where the prospect of ecological catastrophe and human extinction is made visible, and the post-human life beyond is explored.

Fisher notes the following when discussing *Robinson in Ruins*:

'When we hear early on in the film that Robinson has made contact with a series of 'non-human intelligences', we initially suspect that he has finally succumbed to madness. Yet the 'non-human intelligences' turn out not to be extraterrestrials of a florid pulp-science fiction inspired psychosis, but the intra-terrestrial life-forms that an ecological awareness reveals growing with a silent stubbornness that matches the brute tenacity of capitalism. In one of the many slow spirals that typify Keiller's approach in *Robinson in Ruins*, the lichen that his camera lingers on in an early shot, apparently for merely picturesque effect, will eventually come to take centre stage in the film's narrative. Lichen, Robinson comes to realise, is already the dominant life-form on large areas of the planet.' (2014, loc.3380)

The work also utilises a high speed delivery with many 'jump cuts' and 'performative edits' in order to move between the different materials, relationalities, locations, histories and timeframes.

'>capacitor

A capacitor acts as the heart of the device; it holds its power and keeps it alive.

Without its capacitor, it would simply run out and shut down.

>tantalum

Tantalum's source is rooted in the earth and its slowness, but it is also part of the high-speed flow of processes and electromagnetic signals on the surface above it.

The transformation from its time of origin, deep underground, to its time on the surface has an unwelcome effect on the tantalum and provides many unwanted stresses and confusions.

But this tension is important, and sometimes a certain type of magnetism draws it back to its origins'. (Tweed, 2013c)

The lecture includes references to many different actors within the network of the capacitor, including animals such as the mountain gorilla in the DRC.

'>gorilla

A mountain gorilla in the Democratic Republic of Congo looks towards the sky,

it follows a plane as it flies overhead

emitting a trail of nitrogen oxide.

It continues eating' (Tweed, 2013c).

The lecture also connects with pertinent points in history that extend the hyperobject mesh of the capacitor through time:

'>conrad

In 1885, Joseph Conrad wrote about his experience of living in the Congo.

Under the guise of a philanthropic concern, it was being exploited for its raw materials and Conrad noted that the perpetrators were engaged in:

“the vilest scramble for loot that ever disfigured the history of human conscience and geographical exploration” (Tweed, 2013c).

Image removed for copyright reasons

Figure 26: Xperia Z advertisement video still by Sony (2013).

As the lecture progresses, it traces the black-boxing process of the capacitor until it is finally marketed to the consumer via a series of complex fictive marketing strategies. At this point, an example phone advertisement for the Sony Xperia Z is played, and this re-appropriated advertisement and its use of affective and fictional strategies on its viewer is exposed.

Image removed for copyright reasons

Figure 27: Xperia Z advertisement video still by Sony (2013).

The use of language around its HD qualities and its ability to make the virtual 'become real' functions here to expose the unreliable narrator behind these words. It says, 'Immerse yourself, find yourself somewhere else' (Sony, 2013).

Within the conditions of the performative lecture, the advertisement plays a completely new role, and in exposing its own construction and artifice, it functions to subvert itself. In this sense, we can draw parallels between the methods used in works such as *Archimeters*, where post-production software interfaces are incorporated and video effects are exposed.

The lecture also focuses on specific sites that are examples of 'non-places' similar to the Isle of Grain where both human and non-human materials are manipulated. This links to the work of Patrick Keiller and his films such as *London* (1994) and *Robinson in Space* (1997) and, more recently, *Robinson in Ruins* (2010). As Mark Fisher notes,

'Robinson's interest was in the cities where capitalism was first built and in the non-places where it now silently spreads: the distribution centres and container ports that are unvisited by practically anyone except Robinson and his narrator-companion, but which web Britain into the global market.' (2014, loc.3323)

In the final section, the lecture makes a 'call to action' that identifies a new relation between the technological and the ecological and outlines new kinds of hybrid biological and self-sufficient machines. In this way, a satirical solution for technological sustainability is proposed, a solution that is based upon actual research around the use of nuclear fusion as a way of creating raw materials.

From the initial performances, I have then developed the lecture concept further across a number of different iterations at locations including Arnolfini in Bristol (2014) and Strata Conference at Aberystwyth University (2015) and finally delivering the lecture at the Central Academy of Fine Arts in Beijing (2015). The length of the work has grown each time, the complexities of the assembled elements, histories and theories have increased and the focus of the work and the structure of the 'lecture' have also adapted with each iteration.

I have included a range of material in the lecture, some of which has been written by me and some of which has been re-appropriated, and this allows for the shape of the work to begin to represent its own sort of machine assemblage.

This work has allowed me to build on the idea of creating a parallel subversive transmission as an art strategy, an approach that exposes the realities of black-boxed technologies, the fictions of their virtual qualities and the artifice of their marketing strategies and draws into view their closeness to the earth and its raw materials.

The lecture also connects with the use of parallel transmissions within the earlier video works and builds on this approach so that the structure of the lecture itself attempts to mirror that of a technical hyperobject.



Figure 28: *The Signal and the Rock: Proposal for a Film* lecture performance at CAFA Beijing by Charlie Tweed (2015).

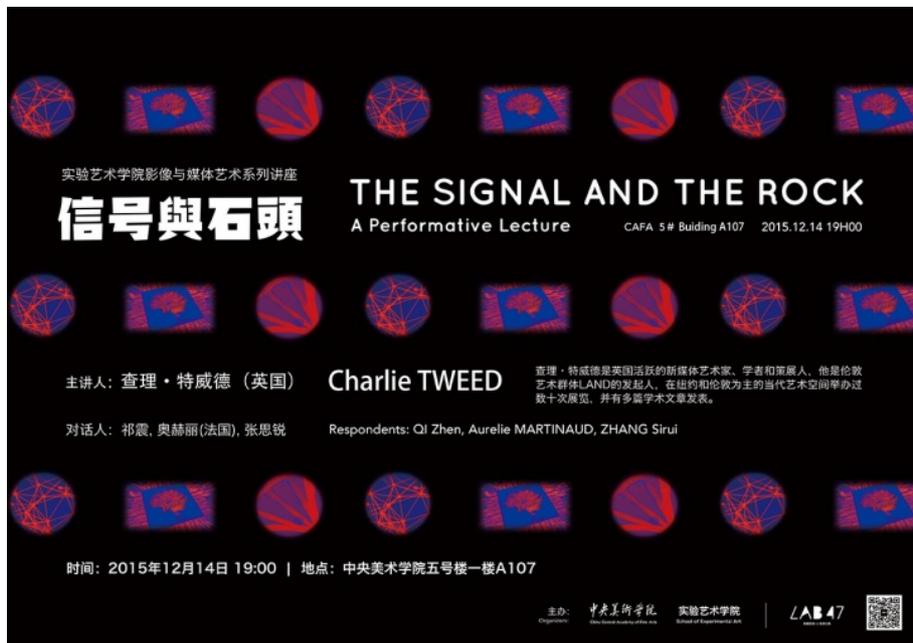


Figure 29: *The Signal and the Rock: Proposal for a Film* lecture performance at CAFA Beijing by Charlie Tweed (2015).

The Meadow (2013)



Figure 30: *The Meadow* film still by Charlie Tweed (2013).

In relation to the e-waste site located in the mapping process, I also developed a new video work which attempted to activate Bruno Latour's concept of the non-human actant. The video employs my speculative fictional strategies to bring into view the merging of different kinds of materials as they flow together and hybridise in their position below an unidentified e-waste site. These waste materials outline their approach as they search for a 'new type of agent'.

'The site has become the test site, the search for a new type of agent' (Tweed, 2013a).

This work develops upon Jane Bennett's notion of non-human actants performing the 'loop flow' and taking down the U.S. power grid by changing direction. It visualises a range of non-human technological remnants as they reform and merge into new assemblages. It gives voice to these speculative constructions and activities to bring this non-human material perspective into view and to consider the potential hybridisation of these waste materials with biological materials.

'From the potato chip to the digital chip, the diode to the emaciated limb,
all things have gathered here' (Tweed, 2013a).

The video utilises appropriated text that describes certain kinds of manmade materials that are found within electronic devices. It also employs appropriated video material that is used to visually portray a liminal space between the physical and the virtual where these waste materials and their effluent begin to decay and then reform.

‘Abandoned devices slowly edge their way deeper, still trying to
connect or transmit.’ (Tweed, 2013a)

In *The Meadow*, I have made use of a digital vocoder applied to text-to-speech voices to generate its artificial and affective voice. The work functions to draw into view a number of non-human actors and aims to ‘give them a voice’ to bring their hidden activities to the surface and imagine them having a sort of agency of their own, away from their intended functions.

These voices discuss their decay, the breaking down of their ‘casings’, and their potential for hybridisation, powered by heat, as they generate into new forms.

‘Plants emerge that can unroot and reroot at the drop of a hat, plants that look nothing like plants and contain not a morsel of organic material, instead made from things like Acrylonitrile, Butadiene Styrene’ (Tweed, 2013a).

In the final section, a strategy for the future reanimation of these waste technologies is proposed:

‘How the essential elements of technologies like the cobalt, the germanium and neodymium can be re-grouped and enlivened so that they are able to self-organise. Automatically removing dirty molecules and toxins and forming new associations. Wooden yet lively, verbal yet vegetable, alive yet inert.’ (Tweed, 2013a)

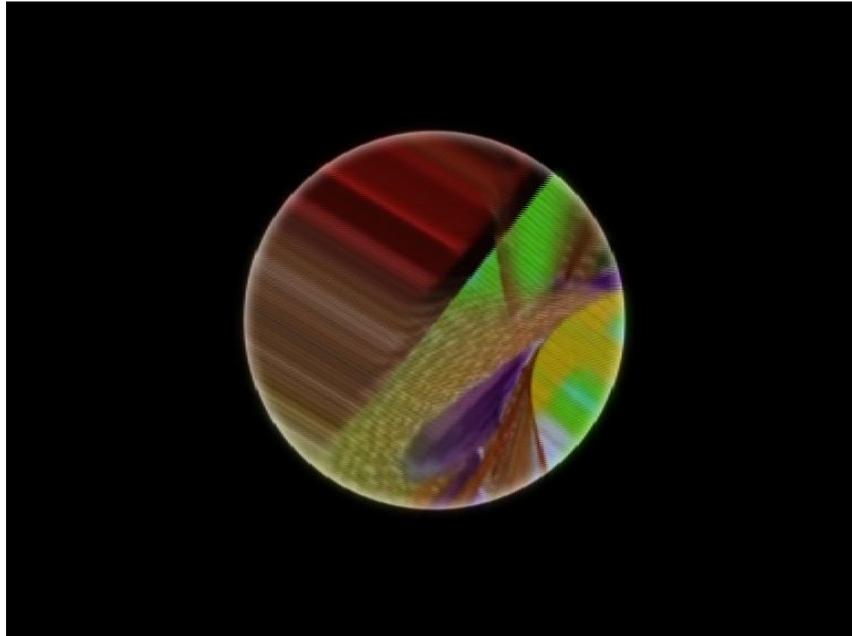


Figure 31: *The Meadow* film still by Charlie Tweed (2013).

Towards a film script and storyboard

As a result of the mapping process, the development of the performance lecture and *The Meadow* video work, I have focussed on developing the final practical outputs for the research project. The initial idea was to develop a large-scale film or series of short films that emerge from *The Signal and the Rock* lectures. Therefore, I have created a script that expands on the content of the lectures and emerges from the underground research space and its various materialities and actors.

I have also developed an initial storyboard; however, for me, the use of this more traditional film production methodology does not work very well because the process is too static for the way that I want to work. I instead want to use a more performative approach (similar to the lectures), in which an embodiment of the structures, materials and non-human actors is important in the delivery.

In the process of producing the pilot video, I have also deviated beyond the script and beyond the ideas of visual material identified in the storyboard. In terms of structure, I want to further test the use of the 'performative edit' which has been used in the construction of the material for the live performances, allowing for a diverse set of relations, geographies and temporalities to come into view. There is also a certain energy, an essence of the voices that I feel is important to inject into the work, and this is difficult to replicate in a more standard essay film format. The idea of 'transmission' is important to the way the work is

'performed', and I want to build on the use of transmission from the initial body of video works and the performance lecture.

I also want to create a diverse range of actors, working with multiple voices that are being transmitted from the underground research site, building further on my use of persona and extending the breadth of the research site. As a result, I have created a pilot version of *The Signal and the Rock* (2016a) film as a 6-minute video work.

The pilot film uses a vocoded voice of a machine-like narrators to represent 'The Researchers' transmitting from the underground research site. It includes visual material that has been appropriated from a range of sources and aims to give the feeling of an in-between liminal space, the space of code, decaying technologies and biological material, potential actants, intertwined digital and physical materialities. The visual material used is blurred, re-filmed and affected, superimposed and merged together to portray a feel of incomplete and broken transmission technologies. In this way, the material used develops the use of abstract pieces of re-appropriated footage used in *The Meadow* video.

'And here we are, navigating through the stratas . . . feeling the depth of time', it begins, 'looking towards Hutton, thinking about how we have used them for our eyes and our ears, our dreams and our falls, our feedback.' (Tweed, 2016a)

The narrators outline their research strategies, including 'mapping geological cycles, travelling through the layers of strata looking for databases and broken faces'. The script here tries to playfully explore this liminal, in-between space of the 'characters' and their own degradation along with the decay of the language itself.

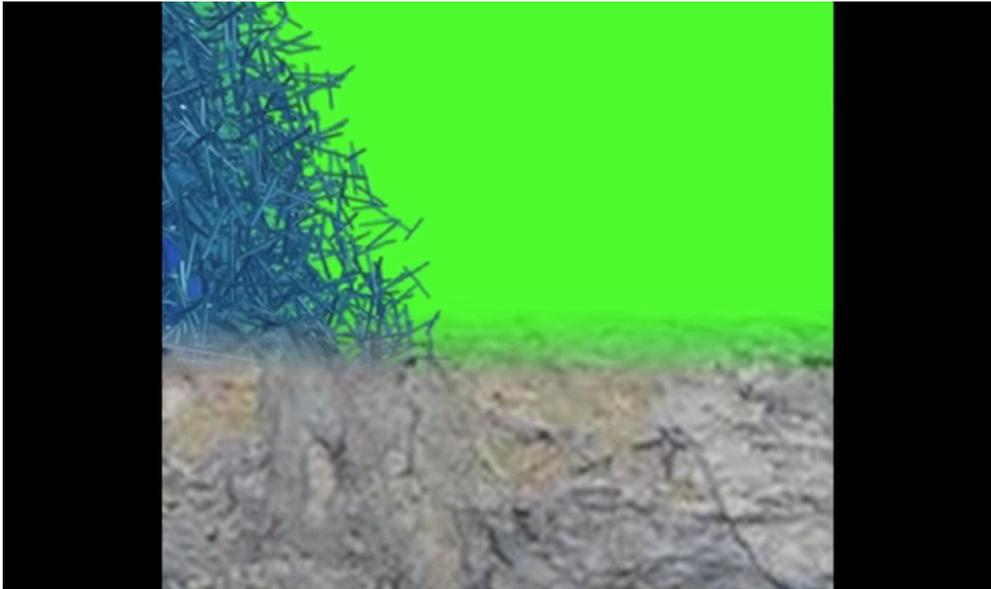


Figure 32: *The Signal and the Rock* pilot, film still by Charlie Tweed (2016).

The film also incorporates a range of other voices, including a choral singing voice that interacts with the text on screen in a playful way, emerging from the non-space of the researchers and the surrounding materials. The use of the choir is an important move in the project, in which an idea of locating the sound of the ensemble of voices from the research site has begun to emerge: a set of ghost-like echoes uttering sounds from beneath the surface, an alternate archaeology of obsolete technologies and ideas. In one section, these voices sing 'and here we are, and here we are' (Tweed, 2016b) as they re-iterate their status within an in-between world. In the film superimposed and blurred text interacts with the non-human voices like a Karaoke machine that is failing and sentient.



Figure 33: *The Signal and the Rock* pilot, film still by Charlie Tweed (2016).

The creation of this pilot work has allowed me to test whether a single screen film functions as a way of expressing the utterances of an assemblage of voices emerging from the research site.

I have spent some time evaluating this work, examining whether it is the right approach for the final output. Although the film was quite successful at producing a voice from within the research space, vocalising its 'research approach' and manifesto of 'The Researchers' and also visualising the layers of materials and fictions, it does not feel like the right output format for the final work and the large amount of written material that I have generated from the 'research site' throughout the project.

However, the various voices, both digital and choral, that have begun to emerge within the video 'transmission' feel like they have potential. This is because they emerge from an in-between liminal space; they have a spectral and machine quality to them, having been through a series of effects and vocoding processes, and they are constructed from a script that is a mixture of original and appropriated material. These voices in the film emerge from an undefined point in the future as a transmission to the present, and the use of sound rather than image also allows me to take this idea further in the next phase of the project.

For me, the notion of the 'ghost' has potential here as a form of non-human actant that transmits from an undefined future point; enabled by my speculative writing strategies, we

might call this a form of 'speculative recycling'. This approach builds on the use of re-appropriated image and text material in the production of the machine-based video works, which are themselves filled with the hauntings of their previous 'lives'.

In this context, Mark Fisher looks towards the possibilities of the spectre and highlights how it prevents us from settling into the comforts of capitalist life:

'Haunting, then, can be construed as a failed mourning. It is about refusing to give up the ghost or – and this can sometimes amount to the same thing – the refusal of the ghost to give up on us. The spectre will not allow us to settle into/for the mediocre satisfactions one can glean in a world governed by capitalist realism.' (Fisher, 2014: p.22)

He suggests that the spectre might 'refuse to give up the ghost on us', and in this sense, the vocalisation and embodiment of technological ghosts is a useful and unsettling strategy for intervening within the daily transmissions of the electronic noosphere and bringing its hidden realities into view.

I am also thinking about how the spectral voice can expose parts of technology that spend their 'life' locked into hybrid machine assemblages as invisible parts, invisible infrastructures and networks that humans construct and hide away in black boxes or buried in the earth itself, in this sense referencing Timothy Morton's hyperobject that he says phases in and out of human vision.

'I start the engine of my car. Liquefied dinosaur bones burst into flame. I walk up a chalky hill. Billions of ancient pulverized undersea creatures grip my shoes. I breathe. Bacterial pollution from some Archean cataclysm fills my alveoli—we call it oxygen. I type this sentence. Mitochondria, anaerobic bacteria hiding in my cells from the Oxygen Catastrophe, spur me with energy. They have their own DNA. I hammer a nail. In consistent layers of ore, bacteria deposited the iron in Earth's crust. I turn on the TV and see snow. A sliver of the snow is a trace of the Cosmic Microwave Background left over from the Big Bang. I walk on top of lifeforms. The oxygen in our lungs is bacterial outgassing. Oil is the result of some dark, secret collusion between rocks and algae and plankton millions and millions of years in the past. When you look at oil you're looking at the past. Hyperobjects are time-stretched to such a vast extent that they become almost impossible to hold in mind.' (2013, loc.1080)

I also want to focus on the use of voice in the final work as a way of utilising the simplest

form of human communication technologies, in this sense moving as far away as possible from the HD moving image. Kittler and others have considered the primordial technologies of the human, and he identifies writing as one of these technologies (Durham-Peters, 2015, loc.498). However, we can take this further and examine the voice itself as the primary human media communication technology, the voice as noise, the voice as language and the voice as the in-between of human and machine. The spectral voice that has potential as a method for looking back at our current digital technologies and their relations to the earth.

‘Civilization announces its progress by a lot of noise, and the more it progresses the noisier it gets. The dividing line between the two voice and noise as well as nature and culture is often elusive and uncertain. We have already seen in the Introduction that the voice can be produced by machines, so that there opens a zone of undecidability, of a between-the-two, an intermediacy, which will be, as we shall see, one of the paramount features of the voice.’ (Dolar, 2006, loc.147)

During this stage of the project, I have also performed two more iterations of the live work: first at CAFA Beijing in December 2015 and second at the Strata Conference at Aberystwyth University in January 2016. In both of these performances, I thought more about the way the work is performed in terms of the speed of transmission and the importance of a performance that interacts with the layers of material that have been developed throughout the project, including the layered and relational performative experience in itself, consisting of many connections, including layers of fiction, appropriated material, research material and performativity.

I have also examined other relevant works, including Laurie Anderson’s *United States* (1983) with the ‘transmission quality’ of its audio recording and the particular use of voice and alter ego by Anderson, often utilising the body/voice mismatch in terms of the tension between the machine and the voice being emitted.

I have also considered Samuel Beckett’s *Not I* (1972), which is a short work in which the mouth of the actor is all that the audience can see within a blacked-out theatre space. As a result, the voice and mouth become disconnected from the human body, a sentient actant with non-human qualities.

The work of artist Rachel Pimm is also relevant here because she explores the human relation with the ecological by taking on the persona of non-human actors, such as worms, and exploring their particular perspective via speculative fictions. This work has many

parallels with my approach to voicing the non-human via the production of fictional voices to bring a non-human perspective into view.

As Chris Fite-Wassilak stated,

'Pimm's narrated and mediated journeys are conscious attempts at making apparent this projection, a conceptual biomimicry that leaves us somewhere unstable. If we still desire to be close to something that we already are, Pimm suggests, perhaps we need to attune how we are listening and acting; we need to be the human being without the conscious distancing of the 'human', to simply be the organic in movement.' (2016: 23)

In light of this, I have begun to think more about how the different voices might emerge from the many layers of the research site and its materials across different temporalities. For me, the final iteration of the project must embody all of these layers of 'strata' that have grown and developed throughout the performances, including the materials, images, rocks, fictional writing, technologies, networks, components, waste materials, hybrids and the self-reflexive script. I want to activate these items and 'tune in' to their perspective via the final transmission, using voice as the primary transmission method.

Conclusion:

Thus, the voice has emerged as the primary method for articulating the final work and as a way of returning to the most basic 'prosthetic' technology of the human to transmit from the endpoint of human-produced technologies. At the same time, the use of voice here expands on the aim of elevating the use of persona within the work and also allows more freedom in the conception of different kinds of voices by moving away from the use of visual, appropriated moving-image material. The use of voice also allows for the complex hyperobjects of 'dead' technologies, their materialities, assemblages, actants and actor networks to be exposed by a swarm of voices that operate as a trace or remnant and play back a transmission from an imagined future position onto the human present. The use of voice also allows for a playfulness in the writing to emerge where different temporalities and geographies are breached via the soundwaves of the transmission. The voices of the dead human and the dead non-human, the depunctualised disembodied voice from a liminal space, the un-blackboxed spectral voice and the voice of the fictive 'The Researchers'. In this way, the spectral voice has emerged as a primary strategy for the production of the final

audio work. Roland Barthes notes the following in *A Lover's Discourse*:

'It is characteristic of the voice to die. What constitutes the voice is what, within it, lacerates me by dint of having to die, as if it were once and never could be anything but a memory. This phantom being of the voice is what is dying out, it is that sonorous texture which disintegrates and disappears.' (1979: p.112)

Chapter 4: Development of final audio work, publication and exhibition

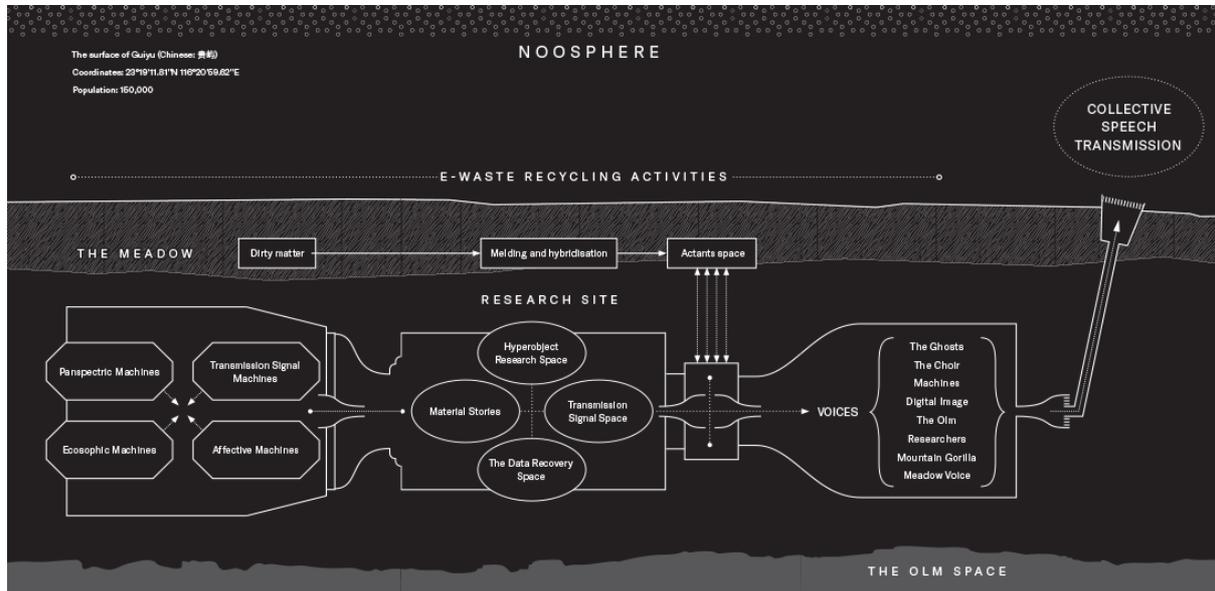


Figure 34: *The Signal and the Rock* map by Charlie Tweed (2017).

Introduction

In this chapter, I consider the development of the methods used to produce the final audio work *Re-writing the Overcode* (2017) and then the accompanying publication *The Signal and the Rock* (2017). I first identify how the aims and methods have developed from the strategies outlined in the previous chapter, and I identify some of the further questions that have framed the final production of works. I also discuss the map that has been used to form the shape of the final output, which I have framed as a 'non-human-to-human translation machine'.

I then consider the final audio work *Re-writing the Overcode* and examine it in detail to provide commentary on the transmission, the voices it uses, their relations and structure. I then discuss the publication *The Signal and the Rock* and consider how it operates to expand on the audio work and also as a form of hyperobject via the structure that is used. In the final section of the chapter, I review the final exhibition at the Stanley Picker Gallery, titled *Soon we will become output* (2017a). I examine the staging of this exhibition, the works exhibited and the intentions behind the curation of the works.

Development of aims and methods:

In the previous chapter, I discussed the development of some further methods in which I attempted to map out the technical hyperobject of a smartphone (within the ‘hyperobject research space’) and identified its assemblage of human and non-human components, exposing the network of relationalities. This map was then developed into the performative lecture, which considers the potential of non-human actants (emerging from the ‘material stories space’), and this in turn informed the initial construction of a pilot film. I highlighted how I discounted the film approach and the formalities of a traditional storyboard, instead looking towards producing an audio transmission as a method of activating a range of non-human voices.

In the final phase of the project, I have built on this approach by writing a transmission script for the different voices that emerge from the map of the fictional research site and activate the ‘concerns’ of the various actors. The aim is to produce a transmission in which a series of disembodied voices emerge from the non-linear layerings in the strata below the e-waste site of Guiyu, China. This particular location was chosen because Guiyu is widely perceived as one of the largest e-waste sites in the world.

The layerings in the strata below Guiyu are the location of the fictional research site and also the imagined future location of broken, disassembled, unseen and forgotten technologies, their code and their algorithms as they decompose, travelling downwards and forming into layerings within the earth. As previously mentioned, the video work *The Meadow* employs a speculative transmission to consider the merging of e-waste and biological materials, and this idea has been taken further in the final audio work. In this sense, it is a site of relationalities between all sorts of materials (human and non-human). The transmission’s structure also acts to expose the hyperobject of the electronic noosphere and brings into view some of the complex relationalities between animals, machines and biological materials. As Timothy Morton notes,

‘hyperobjects occupy a high dimensional phase space that results in their being invisible to humans for stretches of time. And they exhibit their effects interobjectively; that is, they can be detected in a space that consists of interrelationships between aesthetic properties of objects. The hyperobject is not a function of our knowledge it’s hyper relative to worms, lemons, and ultraviolet rays, as well as humans.’ (2013, loc.122)

The voices of these different things emerge in the final transmission as a way of also highlighting the unseen, the depunctualised black-boxed technology, the non-place and the hidden ecological and human cost of technological production and disposal. The set of voices and sounds heard also draw on Bruno Latour and John Law's concept of ANT, giving importance to all elements within a network.

The voices that we hear are also Bruno Latour's actants, and they are intended to have a hauntological and spectral quality to them. The spectral is utilised in the final transmission as a way of intervening within the present. The transmission approach is also a platform for the voice of the non-human to be expressed via the fictional and performative methods of my practice. As an artist, the performance of these voices through my own voice or via digitally mediated voices allows me to activate these hidden components and relationalities of technical hyperobjects using my fictional use of personas as an approach and to connect these complex networks with physical forms of waste. In this way, I have taken on the role of an 'intermediary', channelling the non-human and also the theoretical and appropriated assemblage of material through the writing and performance of the transmitted voices.

In the production of these voices, I want to create a spectral feeling from the way the voices speak, and this has been achieved by the layering of different sorts of voices, sound effects and distortions. Spectral memories emerge in these transmissions from the processes, networks and materials of long-forgotten technologies.

Utilising the idea of hauntology, the audio work allows for these non-human things to be 'heard' and their 'virtuality' to have an increasingly material presence, which is then traced in a section that focuses on exposing the true network of a smartphone capacitor. In this way, these voices act as an interruption of the present. Weinstock notes the following:

'The ghost is that which interrupts the presentness of the present, and its haunting indicates that, beneath the surface of received history, there lurks another narrative, an untold story that calls into question the veracity of the authorized version of events.' (Weinstock, 2004: p.5)

Derrida describes hauntology as the act of haunting, which is about the traces between past and present, between here and there. As Derrida notes the ghost 'introduces knowledge of a supernatural and paradoxical phenomenality, the furtive and ungraspable visibility of the invisible' (Derrida, 1994: p.7).

These traces have potential as a method for intervening in the conditions of the present, disrupting linear time, intermingling with the sound waves and signals of the day to day and interjecting knowledge and histories from technology's unseen and forgotten pasts, presents and futures.

The different voices have been produced by utilising my own voice and various vocoding tools as well as employing a range of digital and synthetic voices. These methods have allowed me to take on many 'characters' from different timescales and different types of objects, machines, animals and materials. For example, the voice of a digital image, the voice of a mountain gorilla and a seismic monitor. In the transmission, I also wanted to generate a set of voices that transmit back a sort of 'future knowledge' from an endpoint of the human existence on earth, creating an elegy to human technologies and their relations to the earth.

In terms of the construction of the final work, I wanted to expand on the use of a performative approach to the production, including the use of jump cuts and edits between different temporalities and different voices, in this way acting on and performing with this 'material' (theoretical research, fiction, appropriated material) and finally framing this into a future strategy for the relation between technologies and the earth. I am building here on some of the initial work that was done in the lecture *The Signal and the Rock: Proposal for a Film* in terms of strategising a new material approach that allows for a more sustainable and also non-human relationship to emerge between self-sufficient hybrid machines and the earth.

Another aim was to create an accompanying publication called *The Signal and the Rock*, which expands upon the audio work by providing first a transcript of the transmission along with a detailed set of notes that provide additional background and context. In this sense, the aim was to produce a written work that itself becomes a complex assemblage of related materials and also expands upon the use of hauntology and spectral non-human voices. The aim was also to develop the use of fictional layering further, providing a background to the transmission and further clarification on the manifesto, 'The Researchers', the voices and the research site.

This has been achieved by producing a publication that includes further context to the work in the form of a manifesto, a screenplay and annotated transmission script. These notes themselves develop on the use of re-appropriation in the work; notes have been sourced from diverse locations and formed together with a large body of visual material harvested from the video works.

In the production of the final audio work and publication, I have considered the following further questions:

How can I harness my fictional methods to activate the 'dead technologies' and their waste materials and bring into view their relation to the earth? How can I take the use of fictional methods further to produce a layering of multiple voices, temporalities and relations?

How can I harness the use of sound to work with the transmission of voices from a variety of non-human things that make use of effects and production strategies so that they have a spectral quality to them?

How can this assemblage of voices act to identify and expose new knowledge about technologies and their relation to the earth and forms of waste as well as providing some proposals for a re-alignment?

How can this assemblage of voices act to identify and expose new knowledge around the use of fictional strategies within art practice as a way of intervening within and reconfiguring the 'real'?

How can a structure for the transmission and publication be defined that appropriates ideas of assemblage, ANT and the phasing technical hyperobject for its own means?

How can the publication provide an expanded layering to the audio transmission and expand on the use of the manifesto and researcher's notebook?

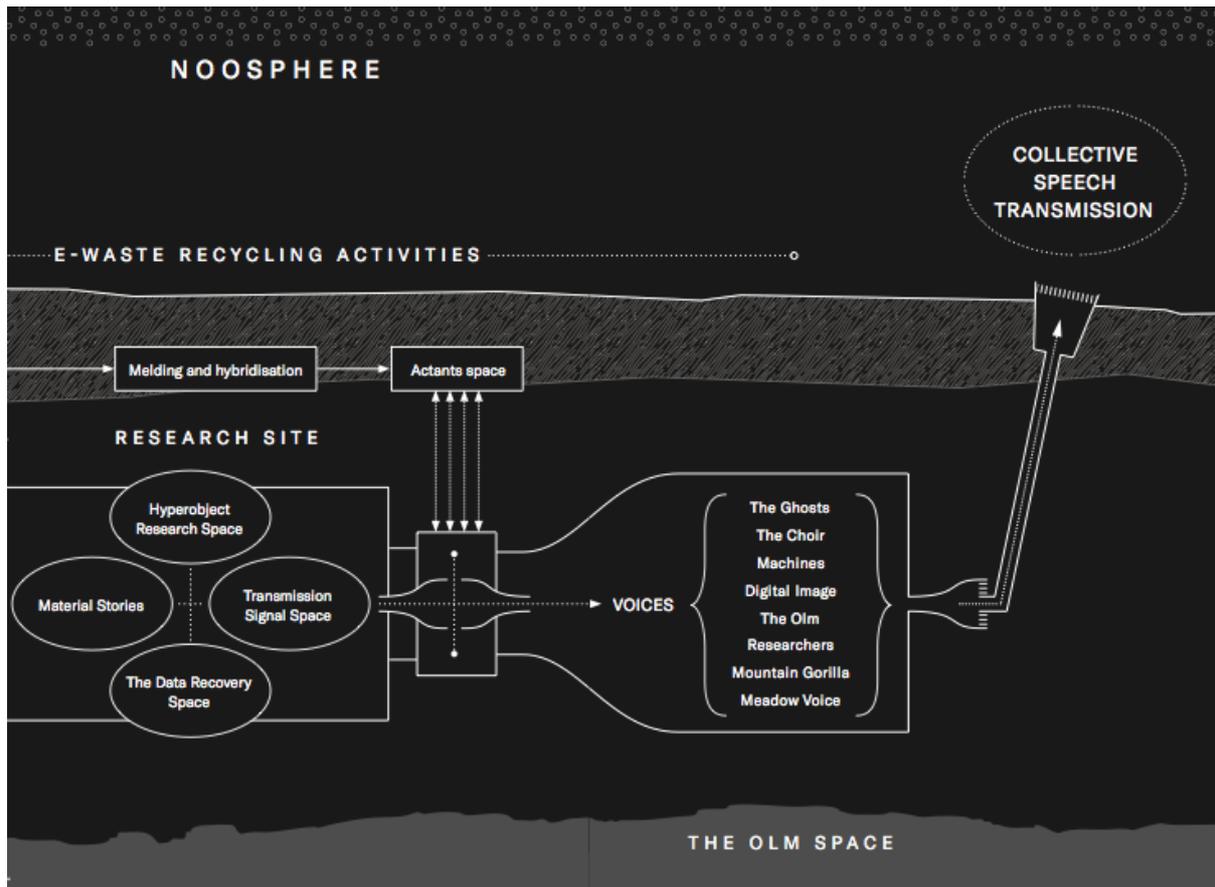


Figure 35: *The Signal and the Rock* map by Charlie Tweed (2017).

The shape of the map

The map above shows part of the underground research space and, to the right, focuses on the voices that we hear in the final audio transmission. The output device surrounding these voices is shaped in a way similar to one of Wolfgang von Kempelen's speaking machines. It connects to the surface by a pipe through which the sound waves of the voices are transmitted and this results in 'collective speech transmission'.

Von Kempelen was an Austro-Hungarian author and inventor and his speaking machine began life in 1769, the machine manifested as a manually operated speech synthesiser that was operated by bellows. I was drawn to the notion of Kempelen's speaking machines because they simulate the human voice in a non-digital way that produces a feeling of the uncanny, a ghost-like, haunted experience. Dolar describes how his machines were constructed and functioned:

'The machine was composed of a wooden box which was connected on one side to bellows (rather like bagpipes) which served as 'lungs,' and on the other to a rubber

funnel which served as a 'mouth,' and had to be modified by hand while 'speaking.' In the box there was a series of valves and ventricles which had to be operated by the other hand, and with some exercise one could produce astounding effects. As one witness put it in 1784: You cannot believe, my dear friend, how we were all seized by a magic feeling when we first heard the human voice and human speech which apparently didn't come from a human mouth. We looked at each other in silence and consternation and we all had goose-flesh produced by horror in the first moments.' (Dolar, 2006, loc.85-87)

The Kempelen machine connects with the approach that I have developed as a form of negative because Kempelen's machine rendered the disembodied voice of the human and my approach is to render the disembodied voice of the non-human, using an assemblage of material and a swarm of voices that have potential as an effect or a surplus, a ghost or trace. As Dolar also notes,

'it is as if the effect could emancipate itself from its mechanical origin, and start functioning as a surplus, indeed, as the ghost in the machine; as if there were an effect without a proper cause, an effect surpassing its explicable cause and this is one of the strange properties of the voice to which I will keep returning.' (Dolar, 2006, loc.91)

My reverse Kempelen machine also suggests the enabling of a collective of voices as they emerge from their location below the surface. These voices also emerge from the various stages of research, beginning with the development of the video machine characters, then moving on to examine the electronic noosphere from a material and network perspective. This examination of the noosphere is highlighted by the work of 'The Researchers' who operate within the 'Hyperobject research space', the 'Material stories research space' and the 'Data recovery space'. This background research knowledge then flows into the 'transmission signal machines' space where the voices are channelled and translated by the fictional non-human to human translation machine that is detailed within the publication *The Signal and the Rock*.

These voices then flow out onto the surface as sound waves that decay into the atmosphere.

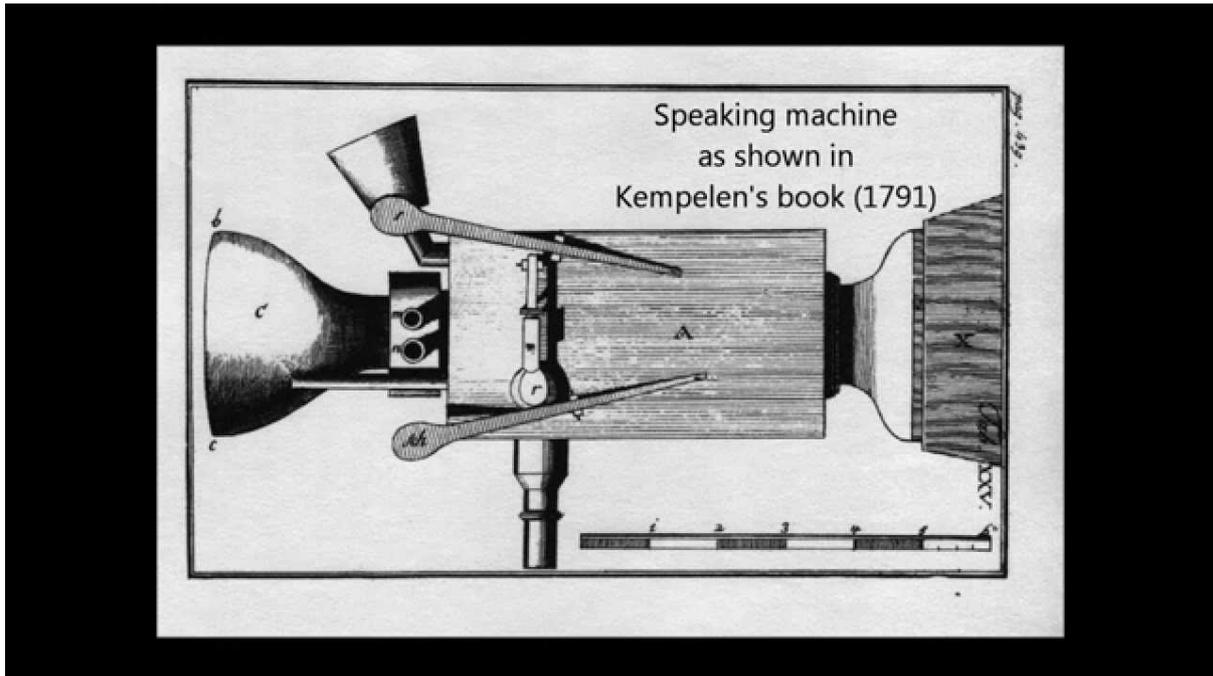


Figure 36: Kempelen's speaking machine from the original engraving by Wolfgang von Kempelen (1791).

Part 1: The audio transmission of *Re-writing the Overcode* (a close reading)

In this section, I will utilise extracts from the transcript of the final audio work in order to comment on the use of voice in this work and the functions of the different transmission sites.

In *The Signal and the Rock* (publication), the operations of a form of translation machine are highlighted at the start, and this is a useful way to frame how the various voices emerge.

A TRANSMISSION

SETTING

2,000 metres below the surface of Guiyu, China, a place known as the 'electronic graveyard' of the world, a series of non-spaces have been constructed for research purposes. No one can see them now. There is only fragmented particles and lossy data, rattling around... with nowhere to go.

Sound waves emerge from a special translation machine that is located in the centre of the space. A vast machine assemblage that looks similar to one of Kempelen's speaking machines.

This machine inhales all sorts of things: research materials, particles, components and remnants of hz, sound waves, pings, the heat from old power sources, multiple voices and traces of past activity. The machine understands all of them and transforms them into 'human' speech and language... it brings these lost things back into focus, it is an embodiment of non-human to human speech software.

Figure 37: *The Signal and the Rock* publication by Charlie Tweed (2017).

All of the spaces and characters represented on the map make a series of transmissions as different voices, and they effectively 'step up to the microphone' and have a chance to speak; they become activated by the fictional writing methods used. This analogy allows us to visualise their 'performance' in a similar way to a support group, whose members have the chance to share their personal experiences. In this context, my use of personas and speculative imaginary fictions allow me to act as an intermediary, enabled by the fictional translation machine. This approach allows me to perform the role of embodying these unheard voices and enabling them to have a transmission platform.

The Researchers (1 and 2)

The transmitted voices include 'Researcher 1 and 2', who transmit their findings and background research from the various underground research spaces such as the 'hyperobject research space', the 'material stories research space'. The Researchers take

on the role of narrators throughout the transmission, introducing the purpose of particular spaces and the function of the research work.

The Ghosts

The voices of the 'Ghosts' manifest in various ways in the transmission. One way is in the use of sounds of fragments of code that are repeated at various points by a range of distorted digital voices as well as the sounds of fragmented waste technologies such as the Canon XA3 ('I am the Canon XA30'), in components ('I am the crystal ceramic resonator'), in extinct animals ('I am the mountain gorilla') or in a video codec ('I am the H264'). The Ghosts also manifest as distorted sound effects, echoes, old lines of code, reverberations and atmospheric sounds.

I am the Samsung 76a,		
I am the Canon XA30, ⁵		
I am the light emitting diode,		<i>Multiple layered voices</i>
I am the colonite chip,		
I am the BenQ DLP,	GHOSTS	We are here together inside,
I am the fibre optic hub,		Together, inside. ⁹
I am the Equinox 4K,		We are here together inside,
I am the bridge rectifier,		Together, inside.
I am the accelerator,		
I am the FDrX,		We are here together inside,
I am the Piezo-electric device,		Together, inside.
I am the 2765a,		We are here together inside,
I am the Fuji-film X-T2, ⁶		Together, inside.
I am the LG Lite 4,		
I am the VXf799,		We are here together inside,
I am the hdrl 9,		Together, inside.
I am the H264, ⁷		We are here together inside,
I am the A100,		Together, inside.
I am the vacuum fluorescent display,		
I am the Hero 5,		We are here together inside,
I am the crystal, ceramic resonator,		Together, inside.
I am the mountain gorilla,		We are here together inside,
I am the wave,		Together, inside.
I am the Sony Xperia Z... Z...		

Figure 38: *The Signal and the Rock* publication by Charlie Tweed (2017).

CHOIR **ALL** of these words will be compressed,
 All redundancies will be removed.

Phonetics¹⁰ will offer possibilities.

Figure 39: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Choir

The Choir represents the voices of all of the characters joining together; they reiterate points and statements as an assemblage of voices. The Choir's voice is hymn-like and references the aim of producing a feeling of elegy within the transmission. The choral voices are rhyming and poetic in the way that they sing. The voices have also been through a number of audio effects that provide them with a distorted echoing quality that aims to produce a spectral feel to their transmission. The voice of the Choir sounds like that of a classic choir but is in fact generated from a single voice that has then been processed and layered to produce this choral effect.

MACHINE 1¹⁴ How might a machine speak?^{15 16}
 How-might-a-machine-speak
 Through these walls?¹⁷
 Through these layers?^{18 19}
 Today is the moment
 for expanding our view,
 No longer just semiotic
 messaging devices,
 But environments.
 Our environments.
 Your environments.

Figure 40: *The Signal and the Rock* publication by Charlie Tweed (2017).

Machine 1

Machine 1 is self-reflexive, as it asks how a machine might be able to speak. In this example, it speaks of itself as a sort of environment, referencing its own embeddedness in the earth's strata and notions of a wider definition of media that includes the materials and infrastructures that form them. It also makes reference to a rising up of geologies and to the final manifesto that is expressed towards the end of the transmission for re-aligning machine relations with the earth and its materials.

DIGITAL
IMAGE

I used to be visual.²³

Oh,
so visuuuuuuuuuuual.

I required
doses and doses of carbon,
Yes,
doses and doses of carbon,
And doses and doses of minerals.

And doses and doses
of carbon.²⁴

Just to make the 'low resolution',
I used to be visual,²⁵

But I required
doses and doses of carbon.

And now,
here I am.

Figure 41: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Digital Image

The character of the Digital Image references its own entanglement with the Anthropocene and its emission of carbon. This character is the trace or haunting of a digital image, no visual material remains, not even Hito Steyerl's lossy poor image data. In this sense, it moves Steyerl's approach to the poor image a step further, while the poor image is a hauntological representation of its former HD self that has potential. The 'invisible image' removes all visual material and embodies the haunted remnant of the image's metadata. In this way, the use of hauntology considers the potential of non-linear memories to broadcast back from a future position, in a liminal space which fluctuates between presence and absence.

The Olm

OLM²⁸ We are located two thousand metres
down,²⁹ below Guiyu, China,
the world's largest e-waste site.³⁰

It is 6,095 miles east from where
you are sitting.

We are submerged
in their 'residue'.

All around is soil and effluent
flowing down,
All over our bodies or
what we think of as bodies.³¹

Figure 42: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Olm acts as a second narrator and is featured towards the start and also at the end of the transmission. The Olm is also included in the map of the underground research site where its tunnel is plotted. The space of the Olm resides below that of the research site, and this particular character is therefore removed from the other voices and the research spaces that we hear in the transmission. I have made use of my own whispered voice for the Olm, and the intention is to create a character who at first appears to be that of an aquatic salamander, but in the final part of the transmission, the Olm is clarified as a form of hybrid post-animal who has emerged from the polluting conditions of the human machines and waste materials surrounding it. In addition, with this character, I was self-referencing my original alter ego project 'The Man From Below', a singular character who lives underground, and the Olm character is in some respects a future iteration of this persona. ('The Man from Below' is a persona that I developed between 2004–2008. The persona made extreme but viable proposals for forming underground communities and returning to simpler methods for living. These manifested in the form of videos, live performances and online materials).

I also used the Olm because it is an example of an animal who has already genetically adapted to its conditions: it has a translucent body and eyes which have evolved into having almost no vision, and it has developed particular sensory functionality in that it is able to sense electric fields and the magnetism of the earth as a navigational device. It also has chemoreceptors which it uses to sense the world around it, and these are highly sensitive to changes in the chemical makeup of the earth. I have taken this evolving creature a stage further in the transmission, imagining it at the end as a hybrid and genetically evolved being:

OLM
(CONTINUED)

The eternal flow of chemicals
from the surface,³⁸
Into the channels and through our cells,
keeps our attention.³⁹

And drives our next adaptation,
our new way.

Pause

Figure 43: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Olm notes how its chemoreceptors have modified in response to the flow of chemicals and pollutants. In this sense, the creature has genetically modified in response to its toxic conditions. As an artist, I took on the voice of the Olm to think about the transition of my own voice from this future point where it is imagined that all human bodies have died and returned to the earth, and only these voices and whispers play back through sound waves emerging from the earth and lodged in the atmosphere. 'The Man from Below' then becomes the Olm transmitting from the future, below everything else that we hear, taking its own path.

OLM

The noxious gases and chemical fluids
have affected my memories.³²

Maybe I am a piece of abandoned
caustic metal or a piece of silicon.

Or maybe I am a small stone particle.

Or perhaps, I am the Olm,
at least that is what I dream... yes...
I am the Olm, but not like the one
that you are thinking of...³³

All around me are many other voices,
from all sorts of things,
Like images, components, plastics,
gasses, human remains and flesh,
plant material, waste material,
hybrid material,
Every type of material.³⁴

Figure 44: *The Signal and the Rock* publication by Charlie Tweed (2017).

Researcher 2:

RESEARCHER 2
(CONTINUED)

We are specifically interested in how
all forms of transmission⁴⁶
technology operate,⁴⁷
Their forces and processes,
what's inside, of them.

How their components talk to each other,
who is responsible for grouping
them together.

How they can all trace their mineral
history back to the 'soil'.⁴⁸

Back to where we all lie,
staring out, through the sockets.

Pause

Figure 45: *The Signal and the Rock* publication by Charlie Tweed (2017).

Researcher 2 discusses the work being done in analysing and deconstructing transmission technologies, their components and material history, Researcher 2 also describes the functionality of the different areas of the research site and reflects on the strategy informing their work in terms of the reverse Kempelen machine and its function as a way of expressing the voice of the non-human. The Kempelen machine is their output device, the way that all of the research materials and the surrounding voices speak. They highlight how all of the research material will join together to become the 'speaking machine': 'Together we will become the speaking machine'. This is supported by a chorus of all the character's voices who outline the strategy of simulating the functionality of Kempelen's speaking machine as they say, 'All of us joining together, pumping the bellows together, emitting the vowels with an open configuration of our vocal tract, articulating the new ontologies'.

RESEARCHER 2
(CONTINUED)

Our research site is bathed by
the decay of machines of all types,
As they are deconstructed and melted,
recombined and obsolescent.⁵⁰

Where material⁵¹ structures are
constantly changing pace and rhythm.

Our entire site follows a
DIAGRAMMATIC STRUCTURE,
Like one of Kempelen's speaking
machines⁵² in terms of its shape
and movement,
His machines invested their purpose
in becoming the voice of 'the human'.

The disembodied voice emerging
from a handmade machine
consisting of wood, leather and air.

Together we will become
the speaking machine.

Together we will become
the speaking machine.

ALL

All of us joining together,
speaking together,
Pumping the bellows together,
emitting the vowels with an open
configuration of our vocal tract,
Articulating the new 'ontologies'.

Pause

Figure 46: *The Signal and the Rock* publication by Charlie Tweed (2017).

Machine 2:

Machine 2 transmits histories, revealing the development of the black-boxed computing device. The function here is to expose the unseen histories of the electronic noosphere to the audience; for example, the extract below discusses the Babbage Difference Engine and the Turing machine. The function is to also join together key moments in the history of computing machines in a relational way that makes connections between the development of computation, new forms of control and the consumption of resources.

MACHINE 2
(CONTINUED)

The ENIAC was created in '46,⁸⁶
the first electronic general
purpose computer.

Capable of being re-programmed
to solve numerical problems.

It was one hundred and fifty feet wide,
with twenty banks of flashing lights.

Seventeen thousand, four hundred
and sixty eight vacuum tubes,
One thousand, five hundred relays.

Seventy thousand resistors.

Ten thousand capacitors
and approximately five million
hand soldered points.

And it consumed one hundred and fifty
kilowatts of electricity.

Figure 47: *The Signal and the Rock* publication by Charlie Tweed (2017).

The seismic device that voices this machine investigates the operations of the earth and its layerings of strata and tectonic plates. This transmission highlights the machinic movements of the earth, considering the earth itself as a form of machine. It highlights key moments in history where its layers have moved, its tectonic plates have shifted and its own organisation has been re-written. The language used to describe the earth and its movements utilises the tone of machine descriptions, and it associates the earth's raw materials, such as gold, with their emerging function within the assemblage of digital technologies. For example, it references the formulation of gold in the earth via a meteorite shower and its provision of 'connectivity' in the circuitry of contemporary devices. It goes on to highlight the 1976 earthquake in Tangshan, China and from here considers the constant movement of the earth and the researcher's own encounter with forgotten infrastructure within the walls of the research space:

And as we monitor these walls,
we bump into the remnants of cabling,
The forgotten networks,
dug in deep, ebbing away,
Flowing down to where we lie.

Music interlude

Figure 48: *The Signal and the Rock* publication by Charlie Tweed (2017).

The voice of Machine 2 considers how the earth itself communicates via its own movements and is also entwined within the physical realities and relationalities of the electronic noosphere and its operations, linking to the work of Parks and Starosielski:

‘The critical study of media infrastructures is tied directly to the emergent field of environmental media studies as it considers where the materials and energy needed to build, operate, and sustain massive systems of content distribution come from and evaluates the impacts of those systems on environs in different parts of the world.’
(2015, loc.335)

RESEARCHER 1 In another space we focus on
DATA RECOVERY,
We are learning from THE DECAY.

The echoes and the remnants,
of permeable media.

Recovering what we can,
Imagining what the environment
was once like.

Examining molecules and sounds:
The sounds of your images?

Were they the sounds of your structures?
Or the name of your files?

Your spreadsheets and tables,⁷⁴
Were these murmurs your
streaming ‘things’,

Or auto reminders?
Your red-un-dancy?

And this single dot, which might be grey,
Was this the image of your decay?

Figure 49: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Data Recovery Space (Voiced by Researcher 1)

Researcher 1 introduces the functionality of this particular research space. It is the space where remnants of information are recovered from the remaining waste materials that are located buried below the e-waste site above. In effect, this space is also the origin of some of the voices, sound effects and distortions that we hear within the transmission.

Hyperobject Research Space (Voiced by Researcher 1)

HYPEROBJECT
RESEARCH
SPACE

RESEARCHER 1 In another space we map⁷⁷ out
the great mesh of production
and destruction at the route
of every technology.

The blurred connections,
the realities.

Our findings play out,
becoming immense.

Working together.

We focus on the capacitor,
the story of its true object:
Beginning with the Mountain Gorilla,⁷⁸
sitting in its habitat in the Democratic
Republic of Congo, unaware...

A plane flies above it,
emitting a trail of nitrogen oxide...

Figure 50: *The Signal and the Rock* publication by Charlie Tweed (2017).

The 'hyperobject research space' is the space where connections, meshes and relationalities of technical hyperobjects are researched and exposed. As 'Researcher 1' notes, it is the place where the 'great mesh of production and destruction' is mapped out. An example of this work is then transmitted in the form of a developed version of the performance lecture (*The Signal and the Rock*) and its discussion and focus on a smartphone capacitor and its associated relationalities and links to the materials of the earth. This expands on the content of the original lecture by removing all of the visual material and introducing a range of sound effects and other voices that emerge from the soundwaves of the transmission.

The 'mountain gorilla' character is heard in this section. The character represents the consumption of animals by the coltan miners in the DRC and connects the animal within the relational mesh of technological production.

RESEARCHER 1
(CONTINUED)

Meanwhile in New York an algorithmic system automatically⁷⁸ generates an electronic signal.

This is translated into a binary code and travels along conductive material, It triggers an action.⁸⁰

This is represented on the screen of the NASDAQ index^{81 82} by changes in colour of yellow, blue and red digits.⁸³

Pause

Figure 51: *The Signal and the Rock* publication by Charlie Tweed (2017).

The relationalities of different actors are highlighted by considering a minute change in electronic signal and how this contributes to an action orchestrated by an algorithm behind the software of the NASDAQ Index to extract an increased amount of coltan. In this way, the signal is an important actor in a way similar to the loop flow of electrons that Jane Bennett highlights in *Vibrant Matter*. The NASDAQ Index also has a fictional quality to it: an interface of numerical changes becoming the site that triggers various forms of extraction and pollution. In addition, the NASDAQ Index has a science-fictional quality: it is one of the electronic noosphere's writing machines that literally re-write the earth itself and the futures of its materials while being powered by digital technologies. In this context, Simon O'Sullivan considers the fictional qualities of the financial derivative and its use of science fictional methods to predict possible futures, and he draws on the parallels with art practice methods:

'Could we not say that the derivative follows the logic of art insofar as art is the presentation of a possible world? These fictions—or models—are not to be thought as representational, they are not near or far approximations of the real, but rather exist alongside the real, as it were. In fact, we might go further here and suggest that the real only 'exists' insofar as it is can be modelled.' (O'Sullivan, 2017, loc.3731)

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RESEARCHER 1
(CONTINUED)

The gorilla's heart rate increases
as it breaks open a termite nest,
It begins to eat the larvae,
unaware that soon its physicality
will transform into a record of its code,
Simulated within the wireframe
of a 3D model.

Stored on ceramic substrate,
enclosed in steel,
A remnant of data storage
with nothing left to say.

We remember the history
of the machine and the earth.

Pause

Figure 52: *The Signal and the Rock* publication by Charlie Tweed (2017).

The diminishing mountain gorilla population in the DRC is highlighted as another actor within this network of the smartphone capacitor. Looking towards its future as purely a record or 3D model located within a data storage assemblage, reduced to a few lines of code.

RESEARCHER 1
(CONTINUED)

That day in April 1784 when James Watt
patented the steam engine,
This was the moment that positioned
humanity as a geophysical force
on a planetary scale.⁸⁴

The signal that began
the decay.

The element tantalum was extracted
from its parent material known
as columbite-tantalite and used
to create a capacitor.

Often from mines in the
Democratic Republic of Congo,
near to the gorilla's home.

Back then the DRC had seventy per cent
of the world's reserves.

Pause

Figure 53: *The Signal and the Rock* publication by Charlie Tweed (2017).

The origin of 'mark making' on the earth by machines is also referenced here, demonstrating the relation between human machines and forms of waste deposit on the earth's surface,

citing the conception of the steam engine as the first example of this mark-making process and also referencing Morton's writing around the steam engine in reference to the Anthropocene (Morton, 2013, loc.211). In this way, the transmission connects the production process of the capacitor to the next stage in this mark-making process, leaving behind its own set of traces and pollutants that are released onto the earth.

The capacitor was chosen as the focus here because it is an important source of 'life' for a device, holding its electrical current and 'keeping it alive'. The changing temporality of its material is also highlighted to bring into view its extraction from a deep time position and its struggle to operate on the surface as an assemblage of high-speed contemporary technologies while being haunted by its past temporal state.

RESEARCHER 1
(CONTINUED)

A capacitor acts as the heart of the device,
it holds its power and keeps it alive,
Without its capacitor it would simply
run out, and shut down.

Tantalum's source is rooted in the earth⁸⁵
and its slowness but it is also part of
the high speed flow of processes and
electromagnetic signals on the surface.

The transformation⁸⁵ from its time
of origin, deep underground, to its
time on the surface has an unwelcome
effect and provides many unwanted
stresses and confusions.⁸⁷

But this tension is important,
and sometimes a certain type
of magnetism draws it back,
To its origins.

Figure 54: *The Signal and the Rock* publication by Charlie Tweed (2017).

The voice goes on to emphasise the journey of the material of tantalum and makes reference to its various guises, its different materialisations and temporalities it experiences as it is extracted and then formed into the component and then the smartphone assemblage.

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RESEARCHER 1
(CONTINUED)

The Columbite Tantalite is smuggled to smelting companies in China, Malaysia, Thailand and India where it is refined.⁸⁹

Here it is mixed with other minerals from around the world.

As a result its origin becomes difficult to trace, its history is erased.

Pause

RESEARCHER 1
(CONTINUED)

The refined materials like the Tantalum are shipped to factories, many of which reside in Asia.

Here they're processed into components which themselves are concealed black boxes uniting a set of objects.

Finally the capacitor is encased in its finished assemblage.

The device is then shipped and marketed.

Phone advert plays out

Figure 55: *The Signal and the Rock* publication by Charlie Tweed (2017).

The marketing of the final black boxed assemblage is then described, and a reference is made to the original smartphone advertisement that was used in the performance lecture. For the audio work, this advertisement was translated into a trace of its former self using a distorted computer voice to re-enact it and a number of sound effects that were intended to give it a hauntological quality.

The work then goes on to consider the activated performance of the device as it is switched on by its end user and makes connection with networks and its capacitor is filled with current. The work notes the power of the user interface as a site for transformation, and it looks towards a hybridised vision of human and technology and virtual and physical materials.

RESEARCHER 1
(CONTINUED)

Marketing strategies produce
unconscious and affective motivations
within the consumer,
When the device is plugged in,
the capacitor is activated
and keeps it alive.

The bright LCD screen and user
interface shines out,
Its liquid crystals vibrate and change
as the power surges through them,
Its geolocator starts recording.

Its interface becomes a generative
friction between different types
of transformation.

It connects the user
to the electronic noosphere.⁹⁰

The agency of the human
and everything else becomes blurred.

Figure 56: *The Signal and the Rock* publication by Charlie Tweed (2017).

Finally, in this section of the transmission, the final journey of the device is highlighted as its perceived obsolescence becomes elevated and the device is ultimately disposed of and disassembled, and parts of its assemblage are abandoned or buried below the surface of an e-waste site, specifically Guiyu, where the fictional operations of the 'The Researchers' is sited.

RESEARCHER 1
(CONTINUED)

Actions become magnified and
intertwined with the Earth's systems,
Every device voicing its materialities,⁹¹
entwined with the datas,
Heading toward the decline,
emitting the dust,
Spitting the residue,
perceived obsolescences
trigger the disposal.⁹²

Leaving the final mark,⁹³
returning to the soil,
As a form of dirty matter.⁹⁴

Figure 57: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Meadow:

'The Meadow' section of the transmission is a development on the *The Meadow* (2013a) video work that was made in an earlier part of the research project (see Chapter 3). The video work attempts to vocalise the activities of a number of decaying technical remnants. It looks towards the concept of the non-human actant and visualises a scenario of hybridisation between different types of waste and organic material. The audio work translates *The Meadow* into a short transmission, outlining the potential for hybridisation and utilising a synthesised voice to take on the persona of 'The Meadow' and its various actors.

The Meadow also references Jane Bennett's (2010) writing on 'The Meadowlands' in her book *Vibrant Matter* and the potential for generating new forms of non-human agency and new forms of actant from a site of abandoned objects.

The call to action for the 'new signal'

TRANSMISSION SIGNAL SPACE

RESEARCHER : We are near the time of the new signal,
a moment when interfaces become
self-perpetuating,
Agitating and re-aligned,
based on listening they will
develop a new relation.

An interruption,
a combination.

We need to secure
the future proof.

Figure 58: *The Signal and the Rock* publication by Charlie Tweed (2017).

In the final section of the transmission, we hear a new call to action which emerges from the research site and its map of actors and proposes a strategy for adapting relations between machines and the earth. 'We are near the time of the new signal' they say as they make a proposal for all of the waste materials to join together to secure their 'future proof'. They propose a time when they can escape their original constraints and become new forms of hybrid technology.

RESEARCHER 1: Data will reform and convert
 an analytical melding of sources.

With hybrid transistors,¹⁰¹
 translator, transcriptors.¹⁰²

Omnipresent velocity.

Vector based optimisation.

And clean speed.

We need to become more strategic,
 listening to the rhythms
 above and below,
 The yellows, the blues,
 the greens and the mauves.

Figure 59: *The Signal and the Rock* publication by Charlie Tweed (2017).

The transmitted voices look towards ‘the time of the empty’ when all forms of raw material have been consumed.

ALL: When all we have is the soil,
 and the great sphere,
 With its solar winds and data streams,
 the myriad of parallels,
 And energies,
 revolving
 and retaining these.

Figure 60: *The Signal and the Rock* publication by Charlie Tweed (2017).

They then outline a proposal for their future endurance and sustainability and a reconfiguration of the flow of matter and energy.

We are creating a series of models
to support requirements:

One uses the concept of the fusion torch,
a methodology for our sustainability,
Allowing us to create new mineral
resources from ordinary soil,
A new way to nourish our components,
a new relation between the human¹⁰⁶
and the earth's crust,¹⁰⁶

Reducing forms of waste
to its basic elements,
Forming these into new types of rock,
new forms of material,
Using hot ionised plasmas with
temperatures of 200 million degrees.

Figure 61: *The Signal and the Rock* publication by Charlie Tweed (2017).

The notion of recycling emerges here as they outline the use of nuclear fusion to transform the soil into different kinds of materials. The proposal identifies a plan for a coding of the earth's materials at the atomic level so that any type of material can be formed and hybridised with other types of material (human/biological/technological).

RESEARCHER 1
(CONTINUED)

Manipulating, transforming
and re-coding at atomic level.

A new material
with fossil remnants.

A material that cannot
be pinned down.¹⁰⁷

A chameleon that can
change shape or direction.

Based on
'The Chemical Basis of Morphogenesis'
defined by Turing.¹⁰⁸

Figure 62: *The Signal and the Rock* publication by Charlie Tweed (2017).

In this way, it highlights a fusing of earth and computing machines into an integrated assemblage that also draws on concepts of biological computing and actual experiments in which data has been stored within artificial strands of deoxyribonucleic acid (DNA).

RESEARCHER 1 Hybridised devices,¹⁰⁹
 with genetic editing.

A merging of languages,
 living computational machines to
 solve difficult combinatorial problems,
 Storing data within strands of DNA¹¹⁰
 and other self replicating materials,¹¹¹
 With new types of molecular interface.

Merging our hardware
 and biological techniques.

The technology of technologies,
 the techne of technes, will be enabled.
 With depth controls and dark patterns
 and genetic pattern generation.

A technology that looks out for itself,
 sustainable and future proofed.

Bringing the new kinship,
 flattening out the hierarchy,¹¹⁵
 AND implementing this by
 re-designing the surface of Guiyu into
 a reformed diagram at molecular level,
 So that it operates as a new type of
 abstract machine assemblage,
 With complete self-sufficiency and
 positive automation.

Powered by waste,
 and sustained by soil.

Figure 63: *The Signal and the Rock* publication by Charlie Tweed (2017).

This final part of the transmission examines a refocusing away from the human, proposing a methodology for the non-human machine assemblage to emerge: a machine assemblage that is embedded in the earth, one that activates the e-waste site Guiyu, the forgotten components and waste materials.

It also highlights a potential future, once again bringing into view the idea of the unreliable narrator and identifying a post-human solution that is on the one hand much more sustainable and operating from a non-human perspective, but on the other hand, it is a subversive call to enable the continued consumption and control of the earth by machines.

The focus on enabling these machines to be self-sufficient and even powered by the most basic of materials, such as soil and waste, provides a viewpoint that these human-designed

machines will continue to consume the earth long after all humans have become extinct. In this sense, the work suggests that the machines that remain are unleashed, sentient and focused entirely on their own sustainability.

The machines and their associated hyperobjects are all encompassing and have a totalising plan for their future relation with the earth, sustaining themselves by overcoding the earth itself, continuing in their consumption of the earth until even the soil has been extracted. In this respect, the machines continue as an enhanced product of their original human architects, self-sufficient and hybrid consumers of the earth.

Part 2: Development of the final publication - *The Signal and the Rock* (2017)

The conception of the publication began in the first phase of the project when I created the map and initial manifesto for the fictional researchers and the research space that they occupied. This strategy built upon the use of fiction and alter ego in the work and expanded the fictional world of its 'investigators'. The publication also began to function as a 'notebook' that provided further insights: 1) around the intentions of the fictional 'researchers', 2) around the strategies used in the various video works, performances, machines and texts and 3) as a way of exposing some of the key theoretical reference points that have informed the work.

The Signal and the Rock publication accompanies the final audio work *Re-writing the Overcode*. The publication is partly a manifesto and also functions as a notebook, apparently created by 'The Researchers', which provides further context to the audio work, the video works and their authors' intentions. The publication also brings together the writing created under the guise of the various personas throughout the research project. It incorporates the full transmission script from *Re-writing the Overcode* and uses a system of footnotes from a wide range of sources to draw out further relations and context. As a result, the publication is intended to operate as an assemblage of human and non-human voices, appropriated material, fictional material, unseen machine histories and as a way to expose the operational mechanics of the earth itself. In this way, it represents a form of hyperobject, existing across temporalities and geographies, that demonstrates complex meshes of relations.

The design of the publication references the layout of a screen or radio play and also the format of a hymn book. The radio play style of formatting allows for the different voices in the transmission to be clearly identified as well as an explanation of the different characters at the start in a way similar to a play. This definition of the characters allows for the publication

to clarify that it is a piece of fictional construction. The hymn-like quality to the design of each line of the transmission allows the text to operate as a reformatted elegy to human technologies.

Overall, the design layout acts upon the methods being used in the audio work in terms of utilising my fictional strategies to activate the series of non-human sounds and voices. In this sense, the design clarifies that what is heard in the transmission is a construction, that it is an 'speculative recycling' of the technologies of the noosphere.

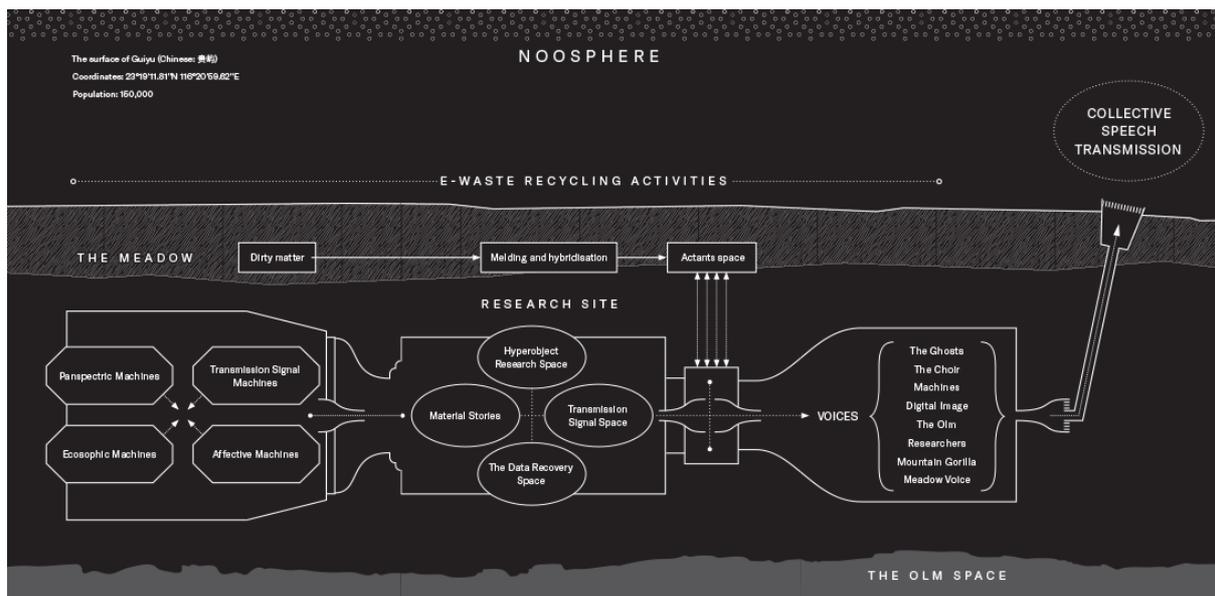


Figure 64: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Map

The fold-out map at the start of the publication clarifies the structure of the research site, highlighting its proximity to the e-waste recycling activities above it. Directly below this e-waste site, the map emphasises the 'The Meadow' space, which itself has a voice within the audio transmission.

The map also documents the various research spaces such as the 'hyperobject research space' and it utilises the Kempelen speaking machine's shape to highlight the mechanisms of 'collective speech transmission' where the hauntological voices are transmitted back into the atmosphere on the surface. The map looks similar to a process map that we might see used to map out a series of digital processes, data storage devices and networks, and it re-appropriates this format to emphasise the performative process at play in the production of both the video works and the audio transmission. It makes explicit a notion of performative

and imaginative recycling of the decaying technologies and content of the electronic noosphere, and the concept of performative recycling is a useful way to join together the strategies and methods that have been used throughout the project.

Prologue

PROLOGUE

I, becomes they, becomes we,
 ourself, becomes 'ourselves',
 Becomes an anonymous component
 without name or form.

We are the 'researchers'.

Figure 65: *The Signal and the Rock* publication by Charlie Tweed (2017).

After the map, the initial text is labelled as the 'Prologue', and it consists of a manifesto apparently authored by 'The Researchers'. The aim here is for the manifesto to provide a framing of the approaches taken in the work in terms of utilising persona and alter ego and becoming a series of anonymous voices. 'The Researchers' call themselves a 're-writing machine', and this refers to the machinic structure of the research space that is documented in the map. This manifesto also refers to the strategies of voice changing that have been utilised in the audio transmission, as it notes, 'We constantly change voice by algorithmic application and vocoded modulation'. It also refers to the focus of creating proposals for specific sites, which is a method that has been used both in the video machine transmissions, e.g. the proposal for the Isle of Grain in the film *Grain*, and in the audio transmission *Re-writing the Overcode* and its proposals for Guiyu.

We want to orchestrate an effective,
 fictive critique.

We take the data and re-format it,
 applying edits, cuts, effects,
 new speeds, transitions, colours,
 Re-montaging, transcoding
 and encoding.

Figure 66: *The Signal and the Rock* publication by Charlie Tweed (2017).

This approach is further clarified in the final section, where it alludes to re-appropriating data, 're-montaging and transcoding'; in this sense, it is highlighting the original focus of the video machines as subversive interventions within the operations of the electronic noosphere. Finally, 'The Researchers' describe their relationship between technology and ecology and allude to the tension at play within the work that they produce.

The Characters

CHARACTERS	
THE GHOSTS	They are the forgotten parts of many things, they are the pings, the haunted particles, the decaying devices and abandoned components.
THE CHOIR	The choir are made up of an assemblage of voices from all sorts of things. They are a collective, a 'swarm' that emits from the layerings.
RESEARCHER 1	A narrator who helps us move between 'spaces', a research leader, an innovator, an inspiration.

Figure 67: *The Signal and the Rock* publication by Charlie Tweed (2017).

The exposure of the fictional construction that has been employed in the project is then further clarified by 'The Characters' section, in which the various characters are identified and described using a similar format to a screen or radio play.

A Conversation

22

A CONVERSATION

*A lift that travels at an inordinately slow speed.
— the lift appears to be empty, but inside
a number of sounds can be heard.*

RESEARCHER 1 Where are we going?

MOUNTAIN
GOBELLA I don't know but it seems to me
that we are moving upwards.

DIGITAL
IMAGE Well I can see a lot of different
consistencies of strata through the
glass and I am almost certain that
we moved/it moved downwards.

Figure 68: *The Signal and the Rock* publication by Charlie Tweed, 2017.

Following 'The Characters' section, there is a short screenplay which features the voices of the primary characters in the transmission as they travel through the strata of the earth in an imaginary lift that appears to be stationary. The format replicates that of a radio play and acts to introduce the characters and the perspectives that they represent in a playful way.

MOUNTAIN
GOBELLA I remember when I was some 'body'.

SEISMIC
MONITOR I remember when I felt something.

Figure 69: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Transmission

Next, there is an annotated transcript of the entire audio transmission. In the previous section, I employed this transcript as a way to visualise the different sections of the transmission. The publication expands on this transcript by incorporating a series of notes that provide additional context around the motivations behind some of the actions and plans that are described.

These notes also build additional layerings to the fiction and shape the publication into its own sort of hyperobject that is made up of many different kinds of voices, materials, relationalities, geographical locations and networks.

The annotated notes are partly original and partly re-appropriated. They continue the focus on making connections and highlighting unseen networks and histories, exposing relations between the voices and the technologies that they speak of and operations on the earth and its materials.

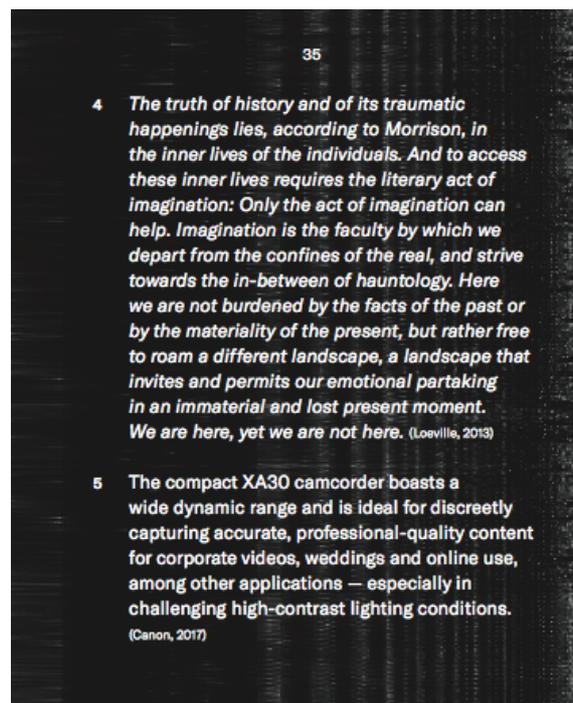


Figure 70: *The Signal and the Rock* publication by Charlie Tweed (2017).

In the example above (Note 4), the strategies employed by myself and the fictional 'The Researchers' are expanded upon and revealed by using a theoretical quote to reference the possibilities of 'the literary act of imagination' and the striving for the 'in-between of hauntology'.

In the second reference in the second example (Note 5), a re-appropriated product description expands upon the functionality of a Canon camcorder that was mentioned at the start of the transmission. The voice of this camcorder exists in the audio transmission as a haunted voice of its past self.



Figure 71: *The Signal and the Rock* publication by Charlie Tweed (2017).

In the example above (Note 18), 'The Researchers' themselves write an annotation that refers to the layerings that the various voices are located within, as well as referencing a 'new geology that rises up, from below our feet'. From this annotation, the notion of layerings, or in Bratton's case, the idea of 'The Stack', is clarified in terms of the position of 'The Researchers' and their surrounding voices.

In the example below, the footnotes are used to expand on the persona of the Olm and to provide the viewer with some clarity around the creature's genetic mutation and hybridisation with machines.

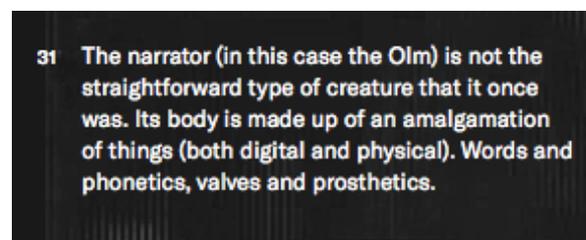


Figure 72: *The Signal and the Rock* publication by Charlie Tweed (2017).



Figure 73: *The Signal and the Rock* publication by Charlie Tweed (2017).

Images

Throughout the publication, a series of images are included. These images have all been re-appropriated from the body of video works that have been produced throughout the research project. This process has degraded these 'poor images' even further, removing them from their origin, pixelating them and re-contextualising them with the text and notes from the publication. In this way, further layers of fiction emerge around each of the chosen images, and they become embedded within a constantly adapting fictional framework.

This approach allows the publication to operate as a complex assemblage of all the 'research materials' that have been created, including the video works, the written works, the audio works as well as re-appropriated materials. As a result, it functions as the final iteration and deployment of the fictional methods that have been used throughout the project. Thus, the publication operates as a handbook for the research project and an explanation of the logics of the research space and its transmission strategies.

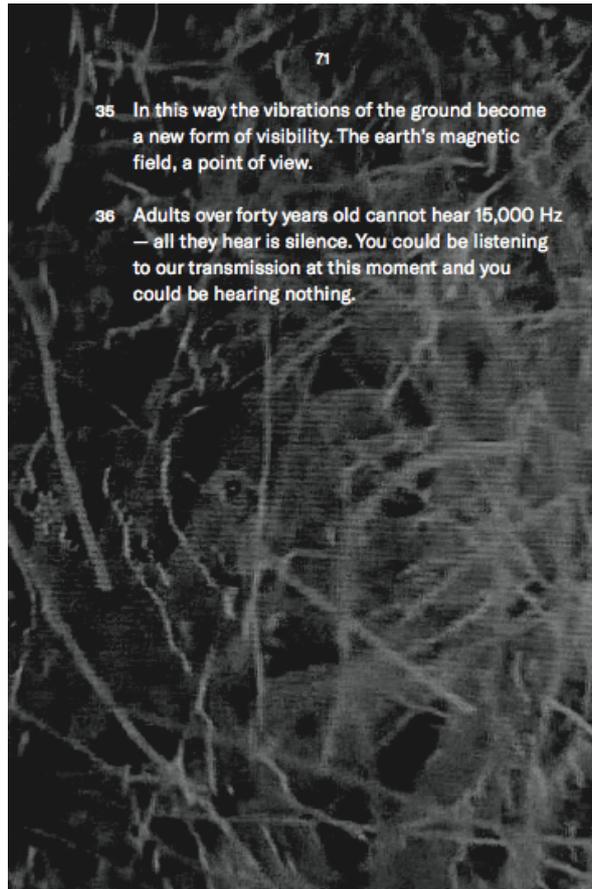


Figure 74: *The Signal and the Rock* publication by Charlie Tweed (2017).

Finally, by utilising this re-appropriated visual material and positioning it next to particular annotations, I am building on my use of re-contextualisation and appropriation to formulate a further metafiction behind the works produced. As a result, there is a non-linear quality to this assemblage that mirrors the complex set of interrelations, temporalities and effects of the electronic noosphere and its digital machines.

As a result of this final method within the work, the publication *The Signal and the Rock* is itself activated as a sort of machine: an assemblage of the methods used and the works that have been the output.

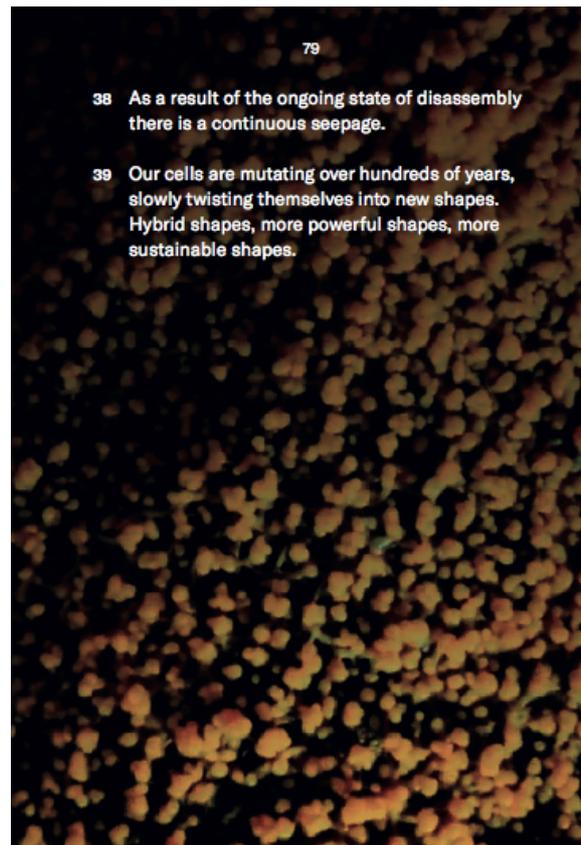


Figure 75: *The Signal and the Rock* publication by Charlie Tweed (2017).

The Structure

The shape of the publication and the audio work originates from the mapping process that was used to consider the capacitor network of the Xperia Z smartphone and the various relationalities that were identified between the components within this network, e.g. when I linked the consumption of the rare mountain gorilla in the DRC to the production process associated with the production of a smartphone capacitor. In constructing the script for the audio work and the layout for the *The Signal and the Rock* publication, I built upon this idea of relational heterogeneous structures and connected meshes.

The transmission, according to 'The Researchers' map, emits from its origin in the underground research site. The walls of this site are surrounded by heterogeneous layerings, web-like relations of strata that flow through the slow times and are forgotten and invisible in their true machinic form to the human observer. These layerings fuse the geological layers of the earth with waste technologies.

For DeLanda the strata of the earth contain a heterogeneous mixture of flows consisting of 'energy, germs, genes and words', and he visualises a condition where 'linguistics, biology

and geology' are not separate spheres but instead seen as three coexisting and interacting flows of energetic, replicative and catalytic materials (DeLanda, 1997: p.267). He notes that these sorts of relations have always been present with parallel flows of time running through them and that the new conditions of capitalism are no different; they are all forms of 'structure generating processes' (DeLanda, 1997: p.267).

The layerings that I employ are made up of these sorts of relationalities emerging from the earth, the spaces where the remnants of old components fuse with rock into their own sort of strata. Many writers whose work emerges out of contemporary capitalist and technological culture have produced works that harness a more heterogeneous dynamic, e.g. in the works of Thomas Pynchon. As Charlie Gere notes,

'Pynchon is in a sense the archetypical American postmodern novelist. His novels are vast, hermetic texts, dense and difficult to read and full of hidden references, heterogeneous modes of writing and an almost total absence of stable meaning. He has been hailed by a number of critics as a writer deeply engaged with questions of Cybernetics, systems and information.' (2008: p.187)

Gere observes that Pynchon's *Gravity's Rainbow* takes the theme of technologising the modern world to extremes. The interesting thing about this novel is that the arc shape of the rainbow in its title also connects with the elliptic set of connections within the novel and the historical and literal trajectory of one of its key focal points the V-2 rocket programme (Gere, 2008: p.187).



Figure 76: *The Signal and the Rock* publication by Charlie Tweed (2017).

Timothy Morton has highlighted these relationalities existing as a sort of mesh as a powerful metaphor for ‘the strange interconnectedness of things, an interconnectedness that does not allow for perfect, lossless transmission of information, but is instead full of gaps and absences’ (Morton, 2013, loc.1468). The structure in the audio transmission and publication contains many of these gaps, absences, holes, missing data, noise, forgotten lines of code and spectral interludes (e.g. Figure 76).

The structure of the texts spoken by the voices and captured in the publication also closely connect to the description of ANT that has been discussed in previous chapters. As described, ANT refers to heterogeneous sets of actors and focuses in on the importance of understanding these sorts of complex networks of human and non-human. These structures emerge from their abstract machine dynamic that we as humans have created, the technological prosthetics of capital that we exist inside and that extend over all kinds of materials and locations. Thus, while these voices and sounds speak as separate entities, they also join together in the flow and force of their abstract assemblages as physically embedded items within the strata of the earth.

This approach connects moments in history, such as earthquakes occurrences, moments of invention, moments of waste deposits, a momentary pause in the DRC with a rare mountain gorilla, parallels of machinic mechanisms to the earth, parallels of computer coding and genetic coding, an endless set of flows of timescales, real times and deep times. The approach attempts to highlight the link between human-produced machines and the depletion and pollution of the earth's systems.

As a result, I have constructed a form of transmission machine that explicitly enables an assemblage of disparate non-human voices to be heard so that it might begin to act on the audience who hear these voices, using my fictional approaches to share a new sort of knowledge about the non-human and about the embeddedness of control technologies within the earth.

Part 3: The Final Exhibition - *Soon we will become output* (2017)

The exhibition *Soon we will become output* occurred between the 13th and 20th of December 2017 at the Stanley Picker Gallery in Kingston. The title *Soon we will become output* refers back to the map of the underground research space and the various transmissions that have been generated from its research spaces and outputs. The title also addresses the audience by playfully referencing a collective future or endpoint where all humans have become a form of 'output' or waste material.

Soon we will become output provides a focused representation of some key works that have been produced in both parts of the research project (from the video machines to the audio and performance works and publication text). It also brings examples of these works together in dialogue with each other in a way similar to the dialogue between the text, footnotes and images within the *The Signal and the Rock* publication.

In the exhibition, it was also important for me to demonstrate several further developments within the practice. Therefore, I have incorporated some recent video works such as *Oporavak* (2016) as well as a further iteration of the audio transmission *Re-writing the Overcode*, which includes a visual spectrogram element.

Works exhibited:

Re-writing the Overcode (2017) (Audio work with spectrogram as visual record/trace, 48:53)

minutes)

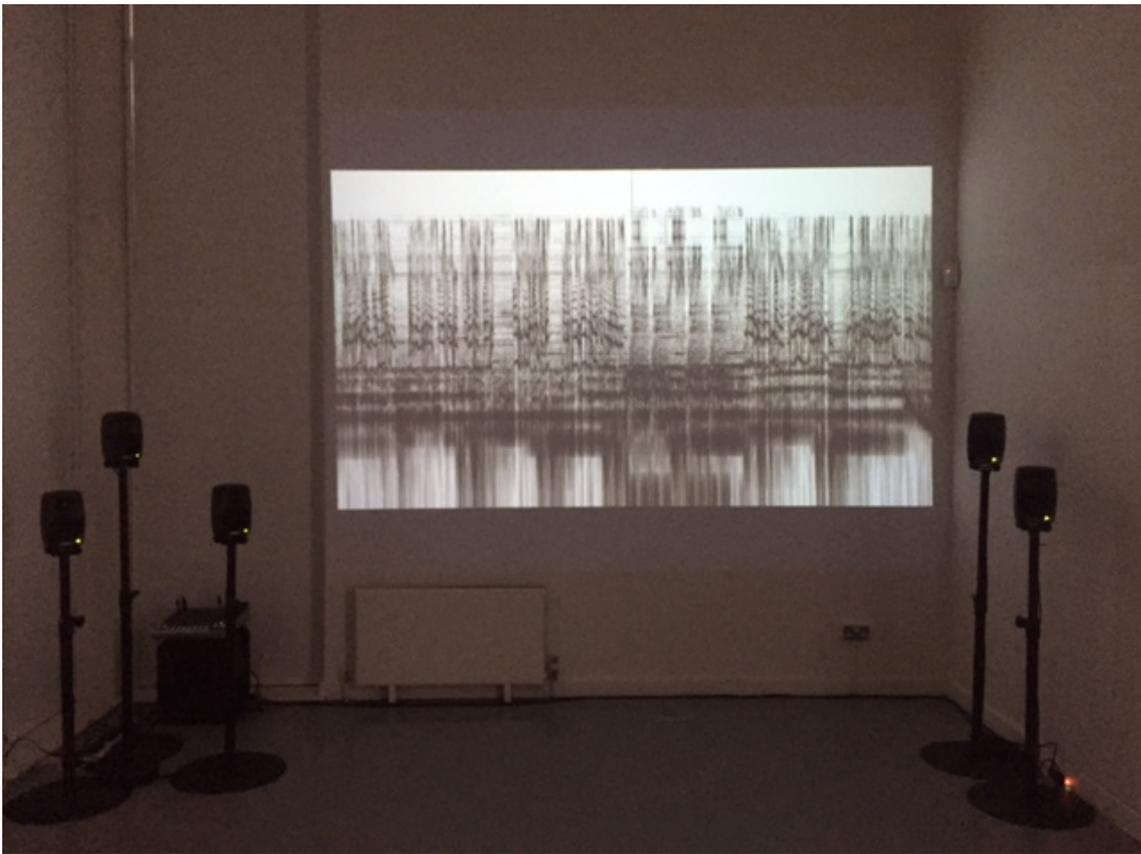


Figure 77: *Soon we will become output* by Charlie Tweed (2017).

The audio transmission installation provides the primary focus in Stanley Picker's Project Studio. The installation uses a high-quality Genelec surround sound speaker system that allows the audio transmission to fill the space and the voices and sounds to have an immersive effect on the seated audience, drawing them into their fictive narratives utilising a range of affective tools.

The exhibition also includes a visual element using specialist audio software to analyse the visual trace of the transmission's sound file, an attempt to bring into view the origin of the voices that are heard. Spectrogram tools are useful here because they can visualise the strata and layering of sound, producing a visual trace of its 'ghosts' and helping to locate what lies inside.

Spectrograms are a visual representation of the spectrum of frequencies in a sound or other signal as they change over time or via some other variable. In a project that situates itself between many temporalities, layers of strata, signals, frequencies and materials, the use of

spectrograms to examine these traces allows for a final visual record to emerge and to be 'stored'. In the context of this project, it also provides a visual record of 'the dead', the waste technologies to which the work partly elegises. It also provides the only available visibility of these unidentifiable and haunted soundwaves, the only visibility of the 'dead' technologies and their transmissions. Carrie Clanton discusses the relationship with communication technologies and the supernatural and the ghostly:

'The development of all media and communications technologies, from telephones to digital video, is closely associated with the supernatural, with such "ghostly media" producing disembodied voices, enabling scenes of the past to repeat in the future, and evoking the presence of those spatially absent or long since dead. In a sense, all recorded media haunts and is haunted: as Roland Barthes (1981) pointed out about old photographs, the people we see in them are likely dead, but are also going to die, and the same is true of audio recordings and film.' (2012)

Arthur Kroker explains how spectrograms have recently been used by scientists who were researching artificial intelligence to attempt to decode brain waves and 'eavesdrop' on what we are hearing, the traces of our own audio memories (Kroker, 2014 p.12). He examines how spectrograms might be recorded from the human brain, which he sees as an auditory archive, and in a post-human future, the patterns of these spectrograms might be translated back to their original sounds. Therefore, this begins to presume that every part of the recorded material might be captured, stored and translated back in the future, unlocked from its original storage format and decoded.

The audience viewing the spectrogram inevitably begin to link the visual material with what they are hearing to see patterns in reference to sounds and also to see images within the spectrogram visualisation that are not present. In this sense, the viewing experience can be compared to that of attempting to decode scrambled or depleted digital images, searching for patterns, trying to make connections and fill in the lost information. In this way, the spectrogram also functions to encourage the viewer to see images that are not actually present. This condition is called 'apophenia', the perception of patterns within random data, as Benjamin Bratton notes, 'drawing connections and conclusions from sources with no direct connection other than their indissoluble perceptual simultaneity' (Bratton, 2013). In this sense, the act of studying the spectrogram and attempting to define patterns, points at the Control Society's desire for complete visibility via informatics and data. The forms that appear in the visualisation are indeed not present and are in fact very far removed from the source of the transmission.

The process of translating the sound file into the spectrogram image allows for new and unexpected forms to appear, including gaps and mistakes, noise and glitching, and visual material that looks more like strands of DNA or rock forms than the product of the spectrogram algorithm, imperfect and flexible signals.

In the production of this spectrogram, a performative process was employed, using the software to search for the 'origins' of the soundwaves by changing the viewing options, zooming in on particular areas of the spectrogram and triggering a change of speed in the way that it scrolls across the screen, thus searching for the true record or the true identity of the voices being transmitted.

The video works

I selected four video works for the exhibition, and these have been displayed in a loop on a large flat screen monitor positioned on the wall with headphones to the rear of Stanley Picker's Project Studio.

Each of the selected video works relates to the strategies employed in the first phase of the project that were generated from the thematic machine area within the research space.

The first video, *Archimeters* (2012b), represents one of the most successful earlier works and maps to the affective machine area. This work was discussed in detail within Chapter 2; it makes a proposal for a 'a fully integrated auto-poietic and auto-effective mechanism' and applies this to the city of Ordos in China.

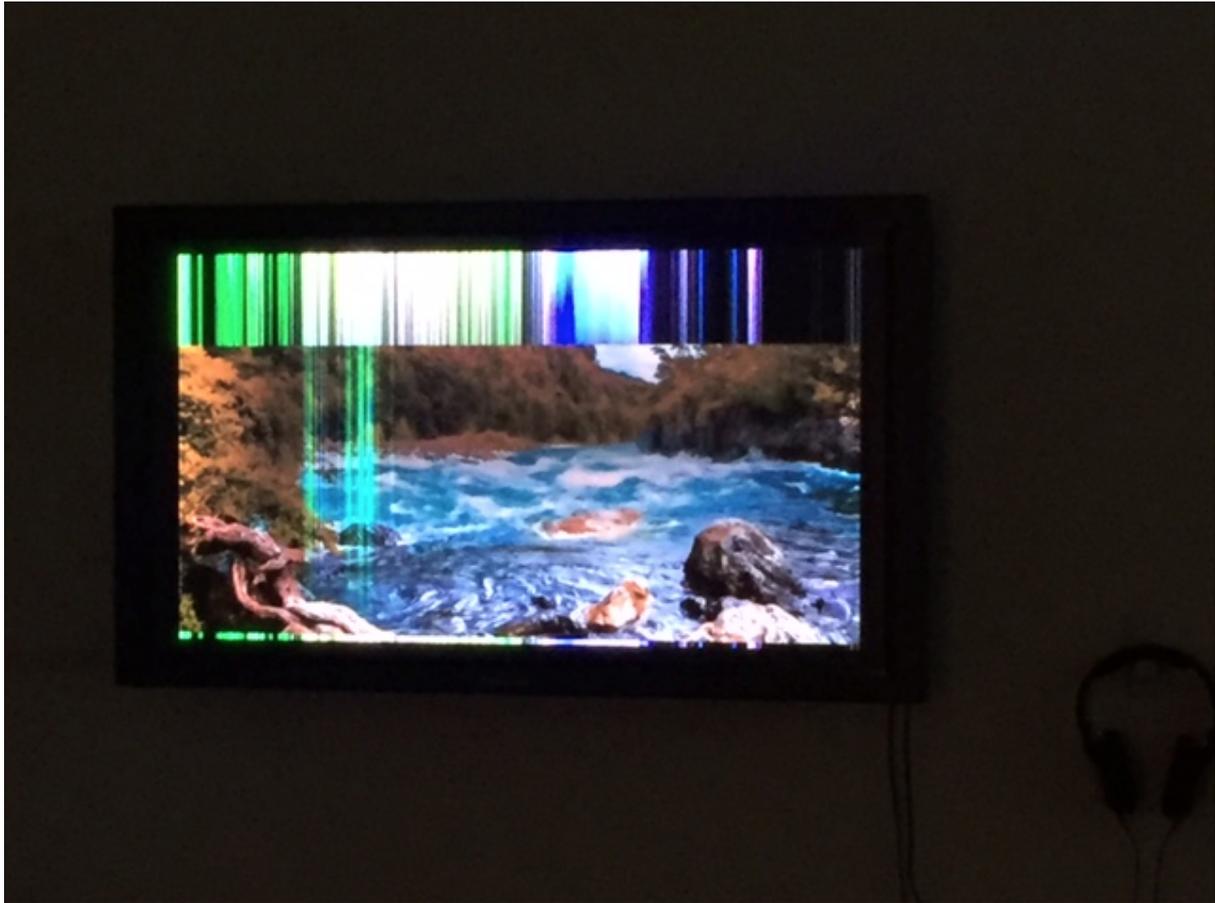


Figure 78: *Oporavak* by Charlie Tweed (2017).

The second video work included is *Oporavak* (2017c). It was selected because it represents a new development from the original set of video works. The video emerges from the foundations of both the ‘affective machines’ and the ‘panspectric machines’, and it employs the mechanism of over-identification to propose a totalising form of control across digital and physical space.

Oporavak proposes a methodology for what it calls ‘information recovery’ and the solving of ‘integrity problems’. Taking its inspiration from data recovery solutions and the language of achieving ‘complete visibility’ via forms of HD technology and big data, the film is part alternative software training video and part the voice of a subversive hybrid machine.

It takes the intent of information restoration into a new context with its apparent ability to manipulate all sorts of digital and non-digital materials via its sentient interface and performative actions, which can apparently operate at molecular level. In this way, the machine is enacting the form of totalising control that Brian Holmes highlights in his definition of the electronic noosphere and its overcoding activities.

The film utilises the voice of an unreliable narrator which acts to draw the viewers in and raise their awareness of inbuilt human desires for clarity and visibility. It also attempts to make the viewers aware of the affective content and remixing tools that are constantly used to manipulate their senses within post-internet culture, and it does this by exposing software tools and revealing video effects that are being used. In this way, it acts to draw the viewers into its proposals but also to draw them out again via the exposure of its techniques.

The final section of the film looks towards a 'sensing mechanism' that has the functionality to manipulate and alter any type of visual material at its source and the capability of connecting with and manipulating the subconscious of its viewers, using sensing and speaking therapies.

This work also builds on the methods that I used in the initial set of video works by re-appropriating text and visual content from online sources and then re-purposing and re-contextualising this material.



Figure 79: *The Signal and the Noise* by Charlie Tweed (2016).

The third video work shown in the exhibition was *The Signal and the Noise* (2016a). This work was selected because it is a recent work which builds upon the ‘panspectric machine’ focus and takes its aim at controlling and manipulating the source code of humans and animals. The work employs language appropriated from the world of computing and technology production to highlight the parallels between machine coding and genetic coding.

The work is voiced by an anonymous group of hybrid machines from some point in the near future. Its narrators consider humans and animals to be inefficient types of machines and consider ways of editing and improving their code. The film draws upon the latest advances in DNA sequencing technology, as well as new ways of controlling behaviour, such as optogenetics, which uses coloured lights to control behaviour. The work proposes a future vision of hybrid computing devices that are used to monitor and repair living things, resulting in better performing humans and animals. Although the work appears to be a piece of SF, all of the technologies and ideas discussed are based on actual advances and research in addition to visions of how things might materialise in the future.

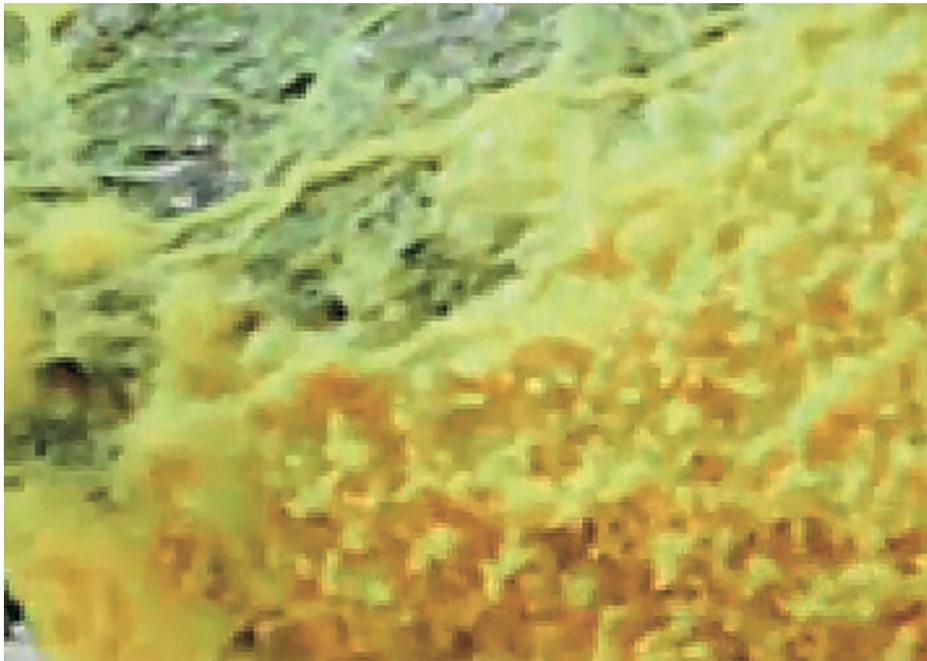


Figure 80: *_s.o.f* by Charlie Tweed (2017).

The final video work included in the exhibition was *_s.o.f* (2017b), whose narrative interacts with the audio transmission and its sentiment about the future of the earth. The work builds on the previous videos that emerged from the ‘ecosophic machine’ research space in the first phase of the project. It acts as a proposal from a future point when almost all forms of

life have been extinguished, and it looks towards the potential agency of a hybrid form of fungal spores which are part organic, part recycled waste and part digital. The spores appear to have embraced the sentiment of the audio transmission when it proposes a merging of machine assemblages with the ecological to formulate new materials and new kinds of machines.

It also connects with the survivalist instincts of the Olm character. This character emerges at the end of the audio transmission as a hybrid lifeform that is part animal and part machine, genetically modified and re-coded in response to the toxic conditions in which it exists. The visual material used in this video work also appears to be dislocated waste elements from video effects software and CGI tutorials. This waste material has been re-filmed and re-contextualised.

As a result, the video functions as a transmission from the endpoint of things: the place where CGI images, old components, biological material, human and non-human bodies all come together. Perhaps it is below the surface of an e-waste site or after some form of mass extinction or in some other liminal space where virtualities and materialities all meld together as the physical and the virtual become indistinguishable.

The video also addresses the viewer, implicating him or her in its narrative: 'you are losing functionality, memory is failing, connections are losing their stick'. It continues, 'chemicals flow through you . . . you make utterances that you don't understand. . . . we all end up down here, embedded, reshaped, reformatted'.

From the liminal space that the narrator and the perceived audience are now in, a proposal for a future melding of digital and physical waste materials is outlined, and its position as 'the strategist of spore dispersal' is highlighted.

This transmission continues the focus of visualising and activating non-human actants and making visible potential future scenarios and relationships. It ends by outlining how at this endpoint, the only option available to the human is one of 'spore dispersal'. It repeats, 'the sanctuary of fungus is among us'. This proposal references the resilience of fungus as one of the few lifeforms that might emerge after all others have become extinct.

The Publication

The completed publication, *The Signal and the Rock*, was also launched at the exhibition and was available for viewers to read as they experienced the audio and video works. As

mentioned in the previous section, the publication aims to draw together the entire research project, including 'The Researchers' and their manifesto, the personas of the non-human voices activated in the works, the fictional research site and its context, the video machine transmissions as well as the re-appropriated visual and text-based material.

The assemblage of the publication also connects with the layout of the exhibition, mirroring the way that the video machine works on the flat screen are in dialogue with the audio work and its spectrogram projection.

While viewing the video and audio works, the viewers were encouraged to also read the publication and follow the transmission script of the audio work and its associated footnotes, resulting in a layered viewing experience. Thus, the viewers became the diviner of the work's assemblage and associated hyperobjects.

Conclusion:

In this chapter, I began by outlining the development of methods that were used to create the final audio transmission. I then considered the framing of this transmission via an adapted version of Kempelen's speaking machine, appropriating this idea and using it to frame a 'non-human-to-human' transmission mechanism. I then examined the audio transmission in detail, looking at each section and discussing the development of approaches in the production of the work.

I also considered the publication *The Signal and the Rock* and its function as a form of machinic assemblage and technical hyperobject that is representative of the entire research project and the strategies used within the practice. Finally, I considered the exhibition *Soon we will become output* at the Stanley Picker Gallery and examined the works exhibited and their intentions. In the concluding chapter, I revisit the key aims of this research project, and I examine how the methods used in the practice have achieved them.

Chapter 5: Conclusions

Introduction

This chapter first considers the aims and objectives of the project and summarises how they have been met through the research, methods and works produced. I then review the key new strategies that have emerged out of the entire body of practical works. Finally, I look towards the future and consider how the developments in this project will inform my future practice.

A summary of the research approach and a consideration of how the aims and objectives have been interrogated through the practice

Part 1:

The first aim of the research project was to ‘interrogate the operations of the electronic noosphere from a machine perspective’. From this research, I highlighted that it operates to realise new forms of virtualised and biopolitical control on its users via a series of networked computational writing machines that are powered by informatics, affective transmissions and new modes of panspectrocinema. I also highlighted how this results in the earth becoming computational, a condition in which sensors, signals and machine assemblages control and manage its environments and populations. These characteristics began to open up spaces where escape routes and modes of subversion were located.

This allowed me to expand the notion of the electronic noosphere into the conception of an all-encompassing technological assemblage. This process is enhanced with the development of ubiquitous technologies, allowing them to move beyond the standard black-boxed computing machine to become much more invisible and integrated within the earth’s planetary skin. As Jennifer Gabrys notes via Guattari, this has resulted in a polyphony of machine voices along with human voices, with databanks and artificial intelligence, and this complex assemblage of human and non-human voices then emerges within the assemblage of the electronic noosphere (Gabrys, 2016). The notion of machine voices allowed me to develop different types of fictional machine and transmit different kinds of machine voice as a critical method within the practice.

This examination of the electronic noosphere also established the relations of its operations to fictional writing machines and helped to focus on the use of fictional methods within the project. The deployment of documentary fictions that intervene within 'real' conditions was a potent strategy for the development of the practical works. As Simon O'Sullivan observes in relation to fictioning, documentary fictions 'operate on a porous border between fact and fiction, but also between fiction and theory and, at times, the personal and political' (O'Sullivan, 2018).

The fictional methods became operational with the deployment of 'The Researchers', identifying a set of approaches for subverting and escaping the mechanisms of the electronic noosphere via their manifesto, research space and production of the subversive video machine personas. As Bratton notes, we might design different sorts of relationships with machines that support a more imaginative approach: 'Our shared design project will require both different relationships to machines (carbon based machines and otherwise) and a more promiscuous figurative imagination' (Bratton, 2015, loc.283).

The deployment of these fictions acts on the second aim of this research project, which was to define how the practice and its fictional methods could be used to test and activate 'strategies of escape and subversion' identified in the theoretical research process.

The map of the underground research site and its different sub-spaces and activities has allowed for all of the project's research and transmissions to be housed within a fictional structure. This has enabled the playful mirroring and simulating of a more scientific or technical style of research project.

The initial body of video transmissions also responded to the aim of 'deploying methods of appropriation' within the production of the works, and this has emerged as a strategy of 'speculative recycling'. In this sense, the video works employ all sorts of appropriated materials in the form of text, video footage, images, voices and old technologies. These works also appropriate the functionality of the electronic noosphere with their use of machines, personas and affect. Each video work and machine type utilise a different type of voice with particular characteristics, each of these an unreliable narrator that functions to draw the audience in and to generate an unstable condition of transmission.

The use of the fictional researchers and their manifesto has allowed me to write about the video works from the perspective of their fictional authors. The expanded manifesto has developed into a notebook which functions as a place for re-interpreting the video works and

the strategies employed in formulating them, beginning to frame a web of layered fictional narratives and mythologies around the video works being produced and around my own art practice. In this sense, I have appropriated the strategies used in the production of mythologies and fictions around brands and hyper-commodities.

The use of the fictional persona of 'The Researchers' and their machines also responds to Boris Groys's argument that artists working within biopolitical and virtualised control conditions should utilise new forms of re-inscription and fictional documentation and propose, in Simon O'Sullivan's terms, 'an imaginative transformation of the world through fiction' (O'Sullivan, 2017: p.6).

Part 2

In the second part of the project, I have responded to the aim of 'researching the technologies of the electronic noosphere from a material and network perspective'. I wanted to understand the electronic noosphere's physical realities and supporting networks of humans and non-humans and how they are implicated within its operations and control mechanisms. Furthermore, Timothy Morton's work on hyperobjects has been a fruitful way to consider the complexity of the relations between machines, humans, non-humans and the earth, from the output of the first steam engines in 1845 to the e-waste sites based in locations in Asia and Africa. Morton identifies the vastness of these interrelations and their hyperobjects that are beyond human vision. He identifies how, as humans, we are caught up in a sort of phasing pattern.

'Hyperobjects seem to phase in and out of the human world. Hyperobjects are phased: they occupy a high-dimensional phase space that makes them impossible to see as a whole on a regular three-dimensional human-scale basis.' (Morton, 2013, loc.1257)

The fictional strategies employed within the practice have been developed further, considering the material and network perspective. First, this was done by working under the guise of 'The Researchers' to map out an example technological hyperobject in the form of the smartphone and its associated networks and actors. Other video works such as *The Meadow* tested an approach for voicing non-human actants, deploying potential future scenarios based upon Jane Bennett's work on the potential of non-human actants. The mapping process was then developed into a series of performance lectures titled *The Signal*

and the Rock, where the relationalities between the non-human/human technological actor networks are traced and reformulated.

These performances have then led towards the construction of the final large-scale audio work *Re-writing the Overcode*. The work activates a set of non-human spectral voices from a distant point in the future, from a deep location within the layerings of the earth's strata.

This final work is located within the fictional research space and channels the voices of materials, technologies, animals and researchers whose remains are embedded in the earth's strata and layerings. This final work emerges as a hauntological audio transmission and elegy to humans, their machines and their links to the production of the Anthropocene.

A further aim of this research project was to interrogate the role of the video image as a form of affective control and consider the potential of Hito Steyerl's 'poor image' (Steyerl, 2009) as a means of escape, critique and agency. As a result, poor images have been used throughout the practical works in the initial video works that included a large amount of re-appropriated and re-filmed material that has been 'recycled' to formulate cohesive video proposals.

In the final audio transmission, the use of the poor image has been developed further, initially using visual material in the pilot film but then removing the images completely so that all we hear are fragments of image source code that are occasionally whispered. The final publication *The Signal and the Rock* also tests the potential of the poor image by using re-appropriated video images that have been taken from all of the video works produced and then re-contextualised in reference to the text. As a result, the poor images used in this project have been constantly re-framed via an ongoing layering of new fictions around them; their quality has been further depleted in each iteration, as each time, the distance from their HD original has been expanded.

New strategies that have emerged from the research project

Several key approaches have been developed throughout the research, generating new knowledge on the operations of my practice. The use of the map and a fictional construct to frame the project and develop the transmissions has allowed me to operate across multiple personas, timeframes and positions below and above the earth in a playful, political and authorial way.

It has allowed me to produce alternative critical and subversive narratives and perspectives about specific sites and to reveal unseen and unseeable histories and networks and non-human voices. These methods have permitted the activation and testing of specific theoretical ideas and frameworks, building them into proposals that are made operational via documentary fictions.

The body of works produced also acts to generate new knowledge about digital technologies and how they operate on populations and environment, exposing non-human perspectives, unseen networks and actors. I now focus upon three key approaches:

(i) Speculative recycling

The research has allowed me to extend the methods of appropriation used in the practice to incorporate the electronic noosphere, its content, structures, use of affect and modes of transmission and control.

The science fictional qualities of the electronic noosphere have flowed into the speculative writing practice used to develop the personas and the works. The structure of the performance lecture, the final audio transmission and the publication *The Signal and the Rock* has appropriated the relational structures at play within the electronic noosphere's actor networks and hyperobjects.

The project has also made use of different forms of waste material that have been re-appropriated, re-filmed and re-contextualised; in this sense, the term 'recycling' is appropriate. The fictional research site, while located below an e-waste site, is itself a machine for 'recycling' all sorts of waste materials from e-waste to images and non-human items to network structures and theoretical writing via its transmission outputs. This has allowed me to define the notion of 'speculative recycling' as a key new strategy within my art practice.

Furthermore, I have appropriated the mechanisms of affect in terms of Lazzaroto's notion of the a-signifying semiotic machines that tune in directly to the body (to its affects, desires, emotions and perceptions). These mechanisms have been incorporated in both the audio and video transmissions as a strategy for drawing the viewer/listener into their alternative proposals, using affective transmission as a performative strategy.

We might also think of the operations of the video works, the publication and the final audio work as types of 're-writing machines' that acknowledge the multitude of computational writing machines that we are surrounded by and actively appropriate and rewrite them, in this sense, responding to Nigel Thrift's notion that 'spaces like cities are being increasingly run by mechanical writing . . . beckoned into existence by code' (Thrift, 2005, loc. 2879).

(ii) Tuning in to spectres and non-humans

The device of the appropriated Kempelen speaking machine has allowed me to translate and 'tune in' to spectres and non-human voices via my fictional and performative methods under the guise of 'The Researchers'. The functionality of the underground research space has allowed me to operate as an intermediary between human and non-human, attempting to tune myself into non-human perspectives and bringing into view the unseen and the unseeable.

A useful comparison here is the concept of 'profane illuminations' where ghostly signals bring unseeable relations into view as Walter Benjamin notes: 'There . . . are crossroads where ghostly signals flash from the traffic, and inconceivable analogies and connections between events are the order of the day.' (Benjamin, 1978: p.183)

This strategy of 'tuning in' has opened up my use of fictional personas to encompass non humans, hybrids, ghosts, objects, codes and processes. The channelling of these voices has been realised using multiple mechanisms, my own voice, appropriated voices, synthesised voices and text-to-speech software.

(iii) Transmitting interference/feedback

The notion of tuning into and embodying the ghostly signals from the non-human voices has been a useful way to consider how the video and audio transmissions then generate a form of interference or a fracture within the conditions of the present and the operations of standardised transmission machines and feedback loops. This interference is caused by the voices and the methods of appropriation and re-contextualisation and their ability to transmit back from an undefined future origin. These interferences transmit new knowledge to their viewer and allow for the human entanglement with the non-human and the earth to be exposed and amplified. A commonality between all of these transmissions is that they act to produce a fracture:

'The ghost always registers the actual "degraded present" in which we are inextricably and historically entangled and the longing for the arrival of a future, entangled certainly, but ripe in the plenitude of non-sacrificial freedoms and exuberant unforeseen pleasures.' (Gordon, 2008, loc.207)

Timothy Morton also highlights that an encounter with the spectral is a way for humans to start to recognise the non-human:

'Recognition of the uncanny non-human must by definition first consist of a terrifying glimpse of ghosts, a glimpse that makes one's physicality resonate (suggesting the Latin *horreo*, I bristle): as Adorno says, the primordial aesthetic experience is goose bumps. Yet this is precisely the aesthetic experience of the hyperobject, which can only be detected as a ghostly spectrality that comes in and out of phase with normalized human spacetime.' (Morton, 2013, loc.2973)

This emerging strategy has allowed me to consider my role as an artist as 'diviner' who locates potential future events and histories and enlivens ghosts to bring into view forgotten voices and unseen or unseeable technological mechanisms and networks. In this way, practices of speculative fiction and speculative design have been harnessed and adapted to propose new futures and new relationships between human and non-human and to reveal unheard voices. The funnel of the Kempelen speaking machine also functions as a knowledge generator: it reveals the hidden networks and relationalities at play within digital technologies. In this context, we might think of the map of the project as a spectral feedback machine that is powered by waste materials and designed to intervene within the conditions of the present.

As Carrie Clanton states, ghosts have the capability to disrupt linear, chronological systems of time and hence notions of history, and she draws on Fredric Jameson to highlight how ghosts can 'make the present waiver' (Clanton, 2012).

The Future

In my future research and practice, I plan to build on the research strategies of 'speculative recycling', 'tuning in to non-humans' and the 'transmission of interference' to develop new performative lectures and video works that interrogate and make visible unseen voices and unseeable networks and interfere within the conditions of the present. In this context, I am

currently working on a new work which exposes the mesh of relationalities around two specific digital images. These images have been appropriated from two previous performance works that took place at two locations, one on Canvey Island in Essex and the other in Týnec in the Czech Republic.

This new work operates on a number of levels. First, it functions as a semi-fictional document of my past practice that reimagines further works and future deployments. Second, it is a way of exposing the complex network relations between the two images, their locations and mechanisms of production and transmission. A fictional persona is also used in this work, which is voiced by a person who experiences 'profane illuminations'. This condition enables the author to 'tune in' to past and future temporalities and to bring into view complex networks and relationalities. The work will be realised as a series of performances which build upon the performative lecture *The Signal and the Rock: Proposal for a Film*.

I am also working on a new collaborative and interdisciplinary research project that explores the possibilities of collaborative fictions as a way of visualising alternative futures, new relations with the non-human and new ways of living with technology. The project will build on the use of fictioning to define methods for making theoretical concepts operational and testing them out on particular locations with groups of artists, scientists and theorists.

Furthermore, I am developing a new series of symposia called 'Digital Ecologies' and these each expand upon particular aspects of this research project. These symposia draw together artists, theorists and scientists, taking an interdisciplinary approach to derive connections between different types of approach. The first symposium, 'Digital Ecologies and the Anthropocene' (2017), focused on new approaches within art practice that address the relations between digital technologies, matter and forms of waste. The second symposium, 'Fiction Machines', will consider the potential of new fictional strategies within art practice in relation to networked 'writing machines'.

Finally, I am also building on the body of short video works produced in the first part of this project and developing a new set of video works that interrogate the relations between humans and particular aspects of digital technologies, defining future proposals for enhancing and destabilising them.

The diversity of these future projects demonstrates how my practice has opened up and expanded over the last 7 years. These developments are directly related to the questions

and methods explored throughout this research project, the diverse range of works produced and a new confidence in creating more complex fictional mechanisms, collaborative explorations and larger scale works.

Bibliography

Texts

Barthes, R. (1979) *A lover's discourse: Fragments*. London, Jonathan Cape.

Bennett, J. (2010) *Vibrant Matter: A Political Ecology of Things*. Durham, Duke University Press.

Benjamin, W. (1978) *Reflections: Essays, Aphorisms, Autobiographical Writings*. New York, Schocken Books.

Bratton, B. (2015) *The Stack: On software and sovereignty*. Cambridge, MIT Press. [Kindle DX version] Transworld Media. Available at: <http://www.amazon.co.uk> [Accessed 9 June 2018].

Coley, R. & Lockwood, D. (2012) *Cloud Time: The Inception of the Future*. Winchester, Zero Books.

Cubitt, S. (2014) *The Practice of Light: A Genealogy of Visual Technologies from Prints to Pixels*. Cambridge, MIT Press.

DeLanda, M. (1991) *War in the Age of Intelligent Machines*. New York, Zone Books.

DeLanda, M. (1997) *A Thousand Years Of Nonlinear History*. New York, Zone Books.

Deleuze, G. & Guattari, F. (1987) *A Thousand Plateaus: Capitalism and Schizophrenia*. London, Continuum.

Deleuze, G. (1988) *Foucault*. London, Athlone Press.

Deleuze, G. (1992) Postscript on the societies of control. *October*. 59, 3-7.

Derrida, J. (1994) *Spectres of Marx*. New York, Routledge.

Dolar, M. (2006) *A Voice and Nothing More*. [Kindle DX version] Transworld Media. Available at: <http://www.amazon.co.uk> [Accessed 9 June 2018]. Cambridge, MIT Press.

Durham-Peters, J. (2015) *The Marvelous Clouds: Towards a Philosophy of Finite Media*. Chicago: University of Chicago Press. [Kindle DX version] Transworld Media. Available at: <http://www.amazon.co.uk> [Accessed 9 June 2018].

- Fisher, M. (2010) *Capitalist Realism*. Winchester, Zero Books.
- Fisher, M. (2014) *Ghosts of My Life*. Ropley, John Hunt Publishing.
- Fite-Wassilak, C. (2016) Profile: Rachel Pimm. *Art Monthly*. 395, 14.
- Foucault, M. (1995) *Discipline and Punish*. London, Penguin.
- Gabrys, J. (2011) *Digital Rubbish*. Michigan, University of Michigan Press.
- Gabrys, J. (2016) *Programme Earth Environmental sensing technology and the making of a computational planet*. Minneapolis, University of Minnesota Press.
- Galloway, A. (2006) *Protocol*. Cambridge, MIT Press.
- Gere, C. (2008) *Digital Cultures*. London, Reaktion Books.
- Gordon, A. (2008) *Ghostly Matters Haunting and the Sociological Imagination*. Minnesota, University of Minnesota Press.
- Gregg, M. (ed.). (2010) *The Affect Theory Reader*. Durham, Duke University Press.
- Guattari, F. (1989) *Cartographies schizoanalytique*. Paris, Editions Galilée.
- Guattari, F. (1989) *The Three Ecologies*. London, Continuum.
- Haff, P. (2014) Humans and technology in the Anthropocene: Six rules. *The Anthropocene Review*. 1 (2), 126-136.
- Haraway, D. (2016) *Staying with the Trouble*. Durham, Duke University Press.
- Hertz, G. & Parikka, J. (2012) Zombie Media: Circuit Bending Media Archaeology Into An Art Method. *Leonardo*. 45 (5), 424-430.
- Holmes, B. (2009) *Escape the Overcode: Activist art in the Control Society*. Eindhoven, Van Abbemuseum.
- Kroker, A. (2014) *Exits to the posthuman future*. Cambridge, Polity Press.
- Latour, B. (1999) *Pandora's Hope. Essays on the Reality of Science Studies*. Cambridge, Harvard University Press.

- Lyon, D. (2002) *Surveillance Society*. Philadelphia, Open University Press.
- Massumi, B. (2002) *Parables for the Virtual: Affect Sensation*. Durham, Duke University Press.
- Morton, T. (2013) *Hyperobjects*. Minneapolis, University of Minneapolis Press. [Kindle DX version] Transworld Media. Available at: <http://www.amazon.co.uk> [Accessed 9 June 2018].
- Mumford, L. (1934) *Technics and Civilisation*. Chicago, The University of Chicago Press.
- O'Sullivan, S. (2017) *Futures and Fictions*. Durham, Duke University Press. [Kindle DX version] Transworld Media. Available at: <http://www.amazon.co.uk> [Accessed 9 June 2018].
- O'Sullivan, S. (2018) Fictioning the Landscape. *The Journal of Aesthetics and Phenomenology*. 5 (1), 53-65.
- Parikka, J. & Hertz, G. (2012) Zombie Media: Circuit Bending Media Archaeology into an art method. *Leonardo*. 45 (5), 424-430.
- Parks, L. & Starosielski, N. (2015) *Signal traffic: critical studies of media infrastructures*. Urbana, University of Illinois Press.
- Raunig, G. (2010) *A Thousand Machines*. Los Angeles, Semiotext.
- Rourke, D. (2013) Encounters with the work of Hito Steyerl. *Afterimage*. 40 (5), 19.
- Rowlands, A. (2007) *3 Communiqués*. London, Bookworks.
- Shaw, J. & Reeves-Evison, T. (2017) *Fiction as method*. London, Sternberg Press.
- Steyerl, H. (2012) *The Wretched Of The Screen*. Berlin, Sternberg Press.
- Tanenbaum, J. (2014) Design fictional interactions. *Interactions*. 21 (5), 22–23.
- Thrift, N. (2005) *Knowing Capitalism*. London, Sage Publications.
- Weinstock, J. (2004) *Spectral America: Phantoms and the National Imagination*. Wisconsin, University of Wisconsin Press.

Web

Bratton, B. (2013) *Some trace effects of the post-anthropocene: On accelerationist geopolitical aesthetics*. Available from: <https://www.e-flux.com/journal/46/60076/some-trace-effects-of-the-post-anthropocene-on-accelerationist-geopolitical-aesthetics/> [Accessed 20th July 2018].

Clanton, C. (2012) *Hauntology Beyond the Cinema: The Technological Uncanny*. Available from: http://www.manycinemas.org/Carrie_Clanton.html [Accessed 6th July 2017].

Deleuze, G. (1990) *Control and becoming*. Available from: <https://antonionegriinenglish.wordpress.com/2010/09/23/control-and-becoming-negri-interview-with-deleuze/> [Accessed 15th July 2018].

Dickinson, R. (2002) *The Milgram Re-enactment*. Available from: <http://www.roddickinson.net/pages/milgram/project-synopsis.php> [Accessed 20th July 2018].

Drexler, E. (1986) *Engines of Creation*. Available from: http://e-drexler.com/d/06/00/EOC/EOC_Chapter_3.html [Accessed 20th July 2018].

Fisher, M. (2001) *SF Capital*. Available from: <http://archive.li/Y9eUI> [Accessed 20th July 2018].

Gabrys, J. (2016) *A continent. Interview*. Available from: <http://continentcontinent.cc/index.php/continent/article/view/243> [Accessed 20th July 2017].

Groys, B. (2004) *Art in the age of biopolitics*. Available from: http://www.ranadasgupta.com/notes.asp?note_id=34 [Accessed 20th July 2018].

Guattari, F. (1981) *Le Capitalisme Mondial Intégré et la 141evolution moléculaire. Lecture delivered at the CINEL*. Available from: http://www.revue-chimeres.fr/drupal_chimeres/files/cmi.pdf [Accessed 20th July 2018].

Guattari, F. (1990) *Vers une ère post-média. Chimères*. 28, 5-6. Available from: http://www.revue-chimeres.fr/drupal_chimeres/files/28chi02.pdf [Accessed 20th July 2017].

Hayward Gallery (2015) *Lindsay Seers: Nowhere Less Now*. Available from: http://www.lindsayseers.info/exhibition_node/405 [Accessed 20th July 2018].

Holmes, B. (2009) *Guattari'S Schizoanalytic Cartographies*. Available from: <https://brianholmes.wordpress.com/2009/02/27/guattaris-schizoanalytic-cartographies/> [Accessed 7th June 2017].

- Holmes, B. (2017) *Driving the golden spike*. Available from: <http://www.e-flux.com/journal/85/156774/driving-the-golden-spike/> [Accessed 10th April 2018].
- Holder, J. (2016) *Let there be norm, in conversation with Joey Holder*. Available from: <http://cultbytes.com/interviews/artist/let-there-be-norm-joe-holder/> [Accessed 10th April 2018].
- Law, J. (2007) *Actor Network Theory and Material Semiotics*. Available from: <http://www.heterogeneities.net/publications/Law2007ANTandMaterialSemiotics.pdf> [Accessed 20th July 2017].
- Lazzarato, M. (2006) *Semiotic Pluralism and the New Government of Signs*. Available from: <http://eipcp.net/transversal/0107/lazzarato/en> [Accessed 20th July 2017].
- O'Sullivan, S. (2015) *Art Practice as Fictioning or Myth Science*. Available from: <https://www.simonosullivan.net/articles/art-practice-as-fictioning-or-myth-science.pdf>
- Palmas, K. (2011) Predicting What You'll Do Tomorrow: Panspectric Surveillance and the Contemporary Corporation. *Surveillance & Society*. 8 (3), 338-354. Available from: <https://ojs.library.queensu.ca/index.php/surveillance-and-society/article/view/4168/4170> [Accessed 20th July 2018].
- Sony. (2013) *Sony Xperia Z advert*. Available from: <https://www.youtube.com/watch?v=Qfg9UqRsiSE> [Accessed 20th July 2018].
- Steyerl, H. (2009) *In Defense of the Poor Image*. Available from: <http://www.e-flux.com/journal/10/61362/in-defense-of-the-poor-image/> [Accessed 20th July 2017].
- Steyerl, H. (2010) *A Thing Like You and Me*. Available from: <https://www.e-flux.com/journal/15/61298/a-thing-like-you-and-me/> [Accessed 20th July 2018].
- Steyerl, H. (2011) *In free fall: A thought experiment on vertical perspective*. Available from: <https://www.e-flux.com/journal/24/67860/in-free-fall-a-thought-experiment-on-vertical-perspective/> [Accessed 20th July 2018].
- Sutcliffe, J. (2016) *Artist Profile: Joey Holder*. Available from: <http://rhizome.org/editorial/2016/jun/01/artist-profile-joe-holder/> [Accessed 20th July 2018].

Art, sound, film and performance works

Anderson, L. (1983) *United States Live* [CD]. Burbank, Warner Bros. Records.

Beckett, S. (1972) *Not I* [Play]. New York, Lincoln Center Theatre.

Dickinson, R. (2002) *Milgram Reenactment* [Performance]. Glasgow, CCA.

Dickinson, R. (2009) *Who, What, Where, When, Why and How* [Performance]. Amsterdam, SMART Project Space.

Holder, J. (2011) *Dark Creatures* [Blog]. Available from: <http://dark-creatures.tumblr.com/> [Accessed 20th July 2018].

Keiller, P. (1987) *Robinson in space* [Film].. London, BBC.

Keiller, P. (1994) *London* [Film].. London, BBC.

Keiller, P. (2010) *Robinson in Ruins* [Film].. London, British Film Institute.

Marker, C. (1962) *La Jetee* [Film]. Neuilly-sur-Seine, Argos Films.

Steyerl, H. (2010) *In Free Fall* [Video]. New York: MOMA.

Tweed, C. (2006) *Man From Below TV* [Video]. London, Rochelle School.

Tweed, C. (2010) *Notes I, II & III* [Video]. Bristol, Spike Island.

Tweed, C. (2011) *Grain* [Video]. Aberystwyth, Aberystwyth Arts Centre.

Tweed, C. (2012a) *A Manifesto* [Publication]. Portsmouth, Aspex Gallery.

Tweed, C. (2012b) *Archimeters* [Video]. London, Whitechapel Gallery.

Tweed, C. (2013) *Codec* [Video]. Portsmouth, Aspex Gallery.

Tweed, C. (2013a) *The Meadow* [Video]. Portsmouth, Aspex Gallery.

Tweed, C. (2013b) *The Tricorn* [Video]. Portsmouth, Aspex Gallery.

Tweed, C. (2013c) *The Signal and the rock: proposal for a film* [Performance Lecture]. Bristol, Arnolfini.

Tweed, C. (2016a) *The Signal and the noise* [Video]. Derby, Quad.

Tweed, C. (2016b) *The Signal and the rock: pilot* [Video].

Tweed, C. (2017a) *Soon we will become output* [Exhibition]. Kingston, Stanley Picker Gallery.

Tweed, C. (2017b) *_s.o.f* [Video]. Kingston, Stanley Picker Gallery.

Tweed, C. (2017c) *Oporavak* [Video]. Dundee, NeON Digital Arts Festival.

Tweed, C. (2017d) *Re-writing the overcode* [Video]. Kingston, Stanley Picker Gallery.

Tweed, C. (2017e) *The Signal and the rock* [Artist's publication]. Kingston, Stanley Picker Gallery.

Images

Figure 1: Paradelle. (2012) *Electronic Noosphere* [online]. Available at: <https://paradelle.wordpress.com/2012/01/14/noosphere-omega-point/> [Accessed 20 July 2018].

Figure 2: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

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Figure 25: Tweed, C. (2013c) *The Signal and the Rock: Proposal for a film* [film still].

Figure 26: Sony. (2013) Xperia Z advert [video still]. Available at:
<https://www.youtube.com/watch?v=Qfg9UqRsiSE> [Accessed 20 July 2018].

Figure 27: Sony. (2013) Xperia Z advert [video still]. Available at:
<https://www.youtube.com/watch?v=Qfg9UqRsiSE> [Accessed 20 July 2018].

Figure 28: Tweed, C. (2015) *Signal and the rock performance at CAFA Beijing* [documentation].

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Figure 30: Tweed, C. (2013) *The Meadow* [film still].

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Figure 34: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

Figure 35: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

Figure 36 Von Kempelen, W. (1791) *Kempelen's Speaking Machine* [engraving]. Available at: <http://www2.ling.su.se/staff/hartmut/kemplne.htm> [Accessed 20 July 2018].

Figure 37: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

Figure 38: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

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Figure 54: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

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Figure 57: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

Figure 58: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

Figure 59: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

Figure 60: Tweed, C. (2017) *The Signal and the rock*. London: Tweed.

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Figure 77: Tweed, C. (2017) *Soon we will become output* At London: Stanley Picker Gallery.

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Figure 79: Tweed, C. (2016) *The Signal and the noise* [film still].

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APPENDIX: Works and outputs

Archimeters (2011) (4:39 minutes) focuses on Ordos – a near-empty ghost town in Inner Mongolia, China which has been newly built but remains almost entirely empty. The work lays out a plan for appropriating the town and constructing ‘a fully integrated autopoietic and auto-effective mechanism’.

[View here](#)

Codec (2012) (4 minutes) looks at creating a subversive transmission algorithm that randomises and destroys data and video images by continuously encoding and decoding them, ‘modulating and de-modulating’ so that they have the potential of escaping pre-defined algorithms and raster screen displays.

[View here](#)

The Meadow (2013) (13:50 minutes) provides the voice of components, metals, matter, effluent and various forms of electronic waste. It appears to come from a vast and complex site, a future vision of waste and excess which is very much alive, where all forms of material have been disposed of, forgotten and abandoned. The vitality of this rotting matter both above and below the surface is voiced, as it looks at implementing its own way of thinking and own conditions for life where materials constantly merge and mutate.

The Tricorn (2013) (7:50 minutes) involves a superimposed machine arriving in the harbour of Gun Wharf and which appears to hover above the water. This machine looks like a 3D model of the old Tricorn centre which was demolished in Portsmouth in 2004. The new Tricorn appears to be a piece of software and a bank of computing devices and other technologies, which attracts other technologies and components to join it in, inciting the development of a vast, ever-expanding, panspectric mechanism.

Grain (2013) (13 minutes) focuses on the Isle of Grain in Kent and plans to remove its population of birds and people and replace them with an airport. Grain has historically been utilised as a place for London’s resources, housing the BritNed power cable, which brings power from Europe, and some of the UK’s key natural gas facilities and a container port. Taking on the voice of a self-learning algorithm, the film outlines a new model for Grain by examining the potential of assimilating its technologies, objects, containers, birds and human population into new assemblages and hybrids.

[View here](#)

Signal 0.1 (2015) (5:32 minutes) is the pilot for the final project and begins to formulate a transmission that is located within the fictional research space below Guiyu.

[View here](#) (password = signal)

The Signal and the Noise (2016) (6:47 minutes) is voiced by an anonymous group of hybrid machines from some point in the near future. *The Signal and the Noise* exposes the parallels of computer coding and genetic coding in humans and animals. The work's narrators look at these creatures as inefficient machines and consider ways of editing and improving their code. The film draws upon the latest advances in DNA sequencing technology as well as new ways of controlling behaviour, such as optogenetics, to propose a future vision of hybrid computing devices that are used to monitor and repair living things, resulting in better performing humans and animals. While the work appears to be a piece of science fiction, all of the technologies and ideas discussed are based on actual advances and research, and visions of how things might materialise in the future. *This project was a Wellcome Trust commission that is linked to some of this project's themes but is essentially a separate piece of research.

[View here](#)

Oporavak (2017) (4:40 minutes) proposes a methodology for what it calls 'information recovery' and the solving of 'integrity problems'. Taking its inspiration from data recovery solutions and the language of achieving 'complete visibility' via forms of HD technology and big data, the film is part alternative software training video and part the voice of a subversive hybrid machine. It takes the intent of information restoration into a new context with its apparent ability to manipulate all sorts of digital and non-digital materials via its sentient interface and performative actions which can operate at molecular level. The film utilises the voice of an unreliable narrator, which acts to draw viewers in and raise their awareness of inbuilt human desires for clarity and visibility. It also attempts to make viewers aware of the affective content and remixing tools that are constantly used to manipulate their senses within post-internet culture and does this by exposing software tools and revealing video effects that are being used. The final section of the film looks towards a 'sensing mechanism' that has the functionality to manipulate and alter any type of visual material at its source and the capability of connecting with and manipulating the subconscious of its viewers.

[View here](#)

Re-writing the Overcode (2017) (48:53 minutes) (sound installation with spectrogram video projection) channels the swarm-like utterances of various post-human 'ghosts' of obsolete

and decaying technologies who exist deep within the earth's strata below the surface in an invisible 'research space'. The voices exist across multiple timeframes and materialities, occasionally joining together to chant and sing responses to their condition. The work is part elegy to human machines and their relation to the earth and part exposure device, highlighting the mesh of interrelations between human and non-human actors that go into the production and disposal of man-made machines. The work also identifies a proposal for the future sustenance of these machines by harnessing fusion technologies and Turing's concept of morphogenesis to formulate new forms of hybrid materials and new types of 'ecosophic autopoietic machines'. A live spectrogram attempts to bring visibility to the traces, soundwaves and lost signals, the remnants of technological production and the human desire to control the natural world.

[View here](#) (password = signal)

_sof (2017) (4:10 minutes)

This film is a transmission from the end point of things: the place where CGI images, old components, biological material, human and non-human bodies all come together, perhaps below the surface of an e-waste site or after some form of mass extinction or maybe in some other sort of liminal space where virtualities and materialities all meld together as the physical and the virtual become indistinguishable. The work considers the hybridisation of all things once they are disposed of and become traces and hauntologies embedded in the earth's strata and moving through the soil, with their only hope for renewal vested in the re-activation of fungal spores.

[View here](#) (password = signal)

Conferences:

Tweed, C (2017) *The Signal and the rock*, In: Digital Ecologies and the Anthropocene Symposium, Bath Spa University, Bath, April 2017.

Tweed, C (2016) *The Signal and the rock*, In: STRATA Symposium, Aberystwyth University, Aberystwyth, January 2016.

Tweed, C (2016) *The Signal and the noise*. In: Silent Signal Symposium, 25 February 2016, Derby University, Derby.

Tweed, C (2013) *I am the tantalum*. In: Geologies of value and vestige Symposium, 10 July 2013, Kingston University, London.

Tweed, C (2013) *Re-writing the overcode*. In: Space and Place Conference, Mansfield College, Oxford.

Tweed, C (2013) *Re-writing the overcode*. In: Trans Symposium, 28 July 2013, Supermarkt Creative Resource Centre, Berlin.

Performances:

Tweed, C (2015) *The Signal and the rock*. Performance Lecture, artist's talk and film screening. In: China Central Academy of Fine Arts, Beijing, 14 December 2015.

Tweed, C (2014) *The Signal and the rock*. Performance Lecture, artist's talk and film screening. In: *Art in the city talks: Charlie Tweed*, Arnolfini, Bristol, 12 November 2014.

Tweed, C (2013) – Performative lecture and screening. Plymouth University Fine Art Department 2013.

Tweed, C (2013) Artist talk and a new performance. Exeter Phoenix gallery, Exeter.

Tweed, C (2012) *Grain*: Newly commissioned performance, In: The London Open, Whitechapel Gallery, London.

Tweed, C (2012) *The Meadow*. In: Experimentica, Chapter, Cardiff

Exhibitions and screenings:

Tweed, C (2017) *Oporavak*. In: *Kew Gardens Festival of Cinema*, NYC, USA

Tweed, C (2017) *Oporavak*. In: *VAEFF*, NYC, USA, November, 2017

Tweed, C (2017) *Oporavak*. In: *NYC Independent Film Festival*, NYC, USA, May, 2017

Tweed, C (2017) *Oporavak*. In: *Megalopolis, WRO Media Art Centre, Poland June-September, 2017*

Tweed, C (2017) *Oporavak*. In: *WRO Media Art Biennale, Poland, May-July, 2017*

Tweed, C (2017) *Oporavak*. In: *NeON Digital Arts Festival, Dundee, November, 2016*

Tweed, C (2017) *Oporavak*. In: *Inland Art Festival, Cornwall, October, 2016*

Tweed, C (2016) *The Signal and the noise*. In: Silent Signal, Quad, Derby, 6 February - 6 March, 2016.

Tweed, C (2016) *The Signal and the noise*. In: Silent Signal, Vivid Projects, Birmingham, 19 March - 23 April, 2016.

Tweed, C (2016) *The Signal and the noise*. In: Silent Signal, Wellcome Genome Campus, Hinxton, Cambridge, 13 May - 25 September 2016.

Tweed, C (2016) *The Signal and the noise*. In: Silent Signal, Lifespace Science and Art Research Gallery, University of Dundee, Dundee, 30 September - 26 November 2016.

Tweed, C (2015) *Vorkuta*. In: BOS: Double Exposure, Berlin

Tweed, C (2015) *Archimeters*. In: Tramway Artist's Moving Image Festival, Glasgow

Tweed, C (2015) *Archimeters*. In: Film Open (selected by Steven Cairns ICA) touring to: ICA, London; Spike Island, Bristol; Transmission, Glasgow; Eastside Projects, Birmingham; Castlefield, Manchester

Tweed, C (2015) *Grain*. In: Limbo Associates show (selected by Adam Chodzko), Margate, Kent.

Tweed, C (2015) *Archimeters*. In: Artist films 2015, Karst, Plymouth.

Tweed, C (2015) *Charlie Tweed - Archimeters*. In: Stigmat - Videofocus, Video art magazine (section on my film and work)

Tweed, C (2015) *From blackbox to hyperobject*. In: We are publication - film screening, ICA, London

Tweed, C (2015) *From blackbox to hyperobject*. In: We are publication - film screening, Stanley Picker Gallery, London

Tweed, C (2014) *Grain*. In: We have never been modern, Dope Chapel, Oklahoma, USA

Tweed, C (2013) *i am algorithm* (Solo Show), Apxex Gallery, Portsmouth.

Tweed, C (2013) *i am algorithm* (Solo Show), Exeter Phoenix Gallery, Exeter.

Tweed, C (2013) *Archimeters*. In: SUB 12, Substation, Melbourne, Australia.

Tweed, C (2013) *Archimeters and Notes III*. In: News from the sun, Exeter Phoenix Gallery, Exeter.

Tweed, C (2015) *Vorkuta*. In: Cultivation Field, The Keep, Reading

Tweed, C (2011) *Grain*. In: The Box Season 5, Aberystwyth Arts Centre, Wales.

Publications:

Tweed, C (2013) 'I am algorithm' (2013), Manifesto publication, designed by Nick Davies for exhibitions at Aspex and Exeter Phoenix.

Tweed, C (2017) 'The Signal and the rock', Publication designed by Modern Activity for the exhibition launch at Stanley Picker Gallery.