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KARL	HEINZ	JERON	MEZ	BREEZE	ROBERT SHEPPARD
CHRIS	BOYD			IMOGEN	STIDWORTHY

EDITED BY NATHAN JONES AND SAM SKINNER

TORQUE # 1

M I N D . L A N G U A G E . T E C H N O L O G Y

EDITED BY NATHAN JONES AND SAM SKINNER

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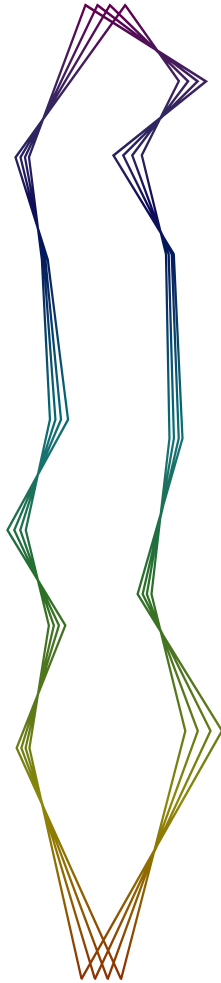
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THIS PUBLICATION IS THE RESULT OF A WIDE RANGE OF CROSS-DISCIPLINARY CONVERSATIONS, TAKING PLACE ACROSS SYMPOSIA, ONLINE FORUMS, LIVE EVENTS, AND WORKSHOPS, TO EXPLORE THE TWISTING TOGETHER OF MIND, LANGUAGE AND TECHNOLOGY.

OUR INVESTIGATION INTO THIS COMBINATION OF THEMES HAS ITS ORIGINS IN A PREVIOUS PROJECT ENTITLED ELECTRONIC VOICE PHENOMENA (WWW.ELECTRONICVOICEPHENOMENA.NET), WHICH EXPLORES INTERFACES BETWEEN VOICE AND NEW TECHNOLOGY, AND ASSOCIATIONS WITH THE SUPERNATURAL. AS A SPLINTER ENQUIRY RESULTING FROM CONVERSATIONS AT AN EVP 'THINK TANK' SESSION IN 2012, WE BEGAN TO CONSIDER RESEARCH INTO HEARING VOICES AND SCHIZOPHRENIA, AND IT WAS THIS STRAND OF THOUGHT WHICH LED US TO THE WORK OF TIMOTHY CROW. CROW'S THEORY OF 'CEREBRAL TORQUE' POSITS SCHIZOPHRENIA AS A POSSIBLE SYMPTOM OF THE LATERALISATION OF BRAIN FUNCTION AND THE EVOLUTION OF LANGUAGE. THE WORD 'TORQUE', WITH ITS INFERENCE OF LANGUAGE IN MOTION AMONG THE CIRCUITRY OF THE BRAIN, AND OF TALKING, OFFERED A THEMATIC FULCRUM TO BUILD THE PROJECT AROUND.

WE HAVE APPROPRIATED AND REDIRECTED 'TORQUE', FREEING IT FROM THE SPECIFICS OF CROW'S THEORY, BUT MAINTAINING ITS ESSENCE AS A TWISTING FORCE WITH ROOTS IN THE CONJUNCTION OF THE BRAIN AND LANGUAGE, AND WITH THE ADDITION OF A TECHNOLOGICAL DIMENSION – THE TWISTING OF WIRES, THE TORSION OF THE MACHINE. IN ESSENCE, CROW'S USE OF 'CEREBRAL TORQUE' ALLOWS HIM TO POSIT SCHIZOPHRENIA AS 'THE PRICE HOMO SAPIENS PAY FOR LANGUAGE'. OUR USE OF THE TERM ALSO ALLOWS US TO ASK: WHAT, THEN, IS THE PRICE WE PAY FOR TECHNOLOGY? DOES DIGITAL TECHNOLOGY'S VIRUS-LIKE EMERGENCE FUNCTION LIKE THE 'SPECIATION EVENT', OR ACT LIKE A NEW LOBE OR TORSION IN THE BRAIN, FURTHER TWISTING ITS LATERALIZATIONS?

In an attempt to articulate a particular type of movement and entwining inherent within our relationship to technology, we use torque to imply a rotating, spiral like force, capable of simultaneously pulling you in and spitting things out; of both tightening and loosening; exerted both upon, and from within, ourselves. Torque is suggestive of our interdependent and transformative experience and use of technology which has the potential to both dominate and emancipate, through forces that morph, duplicate and reconfigure our 'selves', via online identities and mechanical prosthesis, where man and machine can trade places as fulcrum and force, tool and maker. In yet another sense, Torque is evocative of more distorted, unexpected or even sinister forces and movements – the words torture and torment, for example, share their etymological roots with torque, from the Latin *torquere* - to twist.

While retaining our original interest in the interrelation of mind, language and technology, the entitling of the project has acted in a centrifugal manner, allowing contributors to project their ideas outward. In some cases these projections head deep into human histories – Esther Leslie discusses dancer Loie Fuller's twisting serpentine movement of silken fabric as a kind of proto-screen or precursor to the rapture and spell of new media forms, or Lambros Malafouris uses the figure of the turning vase to illustrate his notion of thinking as *thinging*. In others, the authors look to the future – Stephen Fortune explores the perfect storm of transformative technologies emerging since the Industrial Revolution and into new layerings of virtual, informatic and geo-political territories which may lead to a significant biological shift in our brain's ability to enable us to think for ourselves; Alex McLean and Geoff Cox describe conditions in which cultural operations with 'code' can inform our relationship to language and political agency.

Misappropriation and the uncanny become symptoms of the torsions between mind, language and technology in the work of Holly Pester, who combines her own artistic misuse of search engines and digital technology with Hannah Weiner's twisted use of the International Code of Signals into lyric poetry, and in Cécile B Evans practice, who digitizes and recasts mundane and almost timeless hand-held devices – scissors, a screw-driver, a comb – into digital form, pushing them 'to their limits' as things, and finding new emotionally rich terrain for us to explore.

Throughout the book, we have been delighted to find unexpected overlaps between works, which form new and greater resonances for the book as a whole. Esther Leslie's look back at serpentine dancers speaks to Kate Sicchio's text in which she discusses her work extending choreography into the arrangement and control of technological interfaces. Lawrence Abu Hamdan, Hannah Proctor, and Imogen Stidworthy each critique forms of visualization in technological analysis, reflecting on the ideological baggage these enticing forms of 'seeing' possess - and the delineations and modes of control they imply. Holly Pester's code poetry unearths unexpected colonial and patriarchal inferences similarly found in the language of brain imaging discussed by Proctor and Abu Hamdan. And so on.

The inter-relationships for cognition and tool are of course not a new phenomena, and nor are they new modes of enquiry. As Malafouris' essay articulates, tool making and use, brains, bodies and things are in a continual state of exchange, and the lines between mind and matter blur considerably. In Malafouris' theorisations, as with Cécile B Evan's artworks, we see tools, language and the mind share a grammatical form – they speak to one another, and in this sense it matters less which came first because they cross fertilise and inform one another, through mutual feedback and codependent emergent processes, forging a generative interaction that is greater than the sum of its parts.

If language moves fluidly across the senses, functioning not only in the mind, mouth and ear, but also the hand and eye, and evolution can turn a leg into a wing or a worm into an human, the question of how we might merge and twist with machines becomes less strange and more pertinent, perhaps. This project is less about the speculative and steers away from science fictionalising life, however useful such representations are, towards more unalloyed analysis and depiction of contemporary existence, employing more historical, materialist and scientific examinations of the state of things.

Supplementing the essays, we have included a variety of artist pages - some of which were presented at the symposium and some at the live performance event. We are pleased to be able to present the work of Karl Heinz Jeron, Chris Boyd, Cécile B Evans, and Benedict Drew as powerful semiotic nodes among the more discursive work. In the research process we also encountered the work of Emil Alzamora and Dennis Oppenheim and we include their work for its inspirational resonances. And a special thank you to Anna Munster whose symposium presentation from Australia traversed multiple media, including printed matter, recorded voice and skype to brilliant effect.

There has also been a very generous response to the project from thinkers in our immediate circle in Liverpool and London, and we are glad to include notable contributions here from Robert Sheppard, responding to the talk given by Lambros Malafouris at the symposium and applying it to the field of experimental poetics, and from Mark Greenwood who contributed an unforgettable theatrical work with *The Nodes* at our live event in London, and drew interesting inferences in his Q&A with Imogen Stidworthy. Also thanks to Ste Cole and Hannah Silva who translated with skill and sensitivity the concerns of the project into a number of workshop sessions, co-produced with ourselves, and congratulations are due to all who participated in these and created highly imaginative works that deftly twisted mind, language and technology, and made the whole process a joy.

As we have indicated, torque, torsion, and twisting, are a guiding motif for the project – with its divergent twirling strands and multi-platform character we are trying to achieve a dynamic and cumulative interplay between different disciplines, participants, processes and media. The symposia, live events, workshops and publication have all worked collectively to inform and catalyse one another, and we hope that this publication with its nexus of imagery and theorisations channels this further.

We hope this publication contributes something to the discourse surrounding the plasticity of the brain, the adaptability of technology and the malleability of language, and how each offer within them, and in their confluents, a powerful potential to be moulded, reimagined, and redirected. The contributors and their work presented each offer unique models of navigating this territory, of making their own artefacts, writing their own scripts, forging critical space and examining the blind spots.

Please note one specific twist to the usual format – we have allowed authors to use their preferred reference format, rather than stipulating a specific style, thus the publication switches between endnotes and footnotes, Chicago and Harvard – this decision is based on the interdisciplinarity of the authors and our confidence in readers ability to adapt.

We want to thank all those who directly contributed to the project and publication, the majority of which are new commissions. And sincere thanks to designer Charles Holden and our project partners at FACT, Mencap, Rich Mix, Link Editions and Arts Council England. Also, to those whose work was not present at the events but contributed to the publication, including: Lawrence Abu Hamdan, Esther Leslie, Emil Alzamora and Amy Plumb Oppenheim for assistance with documents relating to Dennis Oppenheim. Also thank you to cellist Oliver Coates for his new sound work and for his performance at Rich Mix, accompanying a new video work by Sam Skinner. This work, and other project details and research material can be found at: www.torquetorque.tumblr.com

TORQUE #1 IS WE HOPE THE BEGINNING OF SOMETHING NEW. QUITE HOW IT WILL EVOLVE IS AS YET UNKNOWN BUT WE ENVISAGE A NOMADIC PROJECT THAT INHABITS AND PRODUCES PUBLICATIONS, SYMPOSIA, INSTALLATIONS AND EVENTS, IN COLLABORATION WITH INDIVIDUALS, ORGANISATIONS AND PLACES, CROSSING THE FIELDS OF ART, SCIENCE AND CONTEMPORARY CULTURE – AND IN SO DOING PROMOTE SIGNIFICANTLY NEW MODES OF THINKING, DOING AND BEING.

SAM SKINNER AND NATHAN JONES

LONDON - LIVERPOOL / AUGUST 2014

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THINGING

“NEAR TO US ARE WHAT WE USUALLY CALL THINGS”, THE PHILOSOPHER MARTIN HEIDEGGER WRITES IN HIS FAMOUS ESSAY “DAS DING” (THE THING) (1975, 166). BUT WHAT DO WE MEAN WHEN WE SAY OF SOMETHING THAT IT IS A THING? WHAT THINGS ARE? HEIDEGGER TAKES THE EXAMPLE OF A JUG. I WILL USE INSTEAD A CERAMIC VASE THAT IS ‘NEAR TO ME’ AND THUS I HAPPEN TO KNOW BETTER (FIGURE 1). LET’S TRY TO THINK ABOUT ITS ‘THINGNESS’. WHAT MAKES THIS VASE A THING REALLY?



Figure 1

One way we could answer that question and come to know the 'thingness' of that vase is by experiencing some of its phenomenal qualities. We could perceive its colour, follow the shape of its body, or the ways the light is reflected on its exterior surface. If we want, we could reach and grasp it. We could feel its temperature, weight, or maybe – depending on how experienced we are – also sense something of the texture and physical qualities of the clay that it is made of. Another way to think about the 'thingness' of this artefact is to try identify its possible function. We could, for instance, classify it as a container that can be used to hold something within it and name it as a vase. We could also perhaps think about its origin, about the processes responsible for making it the object it is. We could think of the people, the actions, the materials, the tools and the places involved in its manufacture, and we could also think about it in terms of style, texture, value, aesthetic, skill, time or technique. We could also try to draw it on a piece of paper. Of course, there is a personal or subjective element in all these. I, for instance, just by looking at this vase can remember persons, events, and places associated with it in the past. The vase has a life history of which I am a part. As a result, this object is mine in a sense that it can never be yours. By the same token the vase belongs to the potter who made it – on the wheel – or to the person(s) who use it in a way that is different from my remote sense of 'mineness'.

I can go on writing about this vase for hours. But even then we would have merely scratched the surface of the varieties of our sensuous material engagement. Be that as it may, have we done any progress with our initial query about what is the mode of existence of what we call 'thingness' or 'thinghood'? Not really. It seems that the answer to that question is more difficult than common sense and our use of language in everyday experience might have it. Heidegger, for instance, maintained that things are not what we usually call 'objects'. Things become 'objects' when they lose their 'thingness'. Reflecting on how a thing retains or loses its 'thingness' Heidegger comes up with the following articulation: "the vessel's thingness does not lie at all in the material of which it consists, but in the void that it holds" (Heidegger

1975, 169). Understanding 'thingness' then is less about producing a list of primary and secondary material or phenomenal qualities and more about penetrating the ontological power of this vessel to "gather" space and time. But what does it mean to say that a thing 'gathers'? Heidegger introduces the term "thinging" as a means of expressing the "gathering" or tying together of the vessel's ontological constituents which comprise not just the totality of the form-making processes brought together in the making of this particular thing, but also the material conditions and relations that will sustain the vessel's social, cognitive, and emotional life (actual and possible). This idea of 'thinging' as 'gathering', I think provides an interesting metaphor to think about things.

My own use of the term *thinging* tries to retain something of this original sense of 'gathering' at its heart. But I also diverge from the Heideggerian phenomenological path, especially relevant to one aspect of 'thingness' that is typically cast in the shadow: the vitality and agency of things in human thinking, or else, the cognitive life of things (Malafouris 2008c; Malafouris & Renfrew 2010; Bennett 2010; Sutton 2002). I argue that to understand the latter we need first to answer the question of what do things do for the mind. Trying to do so, I adopt the term *thinging* to denote, more specifically, the act of thinking and feeling *with, through,* and about things. The notion of *thinging* will be referring to the process by which things are presented *to* us through acts of material engagement, rather than, to the process by which things are re-presented *in* us by way of internalisation and mental substitution. It follows that with *thinging* the focus falls on a variety of material assemblages (Deleuze and Guattari, 2004; Marcus & Saka 2006) and ecologies (Ingold 2012; Hutchins 2010) rather than just on specific objects, tools and external representations. *Thinging* embodies culture specific bodily techniques, it also extends to sensory and cognitive prostheses and interfaces of any kind.

This description of *thinging* is probably too general to serve taxonomic philosophical considerations. But in its lack of analytic precision and closure

it opens up new possibilities for transgressing some of our common-sense assumptions about what minds and things are, and about how they relate and connect to each other. The analytical value of the notion *thinging*, then, lies in helping us to understand not what things are (as entities), but instead, how things come to be, that is, how things come to possess ontological specificity or multiplicity in the course of their life history. This will inevitably vary in different times and places. The notion of *thinging* seeks to encapsulate the major phenomenological ingredients of the latter process shifting our attention away from the sphere of isolated and fixed categories (objects, artefacts etc.) to the sphere of the fluid and relational *transactions* between people and things. In doing so *thinging*, on the one hand, frees thinking from a cognitivist view of what mind consists of, and on the other frees things from a narrowly modernist definition of what matter consists of. Thus, so far as *thinging* is concerned no precise and closed definition of it should be expected. Instead, I suggest we stress this ontological mixture of minds and things and we will see how far it goes before it tears.



In any case, the basic premise that I want to communicate through the notion of *thinging* is quite simple: We humans are *thingers*. Not only most of our thinking is thinking *with, through and about* things, it is also, as Henri-Louis Bergson neatly puts it more than a century ago in his *Creative Evolution* “a manufacturing kind of thinking” (*une pensée de la fabrication*) [1998 [1911], 137]. Humans are creators of new things which constantly re-shape our bodies, re-configure our minds, and re-invent our selves (Clark 2007; Malafouris 2008 a,b; 2010). No other animal has been or can be defined *as a species* on the basis of its relationship with the variety of things and material forms that it makes. We humans are precisely a species of this rather strange sort. Bergson’s designation of man as *Homo faber* rather than *Homo sapiens* still captures an important aspect of that strangeness. Let me explain, I say we are strange, not because I deny that other animals are capable of *thinging* - we know that to a certain extent they are. Nor do I

say we are strange because I believe that by making things, and by thinking through things we overcome the limits of our ‘nature’ and enter into a separate ‘cultural’ realm. There is no moment in the history of human evolution where biology gave way to culture. Such a separation between ‘nature’ and ‘culture’ would contradict the reality of becoming as a reciprocal belonging and mingling of the two in the process of human evolution (see also Ingold & Pálsson 2013; Ingold 2004; Bloch 2012). Instead, human becoming has always been inseparably linked with the developmental contingencies of action. No bodily activity - not even our basic capacity for bipedal locomotion - is immune to the situated dynamics of real life ontogenetic development. As the anthropologist Marcel Mauss neatly points out in his famous essay on bodily techniques, there is no ‘natural’ way to move our bodies (1973). I would like to add there is no ‘cultural’ way either. Instead, we should think of the acting body as a relational developmental achievement of situated material engagement. This opening up of the conditions and possibilities of human becoming by way of material engagement brings us right at the heart of the phenomenon I am trying to capture when I talk about human strangeness: we humans *have made thinging part of our nature*. Putting it simply, with *thinging* biological heredity becomes creative evolution.

Instead of simply reproducing ourselves, we rather extend ourselves and we construct new cognitive and material ecologies for growing and instituting our minds. We create things which in turn create us. As I will return to discuss in the last part of the essay the ontological messiness of this ongoing dialectic of co-constitution can be the cause of cognitive dissonance and epistemic embarrassment, but also the source of inspiration. So what exactly do we mean when we say that things make us just as much as we make things? This question raises a great challenge for all the disciplines involved in the study of human ways of being and becoming – especially for archaeology and anthropology. What would make a good example to illustrate the impact of *thinging* in human consciousness? Given that one of the leading questions of the Torque symposium, from which this essay derives, was about the ways

new technologies are 'twisting together' moments of reading, writing and speaking, I will use the practice of writing as a form of *thinging*.



What is the transformative impact of writing in human consciousness, self conception, and thinking? From Theuth's invention of writing in Plato's *Phaedrus* to Google the question of the relationship between writing and thinking remains open. According to the so-called "literacy thesis" the advent of writing has changed the way we think about language (Goody 1968; McLuhan 1964; Ong 1982; Harris 1989). The fundamental idea is simple: writing invites reflective and critical thinking. Once something is written it affords and motivates comparison, questioning and interpretation – even skepticism – in ways that the transient and context-dependent oral forms of narration and communication do not. "Without writing", Walter Ong famously argued (1982, 78) the mind "would not and could not think as it does".

Of course, to say that writing changes the way we think does not need to imply any simplistic dichotomy between literate and non-literate societies. For one thing, there is no clear sense in which reading and writing constitute an advance on its predecessors' mental powers. For another, the effects of literacy cannot be separated or understood independently of their broader historical situation, learning environment, and skills. Significant differences are to be expected but those changes are the relational products of specific cognitive ecologies of literacy rather than literacy as such (see e.g. Scribner and Cole 1981). As Sylvia Scribner reminds us "the single most compelling fact about literacy is that it is a social achievement... Literacy abilities are acquired by individuals only in the course of participation in socially organized activities with written language" (1984, 7-8).

Nevertheless, there is a new kind of consciousness emerging within this process of writing. Writing more than the passive externalization of speech by way of symbolic representations is a radical transformation in the perceptual experience and

thus awareness of language. To perceive speech as a linear sequence of words, symbols, and sentences opens the door to a new awareness and meaning of signification.

Meanwhile, recent discoveries in cognitive and developmental neuroscience demonstrate how the brain is changed by learning to read and write (Dehaene 2009). What is less obvious is how we account and interpret those changes, as well as how those changes differ from other changes that occur as a result of cultural invention and practice. David Olson offers a compelling example of this exploration into the cognitive implications of reading and writing in the last two chapters of his book *The World on Paper* (1994) when he describes the origins of subjectivity and the making of the literate mind. Differentiating his view on the cognitive implications of writing from Merlin Donald's emphasis on the use of different kinds of "exographic storage" (1991) as a means of cognitive extension he argues that more than extending memory the primary impact of those graphic practices should be sought in "the new concepts" emerging from their use. It is those concepts which effect the greatest change in our ways of thinking by allowing us to understand language, the world and our minds in a new way (1994, 258).

More recently, the philosopher Richard Menary, working on the same question of how writing changes the way people think and act outlines what he calls "a cognitive integrationist account" (2007, 621-22). In brief, Menary views writing as a hybrid mental act that involves the co-ordinated interaction between different processes (neural, bodily and environmental). The basic point of Menary's thesis is that both writing and the ways in which the enduring products of this process can be manipulated, should be understood as an active process of 'thinking in action'. I certainly agree with Menary's cognitive integrationist model of writing, but I suggest it is also important to specify how different acts of writing and their products (written sentences or other) differ from one socio-historical context to the other. This means that writing letters on the page or in any other available medium, must be understood not only as ways of

acting and thinking but also as inseparable parts of literacy practices and techniques which, as has been shown by Scribner and Cole (1981) in their famous meticulous study of the Vai people of West Africa (Liberia and Sierre Leone), are products of given society and historical context. In other words, we need to take into consideration the context-dependent nature of reading and writing skills as forms of *thinging*. That is, we need a comparative anthropology of writing, one that is materially and practice oriented, but also firmly grounded in an image of mind not limited by the skin. Only then we can understand the differences or similarities between a medieval cleric and a Mycenaean scribe, or between the trace of an inscription left by the hand on the page and the typing on present day QWERTY keyboards. Understanding important transitions in the history of human graphic systems, from the medieval manuscript to the modern printed text to the internet, depend on critically understanding the cognitive ecologies and ontologies of the materialities and bodily practices involved. What does this mean really? Let's take one step at a time. I return to the basics. Exactly how are things related to thinking?

IV

Consider the following related philosophical query: Where does the mind stop and the rest of the world begin? I would say that this increasingly popular question, raised initially by the philosophers Andy Clark and David Chalmers in their famous essay *The Extended Mind* (1998), still sounds odd to many people. Surely the human head offers a 'natural' demarcation line for separating mind-stuff from the rest of the world. Why do we need our big and metabolically expensive brains if not for taking care our thinking? Can this deeply entrenched assumption about the boundaries of the mind be wrong? Many people working in the sciences of the mind from a dynamically based embodied, distributed and enactive perspective think that it is (Varela et al. 1991; Clark 1997; 2008; Hutchins 1995; 2010; Thompson 2007; Hutto & Myin 2013; Chemero 2009; Wheeler 2005; Noë 2004; Sutton 2008; Menary 2010). I certainly agree with them.

But how can this be? It is one thing to say that one can be wrong about what part of the brain can be associated with what kind of mental activity, or to disagree about the biological and evolutionary basis and function of these associations, it is indeed, another to say that most of what we know about the human mind is grounded on such a huge ontological mistake. How is it possible that a long-standing tradition in Western philosophy, psychology and more recently cognitive science would have repeatedly failed to realise, such an obvious fact of human cognitive life, namely, that human thought is not merely expressed in things but, instead, it comes into existence through them? There are many reasons and, obviously, I cannot discuss them here at any length. I will just mention the one more pertinent to my purpose here and more relevant to my purpose in this essay.

Most of what we know about the human mind, but also the ways by which we have come to know what we know about the human mind, came about without any consideration to the world of things. The mind can be aware of things, or perceive things, but the mental actions which enable us to think about things are seen as different in kind from the physical actions we use to grasp and manipulate them. Philosophers may have pondered for centuries if things exist whether or not an organism perceives or is aware of them, but the nature of this awareness was never premised in the presence of things, but always in their absence. Paradoxically, although there has been much debate and discussion about whether there can be thought without language, the possibility of the co-constitution of minds and things, that is, of thinking as *thinging* has never been properly explored or even raised. Though this epistemic neglect of things is unfortunate, it is hardly surprising. One of the major objectives in the study of mind has been to demarcate and insulate the mental from the physical and then come up with a mechanism able to bridge the huge ontological gap left between. To accomplish that material culture has to be left out from the cognitive system proper. In the place of real things 'out there' various neural and mental substitutes were created and placed inside the cranium. We call those substitutes mental, or more recently, neural 'representations'.

I imagine that methodologically speaking, this substitution makes good sense if your objective is to fit a part of the world inside the brain while lying still in a fMRI scanner or to build a computational model to account for it. But the ontology of this underlying representational logic is weak and its products often resemble a lifeless abstraction. More importantly, it misleads us to think that all that really matters to study the mind and its evolution is to understand the nature of the internal mental representations and the input/output mechanisms that enable their formation, transformation and processing. As a result, not only does it often go unnoticed that most of our thinking takes place outside our heads, but when it gets noticed it seems odd. Much of value in the study of mind has been lost.

From the vantage point of archaeology, looking carefully at the earliest examples of human engagement with the material world one could hardly find any reason why the study of the mind should simply focus on the brain 'inside' the head. Rather, what we see in the archaeological record suggests both equivalence and complementarity of what is 'inside' with what is 'outside'. From the

coevolution of stone tools and language and the freeing of hands to the construction of the first compound tools, body ornaments, engravings, to the emergence of symbols and writing systems, *thinging* has been playing an active role in human evolution extending our bodies and bringing forth our minds. There is an abundance of evidence testifying that things, like neurons, have played a significant role in the making of the human mind. Brains, bodies and things participate equally, albeit in different ways, in human cognitive life. Obviously, I do not mean to question the neural bases of cognition or the immense contribution of neuroscience methods like neuroimaging in delineating how cognition is supported and mediated by the brain. I want simply to underline that the brain is only part of the story of mind, or to use the words of pragmatist philosopher and psychologist John Dewey "Hands and feet, apparatus and appliances of all kinds are as much a part of it as changes within the brain" (Dewey 1916, 13-14).

This is also where Material Engagement Theory (MET) comes in (Malafouris 2013; 2004). The major objectives are: (a) to explore the varieties of human

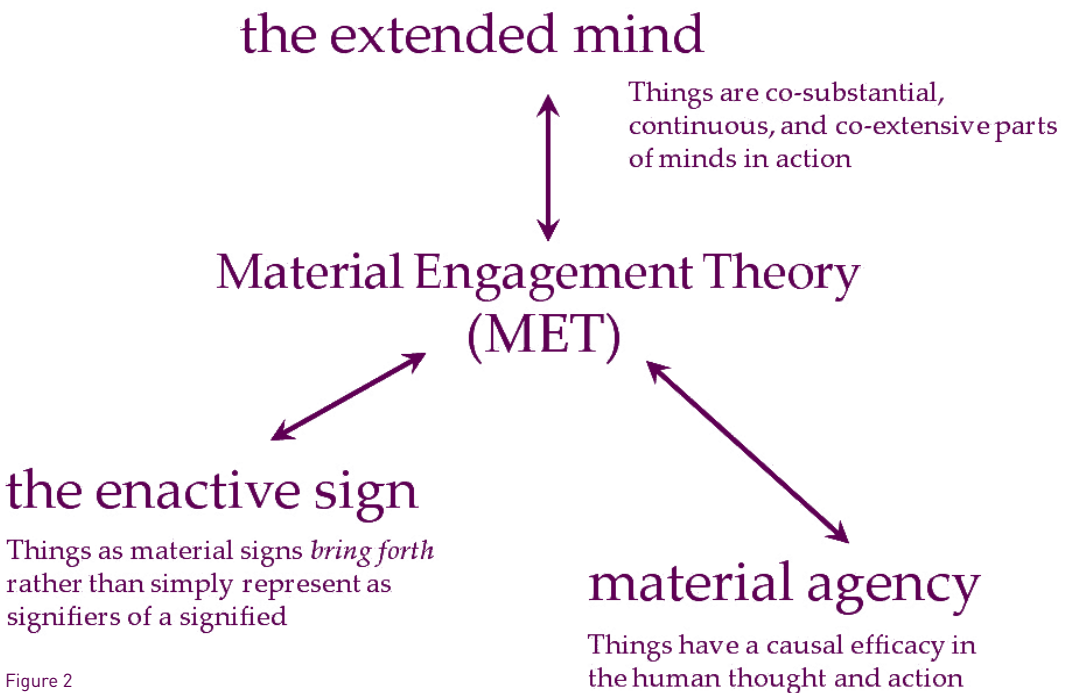


Figure 2

thinging, and (b) to investigate how those ways might have changed since earliest prehistory, and what implications they may have for human intelligence. Material Engagement Theory wants to change our understanding of what minds are, and what minds are made of, by changing what we know about what things are and about what things do for the mind. It enables us to restate the problem of the interaction between cognition and material culture by placing it upon a new relational foundation. The anthropologist Edwin Hutchins (2010), also inspired by Gregory Bateson, uses the term cognitive ecology to describe a similar kind of relatedness. The challenge for *cognitive archaeology* then becomes one of penetrating the ontology of this “relational domain” from an object-oriented perspective.

To achieve this objective, Material Engagement incorporates three major working hypotheses, each one targeting a different but complementary aspect of human becoming - i.e., cognition, signification, and agency (Figure 2): *the hypothesis of the extended mind*, which explores the constitutive intertwining of cognition with material culture; *the hypothesis of enactive signification* which explores the nature of the material sign not as a representational mechanism but as a semiotic conflation and co-habitation through matter that enacts and brings forth the world; and last, *the hypothesis of material agency* which explores agency not as a human property but as the emergent product of situated activity (asking not ‘What is an agent?’ but ‘When is an agent?’)

V

If all that sounds too complicated let me put it more simply using a more familiar phenomenological example. Think of a blind person with a stick. Where does the blind person’s self begin? This example, which I borrow of course from Merleau-Ponty (1962) and Gregory Bateson (1973), is one of my favourites. It provides a timely and refreshing analogy for the profound embodiment and plasticity of the human mind. It also helps us conceptualise the ontological unity and continuity of minds and things in the course of human becoming. Turning touch into sight the stick becomes an interface of a peculiar transformative sort - what might be called a brain-

artefact interface or enactive cognitive prosthesis (Malafouris 2010a; 2008b). Whatever actual form the ‘stick’ might have taken in the history of our species (from the earliest Paleolithic stone tools to the latest information technology), its primary function was that of a pathway for *thinging*.

Through the ‘stick’, the human species, much like the blind man in our example, feels, discovers, and makes sense of the environment, but also enacts the way forward. Let’s not forget that from an evolutionary point of view the main reason we have a brain is to move not to contemplate. To begin with, moving was thinking. I mean that not in the computational sense of developing a brain able to produce and control adaptable complex movement. Rather, I mean that in the enactive sense of developing a mind which is “inextricably linked to histories that are *lived*, much like paths that exist only as they are laid down in walking” (Varela et al. 1991, 205). And it seems fair to say that the reason we came to have our meta-cognitive capacities for language and reflective thinking is that unlike any other animal we gave our movement purpose, conscious direction and collective meaning. We had to use a stick to accomplish that, something concrete, a material scaffold to think through, with and about. This unique human epistemic predisposition for material engagement can explain why we humans, more than any other species, make things, and how those things, in return, make our minds what they are. It is especially in the latter sense that the example of the blind man’s stick encapsulates the spirit of Material Engagement Theory. It reminds us of something that many people forget, namely, that no human mind is ever complete. It is in the nature of human intelligence to remain amenable to drastic deep reorganization and reconstitution by incorporating new technological innovations.

Let me explain. We are used to thinking of our ‘sapient’ minds, with all our unique capacities, as the apex of human evolution. But I have repeatedly emphasised in my writings that this vision of humanity as ‘complete’ and ‘fixed’, and the concomitant neo-Darwinian ideals of cognitive and behavioural ‘modernity’, is certainly wrong. My approach to human evolution, instead, sees

the human mind as an unfinished project, in some sense 'blind', and thus, potentially, in a permanent state of on-going evolution. I said before that we humans are different from other animals in that we have made *thinging* our nature. I would also insist that we humans are also a species 'incomplete' by nature, which also explains our remarkable plastic qualities and prosthetic abilities (Malafouris 2013; 2010b). The extraordinary plasticity of human mind and its reciprocal openness to creative evolution by way of learning and technology becomes a distinctive feature of our species. I am not saying that other species are not plastic or intelligent in their own special ways. And, obviously, I am not just talking about brain or neural plasticity here. I take it we all agree that the brain of humans and other animals is intrinsically plastic. It changes both structurally and functionally in response to the environment and experience. What I am proposing, and thus, my use of the term 'creative evolution' which I borrow of course from the famous book of Henri Louis Bergson, is that we humans, unlike any other species, seem to have more than just a plastic mind: we have a mind which is also inextricably intertwined with a plastic culture. I am trying to gesture towards a different kind of plasticity: the plasticity of a mind not limited by the skin. I call that *meta-plasticity* - we have a plastic mind which is inseparably constituted with a plastic culture. The focus here is on understanding the nature of plastic changes, not at the level of the individual, but in the broader systemic context (cultural or social) where *thinging* takes place. At this higher level of engagement with the material world where neural and cultural plasticity interact and exchange properties, material culture competes, equally with any other brain region, for a place in the human cognitive system.

The actual forces that shape the directions, size and connections of neural fibers can only be found 'out there' into the world. And I argue that best way to make sense of that and gain empirical access to metaplasticity is to focus on the realm of material engagement, that is, where brains, bodies and cultures conflate. Human beings, understood as real living creatures that move and act in this world, are the developmental products of this conflation. If

you separate the three - if you separate brain, body and culture - you end up with a number of overly simplified abstractions about lifeless categories. I am not denying the analytical value of those abstractions for many disciplines; but I do think they are misleading when it comes to understanding human becoming. The dynamical account of acting and thinking that the focus on *thinging* and material engagement brings with it, promises reconnecting the brain with the body and beyond, and breaking with reductionistic explanations and the cognitivist past. This is also where popular ideas like that of 'connectome' (Sporns 2011) and 'meshwork' (Varela 1991; Ingold 2008; Knappett 2011) could meet the notion of *thinging*. A precondition for that however, is the recognition that *cognition has no a priori location*. The active mind cannot be easily contained. Thinking is *thinging*.

R E F E R E N C E S

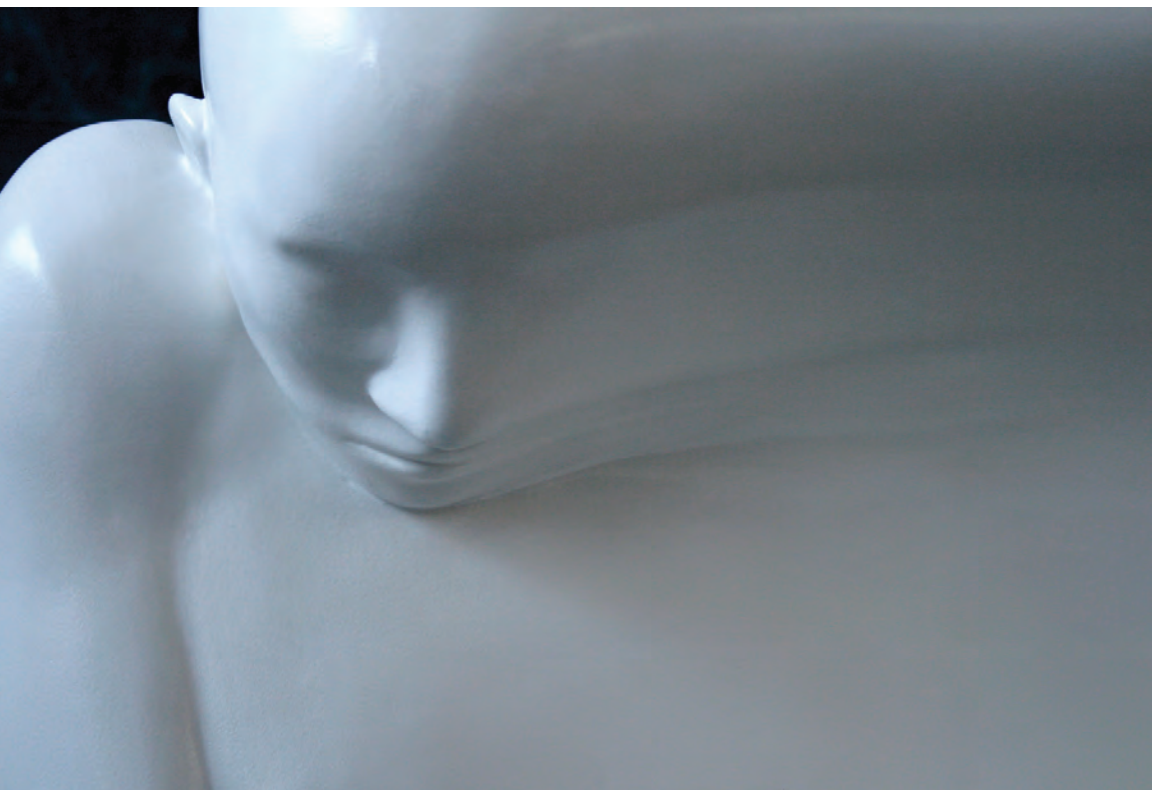
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IN TWO PLACES . SHIFT



In Two Places, 2014, Gypsum, Paint, 37 x 18 x 10"





Shift, 2013, Gypsum, Graphite Wax, Life-size



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ENTANGLEMENTS OF BRAIN,
TECHNICS AND EXPERIENCE

DESPITE HAVING PASSED A RECENT MILESTONE – 1990-1999 BEING DUBBED ‘THE DECADE OF THE BRAIN’ – THE PHILOSOPHER CATHERINE MALABOU HAS NONETHELESS POSITED THAT WE STILL DO NOT KNOW WHAT WE SHOULD DO WITH OUR BRAINS (MALABOU, 2008). YET PHILOSOPHY IS PERHAPS CONFRONTING SUCH RISKS TOO LATE, AS AN ENTIRE TECHNICS OF SEARCH, QUERY, DATABASING, PATTERN MATCHING AND MACHINE LEARNING IS ALREADY ATTEMPTING TO DETERMINE WHAT OUR BRAINS MUST DO. SUCH A TECHNICS SEEKS OUT THAT SHARE OF MIND WHICH IS NONCONSCIOUS OR PRECOGNITIVE AND STAKES A CLAIM ON WHAT WE SHOULD BE THINKING AND FEELING, HOW WE SHOULD BE BEHAVING, BEFORE WE REGISTER THAT THIS ENTANGLEMENT IS SOMETHING WE MIGHT INDEED WANT.

Take, for example, Google’s aspirations beyond its constitution as the ‘ultimate’ search engine. Its construction of and investment in ‘the future’ rests on its capacity to *reterritorialise* this proto-mind space. This reterritorialisation is attempted via a raft of machine learning techniques from data mining to dataset training, which claim to reveal dimensions of thought and behaviour. This move away from search per se toward prediction of what “users” desire before they even know what they want signals an insidious foray into the nonconscious and affective terrain of precognition and all its inbetweenness. Networked platforms

and corporations thus turn toward systems, tools, and processes of what I call “neuroperception”; that is, a paradigm of perception that sees human thought and action emanating from the overlay of artificial neural networks on to our forming sensorium. This overlay stakes a claim to what are actually the indeterminate *nonpredictive* capacities of neurobiological processes. In neuroscience this nonpredictability is everywhere referred to as the brain’s plasticity. Yet *plasticity* is not the only facet of brains that make the neuroscience of thinking indeterminate:

IF YOU TAP YOUR FINGER ON THE TABLE, YOU EXPERIENCE THE EVENT AS OCCURRING IN "REAL TIME". THAT IS, YOU SUBJECTIVELY FEEL THE TOUCH OCCURRING AT THE SAME TIME YOUR FINGER MAKES CONTACT WITH THE TABLE. BUT OUR EXPERIMENTAL EVIDENCE STRONGLY SUPPORTS A SURPRISING FINDING THAT IS DIRECTLY COUNTER TO OUR OWN INTUITION AND FEELINGS: THE BRAIN NEEDS A RELATIVELY LONG PERIOD OF APPROPRIATE ACTIVATIONS, UP TO HALF A SECOND, TO ELICIT AWARENESS OF THE EVENT! YOUR CONSCIOUS EXPERIENCE OR AWARENESS OF YOUR FINGER TOUCHING THE TABLE THUS APPEARS ONLY AFTER THE BRAIN ACTIVITIES HAVE BECOME ADEQUATE TO PRODUCE THE AWARENESS. (LIBET, 2004: 33)

In a range of experiments that began in the 1970s using electroencephalograms to measure brain activity, Benjamin Libet proposed that the brain exhibits a 'readiness potential' of at least half a second before conscious awareness that an action or stimulus takes place. This measurement of 'evoked potential' is a sharp positive potential appearing in the appropriate sensory region of the brain about 25 milliseconds after a skin stimulus. Libet's experiments demonstrated that there is an automatic subjective referral of conscious experience backwards in time to this time marker.

In 2008, researchers from the Max Planck Institute used fMRIs to watch *in vivo* brain activity of participants making decisions to push a button randomly in either their left or right hands. The findings were startling, revealing that brain activity began in different regions of the prefrontal and parietal cortex – depending on whether the final decision was a left or right push outcome – up to 10 seconds before it entered awareness for the subject. The researchers concluded that the delay presumably reflected the operation of a network of high-level control areas that began to prepare

an upcoming decision long before it entered awareness.

For Libet, these subjective referrals would appear to be purely a mental function with no corresponding neural basis in the brain:

[...] MY VIEW OF MENTAL SUBJECTIVE FUNCTION IS THAT IT IS AN EMERGENT PROPERTY OF APPROPRIATE BRAIN FUNCTIONS. THE CONSCIOUS MENTAL CANNOT EXIST WITHOUT THE BRAIN PROCESSES THAT GIVE RISE TO IT. HOWEVER, HAVING EMERGED FROM BRAIN ACTIVITIES AS A UNIQUE 'PROPERTY' OF THAT PHYSICAL SYSTEM, THE MENTAL CAN EXHIBIT PHENOMENA NOT EVIDENT IN THE NEURAL BRAIN THAT PRODUCED IT (LIBET, 2004: 86-87)

John-Dylan Haynes, one of the 2008 researchers suggests instead that the 'neural patterning' and awareness of a decision might be more fruitfully understood as both a continuum and in relations of feedback with each other:

IF WE FIND THAT A PERSON'S THOUGHTS ARE VERY CLOSELY ENCODED IN THEIR BRAIN ACTIVITY, WE CAN'T MAKE A DISTINCTION BETWEEN THESE THOUGHTS AND THE BRAIN ACTIVITY. WE DON'T NEED TO ASSUME THAT THEY'RE TWO SEPARATE ENTITIES EXISTING IN TWO DIFFERENT SPACES. (HAYNES, 2009)

The notion that neural activity 'controls' or determines who we are and what we do is a fantasy derived from our ways of thinking about thought and the brain and is not necessarily borne out by these kind of neuroscientific studies.

However, prediction is good for business. A good example of the contemporary "predictive" trend (and an attempt to capture the vagueness of 'potential') is the development and implementation of Google's *Prediction API* tool. This tool forms part of the networked corporation's self-conscious development from "search" toward artificial intelligence and marries cloud computing with predictive AI. Both *Prediction API* and the shift to prediction as the ultimate goal for Google search are indicative of a disposition toward capturing and reterritorializing the radical potential of distributed (neuro)architectures. Like any API, the heart of this application is source code that allows for certain kinds of communication functions to occur on or between components of a database. In the case of the *Prediction API*, these functionalities allow for pattern matching and machine learning. As Eric Schmidt, Google's CEO famously stated:

I ACTUALLY THINK MOST PEOPLE DON'T WANT GOOGLE TO ANSWER THEIR QUESTIONS... THEY WANT GOOGLE TO TELL THEM WHAT THEY SHOULD BE DOING NEXT. (SCHMIDT, E. 2010)

We can see the mutation of search into prediction, chance into determination via statements made by Google senior executives over the last few years:

IN FIVE YEARS, GOOGLE WILL HAVE BUILT 'THE PRODUCT I'VE ALWAYS WANTED TO BUILD - WE CALL IT 'SERENDIPITY,'... [IT WILL] TELL ME WHAT I SHOULD BE TYPING.' SCHMIDT IN FARBER: 2006)

"Serendipity" – without the least amount of irony – transmutes into "prediction," becoming the resource on which the Google machine lays down its artificial neural networks. Today the most serendipitous product leaves nothing to chance. Welcome to the world of Google's *Glass*.

The 2013 TED talk in which Sergey Brin, Google founder, infamously fumbled between his phone and pocket, on the one hand, and smoothly and transparently slid from *Glass* to its transducer behind his ear, on the other, was revealing of his 'vision' for the next phase of the corporation's R&D. Brin stated that his vision for Google was eventually for its engine to be "queryless" – information would just come to you when you needed it. Indeed there would be no 'future' – in the sense of indeterminacy – for query, because the potential to vary, to be different and, moreover, to change one's mind while thinking, would never be activated. Information would just arrive.

What is different about platforms such as *Google Glass*, and indeed any predictive technologies, is that they modify the temporal ordering of immediated assemblages of technology, body and environment into linear sequences. In so doing, they shape their 'events' into linear order; events here being simply things that happen relationally in and to bodies, brains, technics and their habitats. These kind of temporal inflections performed by predictive *immedia* are 'captures'; they are political because they bring force to bear on relations of presentness, pastness and futurity, and because such force harnesses us to a specific subjectivation reliant upon a proprietary platform. Predictive technologies necessitate an unfolding of temporality in which we become subjectively aware of the next product we want to buy, the next item we require more information about, the next restaurant we want to eat at, through a simultaneous backward referral or "antedating" of our sensory experience *and* a filling in of the temporal gap between desire (which is past) and consciousness (which is present) by the platform's predictive capabilities. Predictive immediation rolls this gap in to a predicated future. The effect is that 'we' become conscious of what Google knows we already will desire.

Google's *Glass* brings prediction and information together in a singular capture of immediation – and I mean *immediation* rather than mediation – such that future thought is made to unfold with certainty in the now. Such technologies must be thought of as new kinds of media, perhaps we can call these *postmedia* insofar as what is at stake is a direct and *immediate* lived experience of their technicity. Technologies of transmission and broadcast – television, radio and to an extent much of our previous experience of the internet at our desktops and some of our prior experience of mobile interaction – operate by *mediation*. This is most often achieved via the hypermediated functioning of screens, speakers, headphones, touchpads and so on. However, technologies and platforms such as SMS messaging, touchscreen interfaces, immersive environments, digital assistants and now the full platform of *Google Glass* offer experiences of immediation in which technology, body and environment co-modulate at ever faster

speeds. (In fact, it could also be argued that any mediation is always already an immediation at a micro-perceptual level).

WHAT IF WE WERE TO UNDERSTAND BRAIN-TECHNICS, TECHNICS-TEMPORALITY, EXPERIENCE-MEDIA AS 'EVENTS' RATHER THAN DETERMINATIONS OR OUTCOMES? IN WHAT WAY MIGHT A 'READINESS POTENTIAL' SUGGEST A NOVEL UNPREDICTABLE BECOMING OF THOUGHT? HOW MIGHT 'BRAIN ACTIVITIES' NOT BE ALIENATED FROM 'THOUGHT' BUT INSTEAD UNDERSTOOD AS NEURAL PROCESS THAT BECOMES INDIVIDUATED AS THINKING? "IMMEDIATION DOES NOT EXCLUDE DETERMINATIONS FROM THE PAST OR TENDINGS TOWARD THE FUTURE. THE TERM IMMEDIATION IS A WAY OF DRAWING ATTENTION TO THE EVENT AS THE PRIMARY UNIT OF THE REAL. THE IDEA IS THAT WHATEVER IS REAL MAKES ITSELF FELT IN SOME WAY, AND WHATEVER MAKES ITSELF FELT HAS DONE SO AS PART OF AN EVENT. IT HAS ENTERED IN SOME WAY INTO THE IMMEDIACY OF THE MOMENT AS A FACTOR IN THE EVENT NOW TAKING PLACE." (MASSUMI IN BRUNNER, MASSUMI AND MANNING, 2013: 135)

The actual nonlinearity and desubjectivation of networked, immediate events in which something might be felt or sensed but does not yet have an end point, determination or outcome, can not be tolerated by predictive techniques. The politics of control enters when predictive techniques invade and attempt to determine what is necessarily indeterminate and yet nonetheless is experienced immediately – nonsensuous, precognitive, perception. We should be careful not to imbricate recent neuroscientific findings within such a politics of control, in spite of the sometimes mechanistic and reductive modes of explaining what is 'in' the

brain. If recent studies suggest that 'the brain' is already preparing to make a decision before that decision is consciously known, then it is the notion of consciousness itself that needs rethinking. What if consciousness were instead an immediate 'event' in which determinations from the past and tendencies toward the future both made themselves felt as real? And yet the potential to differ were always, even if micro-neurally, held on to as real as well? Looking 'in' at the brain via neuroimaging techniques would then only be a realization of the backwards referral of sensory experience; just envisioned from the machinic perspective. For where the potential to differ is real, where this potential can actually transduce into something novel, where potentiality and nonlinearity co-habit, prediction arriving before the event's occurrence is impossible.

The increasingly mutable mixing and matching of audio, visual images and text, accompanied by the tactility of the touch screen and the kinesthesia of the interface, quite aside from any more insidious predictive technics, already changes the body's perceptual posture, the brain's activities and *redistributes* their actions in relation to the interface, as much as the interface distributes information. These considerations can no longer be considered extraneous or secondary; they are not "merely" contextual. They are inextricable from what media do today. The issue is not to find a way to rethink the brain in terms of languages of media or technical metaphors but to be better able to understand media themselves as already immediately entangled and lived assemblages. Media and technics might be better thought of as media-events or technical-potentialities; not as outside us but in relation with us – a thinking immediated; a brain-screen (Deleuze, 2000: 366); a technics-in-motion. We require ecological approaches for articulating these relationalities.

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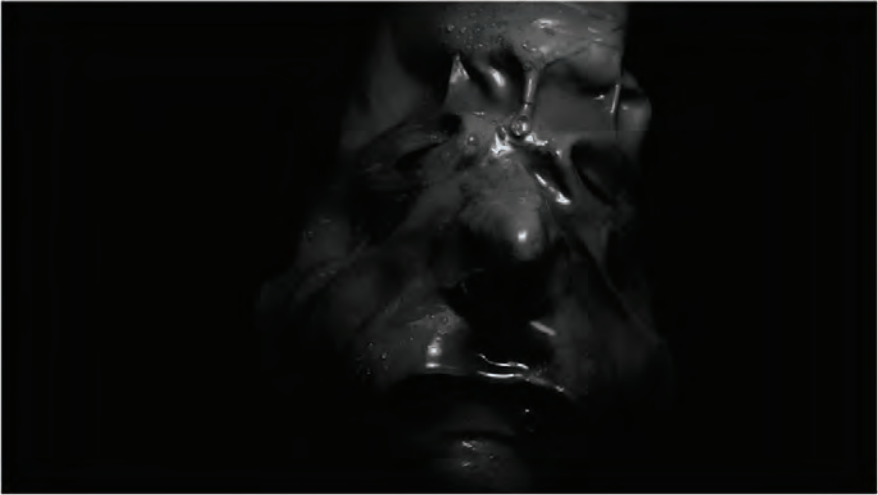
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T H E O N E S I E C Y C L E

at the risk of stating the fucking obvious

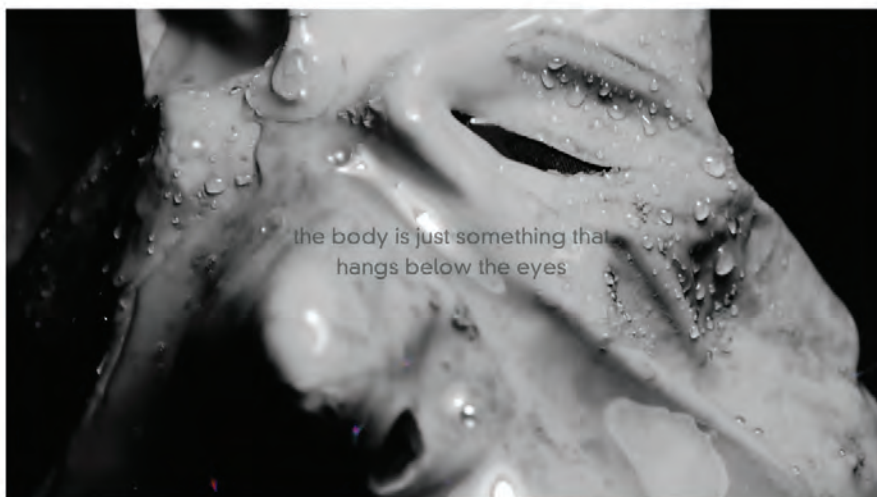


over and over

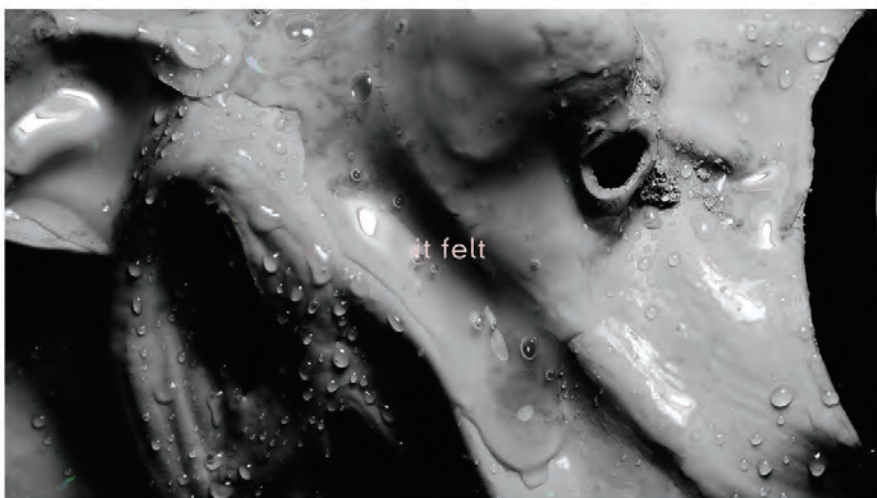
The Onesie Cycle, 2013 (Stills), courtesy The artist & Matt's Gallery London

but lets focus on the face





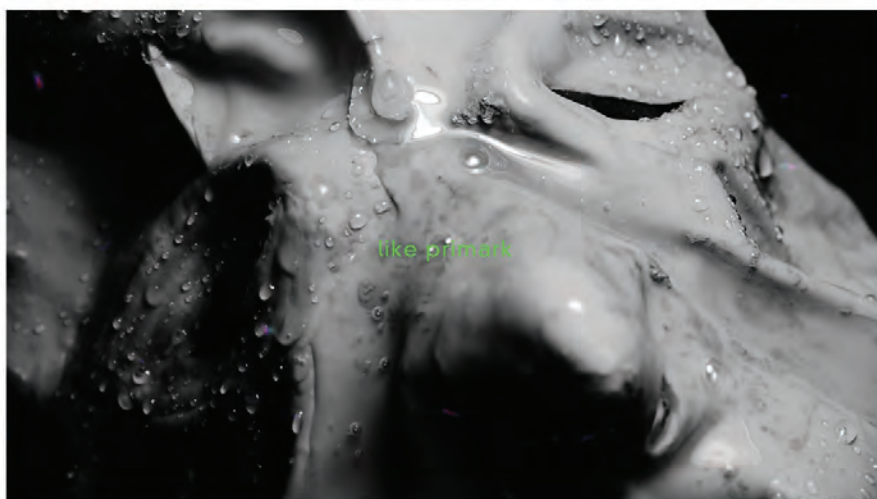
the body is just something that
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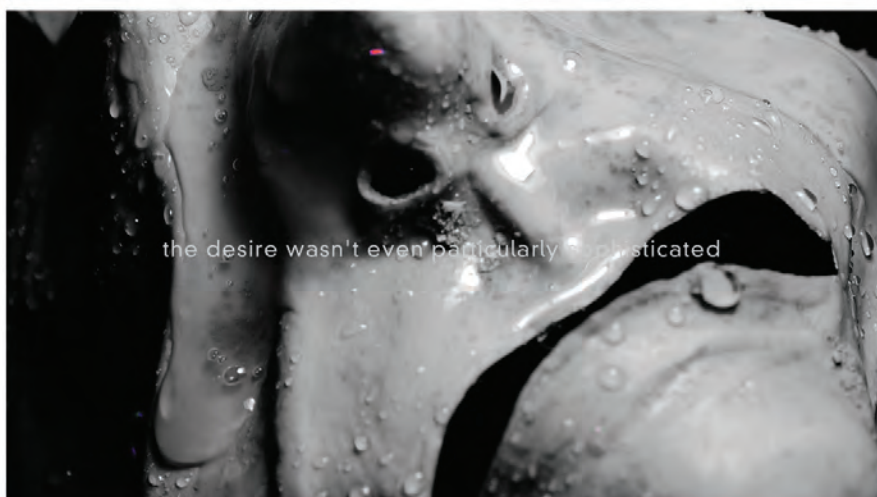
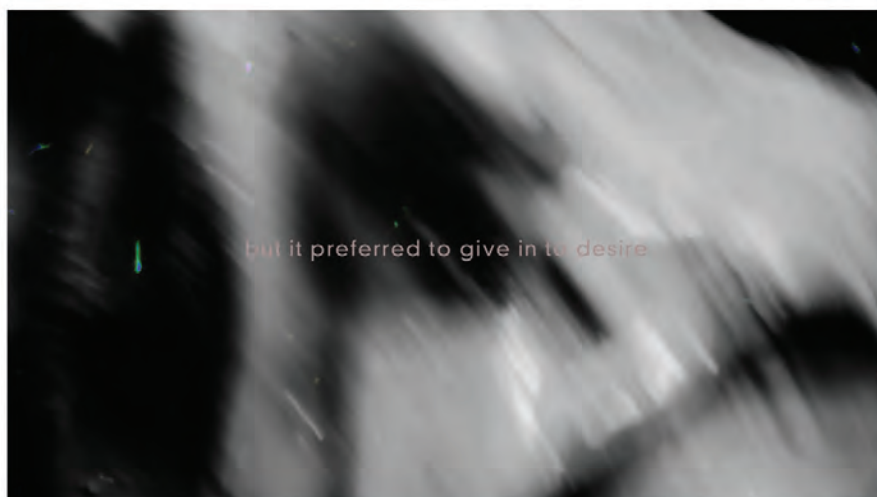
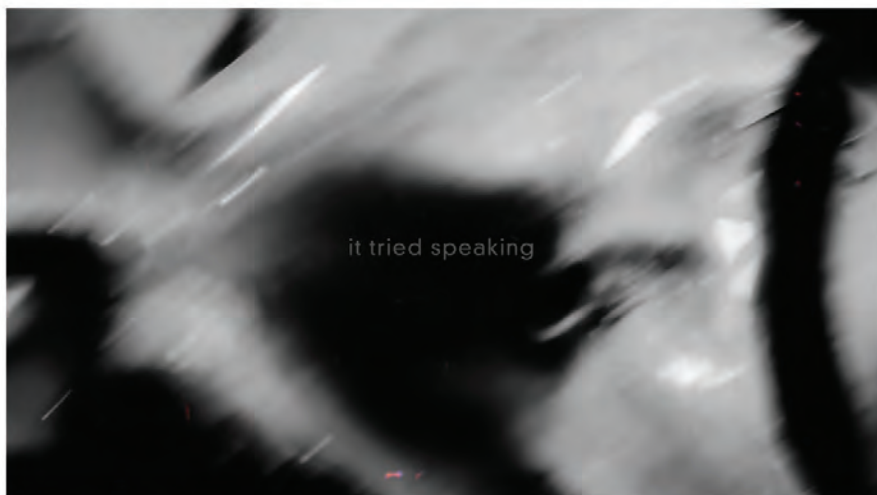


it felt



like the man on the cigarette packet







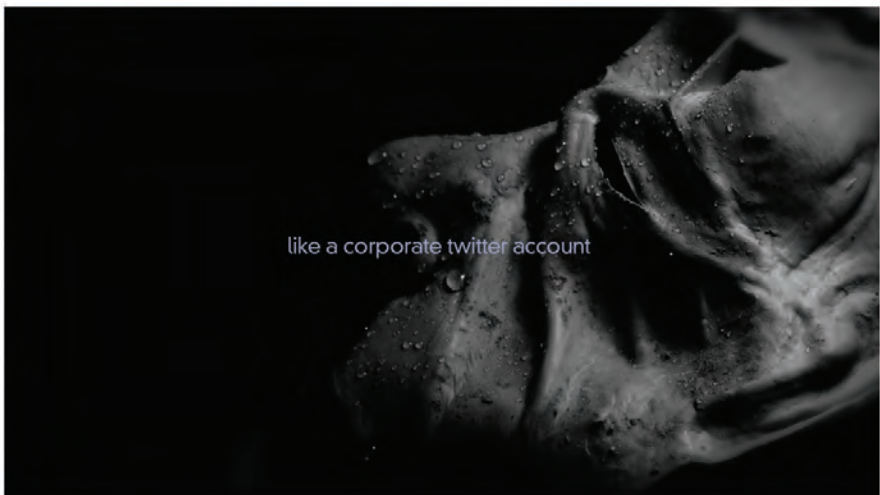




and the atrocities of the estate agent



it felt



like a corporate twitter account



self help

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TORQUE, TWIST AND
TURNS OF MEDIA

MEDIA BEGINS WITH THE TWISTING SKEINS OF CHIFFON THROWN BY THE SERPENTINE AND BUTTERFLY DANCERS. MEDIA AS WE KNOW IT, AS WE KNOW IT TODAY IN OUR LCD SCREENS, BEGINS WITH TWISTS OF CLOTH, SHAPES MADE AND REMADE OUT OF BODILY GESTURES COMBINED WITH FABRIC. ONE OF THE MOST FAMOUS OF THE SERPENTINE DANCERS WAS LOÏE FULLER, WHO BEGAN HER CAREER ON STAGE, UNDER COLOURED LIGHTS AND REFLECTED BY MIRRORS TO BATHE AND MULTIPLY HER BODY AND SHE DECORATED HER CLOTHING WITH PHOSPHORESCENT DESIGNS THAT TWINKLED ALMOST INDEPENDENTLY.

SHE WAS THE SCREEN BEFORE THE SCREEN APPEARED. A LIVE PRESENCE, IN MOVEMENT, IT WAS AS IF SHE WOULD SQUEEZE MORE MOVEMENT FROM HERSELF BY MOBILISING COILS OF LIGHT, AIRY MATERIAL, AS EXTENSIONS OF HER GYRATIONS. HER PERFORMANCE WAS A MOVEMENT, A PERFORMANCE OF MOVEMENT, OF MOVEMENT BEYOND MOVEMENT – AN OCCUPATION OF SPACE, IN WHICH SPACE WAS FILLED OUT BY TEXTURES, FOLDS, REFLECTIONS, INTERFERENCES, DISTURBANCES. SHE DEBUTED AT THE FOLIES BERGÈRE IN 1892-3, PLAYING A HYPNOTISED SUBJECT. SHE STRUTTED ACROSS THE STAGE, LIFTING UP HER LONG SKIRTS. THESE MOVES MADE HER REALISE – JUST AS DID THE VITALISTS IN THE SAME MOMENT – HOW MUCH OF A LIFE MATERIAL POSSESSES, OR, AT LEAST, IT MAY POSSESS IF MOBILISED BY HUMAN OR OTHER NATURAL ENERGIES. FULLER DEVELOPED HER REPERTOIRE OF MOVEMENTS INTO A SCULPTURAL CHOREOGRAPHY.

She studied the movement behaviours of silks. She observed what happened when fabric, light and colour were thrown together in dance. She found ways of intensifying shimmer, changing each coloured light that hit her body each time she struck a move or a pose. She flung around her metres and metres of crepe de chine, which twirled and let through the light. She let her body and its fabric become the surface for magic

lantern projections. 'Light and color', 'thrown great masses of silk was my real representation and not dancing at all', she said of her work.¹ The poet Mallarmé described her as a 'phantasmagoria of dusk and grotto'.² She froze into orchids, clouds, butterflies, and later, becoming more and more abstract, she evoked snowstorms or rippling water. Others followed in her wake, imitating the same twists and turns.

1 Sally R. Sommer, 'Loïe Fuller', *Drama Review*, 65, 1975, p. 58.

2 Stéphane Mallarmé, *Œuvres complètes*, Bibliothèque de la Pléiade, n° 65, 1945, p. 308.

Such mobility, such power of torsion, was, in turn, captured by the moving arts of film recording, just as it was captured by imitators. All of the 'fathers' of cinema made this type of film: Edison, Dickson, Louis Lumière and Paul Nadar. Edison released four film versions of a serpentine dance by Annabelle Whitford. One of these strips was exhibited at the first kinetoscope parlour, which opened in October 1894 at 20 Boulevard Poissonnière, in Paris. The Lumière brothers made a film of a serpentine dance in 1897. The performance lasted for fifty seconds on a wooden stage. These little films were brightly coloured, each frame tinted by applications of paint directly on film stock. Not only did the material twirl, the colours slid through the spectrum, detached from the real world. It was a rainbow of sensations, light bent and scattered in many hues. The short strips capture the mobilisation of material, the swirling forms and transforming colours of coils and fans of material as it is twisted by girls performing their butterfly and serpentine dances. The girls' bodies disappear periodically, engulfed by material. The bodies are elements that enable the endless animated flow of material to twist and turn and display its material qualities. The fabric coils for as long as the film strip coils through the projector. Around one third of films made in the first twenty years of cinema were of this type, garishly hand-coloured and short.

The girls twist. The cloth twists. The film projector twists. The film strip twists through the projector. What film twists into being is narrative eventually. The fifty seconds becomes fifty minutes, or longer, and there is time enough to tell stories with beginnings, middles and ends, including various twists and turns of plot along the way. The folds of cloth mobilised into actions is substituted over time by the twists and turns of a storyline.

At the same time as film capitalised on the serpentine dancers, animation came into being, and it set in motion films' turn toward narrative. The first narrative animation device was Charles-Émile Reynaud's invention, the Théâtre Optique, on which he showed his own Pauvre Pierrot and

other 'luminous pantomimes', or animations. These strips broke with the repetitive nature of movement in previous devices, including his own praxinoscope, which had simply spun and spun and repeated a single movement – a rat leaping on a man, a girl feeding hens, a horse jumping. Reynaud's proto-cinematic plates on a band with sprockets allowed for the unfurling of a story. The flexible band of animated images could be as long as the drawing animator could bear, for more seconds of story time could be gained with the addition of each further drawing. There were between five hundred and seven hundred mobile images in Reynaud's luminous pantomimes, and each would twinkle on the screen for a second or two. This length of time and ability for variety turned movement into action. It permitted the telling of a story, with a beginning, middle and an end. The twists of the band made possible the twists of a narrative. It produced time and filled it with activities. It also consumed minutes, not seconds, of attention. With this gain in time, the questions begin of what a story might be, and unhappy endings, in these early days, were as likely as happy ones. Animated optical culture begins to tell stories. Inaugurated in this is a certain imbrication of two types of inscription, image and story, or the visual and the verbal, or the film and the book. Animated culture begins its drawn-out and never completed fate: to supplant the book.

A story telling machine is in place. Modern humans, technologised and mediatised, are animated through this story-telling machine. It has colours and twists and turns and it contorts and distorts for us and in us. We become its punctuation mark – its end of the line – as machinic labour, as subjects of bureaucracy, as cinema viewers. We are instituted by our technologies. We institute them in the light of what we have become.

After film, the twisting motion is appropriated for television. The dancing bodies and fabric will be simulated, in the early days, by Felix the Cat, an animated feline from New York. He gets broadcasted in 1928, when his rotating 3D 13 inch papier mache body, his matter, was parsed

through the mechanism of a scanner to an electric kinescope receiver. Felix the Cat provided the first TV test image: he arrived on screens dotted across the city, two inches high and composed of fat grey lines. Miniaturised, flattened, dis- and re-assembled, almost immaterially composed of lines, Felix greets the viewer from the other side, from an elsewhere that is distant to himself too, through the interface of TV. Felix span on that turntable for a decade, into the later 1930s, as the lines narrowed and the focus sharpened and technicians strove for improvements in definition. Felix the Cat becomes part of media history. In watching him in his cartoon appearances, his desperate urban tales of thwarted love, hunger, the usual misery of city lives, his tail twirling and contorting, sometimes even into words or question marks, sometimes into things, we find that, like the cat in the corner of the room, or the cat on our lap, he will become domesticated, that is, part of our home, our modern twentieth century homes. His TV image will be domesticated too and so thereby will the television come to take up a place in the corner of our room, or in the centre of it, angling our vision, making us all twist our heads towards it. Felix twists on the plate for broadcast. In this gyration, this contortion of or by animation, its rubber limbs stretching, we sit. He slinks. The TV fizzles with energy and life.

The twisting cloth of serpentine dancers. The emergence of twists of film. The twists and turns of film develop into narrative. Twisting Felix being turned into lines suitable for broadcasting through TV. It is not just optical culture that genuflects to the gesture of the twist. There is also twist of the radio dial. But it is only the hand that is mobilised for this twist – the hand twists the dial to make language and sound shift, twisting, producing the articulate, sliding into the inarticulate. Only James Joyce really understood how language was twisted by this media technology of radio. Harry Levin observed in 1941 that Joyce replaced the archangel's trumpet with an electric amplifier and insisted further that the 'loudspeaker' of radio is the medium of *Finnegans*

Wake.³ It is indeed a radio book, composed by a man who listened to Radio Eireann every day. Joyce includes broadcasts at points in the narrative and there are direct references to radio, such as:

'THE EAR OF FIONN EARWICKER AFORETIME WAS THE TRADEMARK OF A BROADCASTER WITH WICKER LOCAL JARGON FOR AN ACE'S PATENT (HEAR! CALLS! EVERYWHAIR!) THEN AS TO THIS RADIOOSCILLATING EPIEPISTLE TO WHICH COTTON, SILK OR SAMITE, KOHOL, GALL OR BRICKDUST, WE MUST CEASELESSLY RETURN'⁴

Moreover, the whole book, with its glut of languages, its parodies of every style and genre, its code mixing and switching, recreates the experience of surfing through endless radio stations in foreign languages, the blasts of jingles or nonsensical ear-catching commercials. It catches too the sounds of the buzz and fuzz and whelping that occurs between tuned in stations. The book is a book for the ear, Joyce's own ear picking up the airs of Radio Eireann, which merged with what he claimed was the sound of static in his Paris apartment, the result of the vibrations of past lives, past voices.

Modern lives are reoriented around the mobilisation of material and of the immaterial, the energy of wind and waves, radio waves and electric winds, the visions of ambulant colourful stuff, moving itself, of lines in movement and broadcast to everyone from a hidden abode of production, of sounds ripped from the air, and addressing us and everyone else. The reorientation is the point, to be pulled this way, into the modern mode of living, moving, gesturing, flexing one's self into the new now. Thinking too adapts to this flexing motion, as exemplified in Bertolt Brecht's thinking about thought from the second half of the 1930s. *Me-ti; Book of Transformations* or *Book of Changes* or *Book of Twists and Turns* or *Book of Turning*

3 Harry Levin, *James Joyce: A Critical Introduction*, Faber, London, 1941, p. 67.

4 James Joyce, *Finnegans Wake*, Book 1, chapter 5.

Ways, was not published when Brecht was alive.⁵ It emulates writings by the Chinese dialectician and anti-Confucian of the classical period Me-ti (or Mo-Dzi), who was regarded by many nineteenth-century scholars as a proto-socialist. The subtitle – *Book of Twists and Turns, or Turning Ways* – stems from a Confucian text – the *I-Ching* – which can be translated likewise as the book of transformations. Brecht in yoking two divergent things together was acting eclectically, but was also enstaging contradiction. Such a stance arguably underwrites the whole of Me-ti, an attempt to reflect critically on the method of thinking contradiction, of dialectics. Brecht’s Chinese fascinations – comprising philosophy and method as well as theatrical practice – deviate from Stalinist dogma, offering instead an articulation of the dialectic in terms of flow, flux, change, transformation. Given that Me-ti’s original effort attempted to establish rules of behaviour in relation to socio-political considerations, Brecht’s aphoristic mimicries foreground the question of individual behaviour in the context of collectives. The self too is not exempt from this process of contradiction, nor disconnected from the larger context, which may be riven by the same contradictions:

*“Me-ti said: It is advantageous, not merely to think according to the Great Method but to live according to the Great Method as well. Not to be identical with oneself, to embrace and intensify crises, to turn small changes into great ones and so forth – one need not only observe such phenomena, one can also act them out. One can live with greater or fewer mediations, in more numerous or less numerous relationships. One can aim at or strive for a more durable transformation of one’s consciousness by modifying one’s social being. One can help to make the institutions of the state more contradictory and thereby more capable of development.”*⁶

This is the modern flexibility of a post-revolutionary self, or a self engaged in the process of revolutionising things. The self tears opens its own

being in order to transform consciousness, to be made anew, but it also balks at institutions, working against them, tugging at them, transgressing their limits in order to push the settledness of the given into contradiction. It is as if the self acts as a fulcrum exerting force on the solid mass of what is to turn it, twist it into something else. Revolutionary politics is prone to borrow its metaphors from engineering and physics, in order to express the moment and the process of revolutionary change.

EVERY QUESTION ‘RUNS IN A VICIOUS CIRCLE’ BECAUSE POLITICAL LIFE AS A WHOLE IS AN ENDLESS CHAIN CONSISTING OF AN INFINITE NUMBER OF LINKS. THE WHOLE ART OF POLITICS LIES IN FINDING AND TAKING AS FIRM A GRIP AS WE CAN OF THE LINK THAT IS LEAST LIKELY TO BE STRUCK FROM OUR HANDS, THE ONE THAT IS MOST IMPORTANT AT THE GIVEN MOMENT, THE ONE THAT MOST OF ALL GUARANTEES ITS POSSESSOR THE POSSESSION OF THE WHOLE CHAIN. IF WE HAD A CREW OF EXPERIENCED BRICKLAYERS WHO HAD LEARNED TO WORK SO WELL TOGETHER THAT THEY COULD LAY THEIR BRICKS EXACTLY AS REQUIRED WITHOUT A GUIDE LINE (WHICH, SPEAKING ABSTRACTLY, IS BY NO MEANS IMPOSSIBLE), THEN PERHAPS WE MIGHT TAKE HOLD OF SOME OTHER LINK. BUT IT IS UNFORTUNATE THAT AS YET WE HAVE NO EXPERIENCED BRICKLAYERS TRAINED FOR TEAMWORK, THAT BRICKS ARE OFTEN LAID WHERE THEY ARE NOT NEEDED AT ALL, THAT THEY ARE NOT LAID ACCORDING TO THE GENERAL LINE, BUT ARE SO SCATTERED THAT

5 Bertolt Brecht, Me-Ti. Buch der Wendungen, Suhrkamp, Frankfurt/Main, 1972.

6 Fredric Jameson, Brecht and Method, Verso, London, 1998, p. 30. See also Sergei Zemlyanoi, ‘Bertold Brecht’s Project for Humanity’, in Chto Delat, September, 2009. See also Emily Pethick/Peio Aguirre, Casco Issues X: The Great Method, 2007.

THE ENEMY CAN SHATTER THE STRUCTURE AS IF IT WERE MADE OF SAND AND NOT OF BRICKS.⁷

Lenin's metaphor suggests that there is a moment of intervention, a holding on to something that slips and circles past, smoothly, repelling all too easy a grip. The chain is a band that loops and glides by, comprised of actions and counter actions, links that are promising, those that go nowhere, those that are weak and those that are strong and can forge more links. In addition, the revolutionary forces lay bricks here and there, but are unable to build them systematically, to make anything strong, any bulwark against the forces of the ruling class. This was Lenin in 1902 writing in *What is to be Done?* The problem was one of mass and organisation. The dominant class is powerful. History does not seem to be in any way on the side of the righteous. Any victory must be snatched, almost by a lucky grab into the unpredictable complexity of world history.

Some thirty years later, Walter Benjamin develops another metaphor to consider the ways in which political activity, and political thinking, might develop, with a more dialectical conception of the relation of parts in the process of world historical movement. In fact he summons up the torque forces of sailing to conceptualise the unfurling and the steering of historical movement. In the epistemological section of *The Arcades Project*, known as File N, he defines the concept of *Rettung*, rescue or salvation of the historical process in relation to a metaphor:

[IN 9, 2] RE THE CONCEPT OF 'RESCUE': THE WIND OF THE ABSOLUTE IN THE SAILS OF THE CONCEPT. (THE PRINCIPLE OF THE WIND IS THE CYCLICAL.) THE TRIM OF THE SAIL IS THE RELATIVE.⁸

History moves as an absolute, cycling, eternally returning the same old oppressions, becoming like nature. But the concept, the conceptual moment of analysis, of fashioning understanding, is a sail, cuts through and yet glides off the wind, utilising it,

capturing its energies for another defined project. The sail must be pulled in to the point where it fills up with wind, its luff in line with the wind's line of movement. How does a boat sail? How does it use the wind in its sails and the water around it? Wind and water, two horizontal forces, cancel out each other's power, but make a torque that tilts the boat one way. The buoyancy and weight of the vessel, two other equals and opposites, make a torque in the opposite direction. Cancelling and balancing, mobilising forces and negating them is the art of movement, of revolution. To this Benjamin adds the sail as a crucial component that directs the energies that might otherwise scupper the boat. These energies are, he defines elsewhere, the process of history which blows on regardless. But the energy can be angled, can be taken control of, directed. For the theorist, for Benjamin himself, the point is to have an angle, to think in relation to a project, and one that can develop world history in a certain direction.

WHAT MATTERS FOR THE DIALECTICIAN IS HAVING THE WIND OF WORLD HISTORY IN HIS SAILS. THINKING FOR HIM MEANS: TO SET THE SAILS. IT IS THE WAY THEY ARE SET THAT MATTERS. WORDS ARE HIS SAILS. THE WAY THEY ARE SET TURNS THEM INTO CONCEPTS.⁹

Benjamin's insistence is that a vocabulary of revolution needs to cut its way through the morass of poor thinking or corrupted fantasy. The wind of history, the angling of the relative towards the absolute, is Benjamin's concern, for otherwise there is only the passive, miserably being blown by the storm of progress into oblivion. The sails are twisted into position. Some twists break things off. At a given point quantity turns into quality.

Torsion, the twisting of the self in response to the technologies, the media, the techniques, the languages of an environment that comes increasingly to be comprised of twisting things, of mechanisms that turn repetitively, endlessly,

7 Lenin, *What is to be Done?*, Progress, Moscow, 1975, p. 219.

8 Walter Benjamin, *File N, The Arcades Project*, Harvard, Cambridge, MA, 1999, p. 473.

9 Walter Benjamin, *File N, The Arcades Project*, 1999, p. 473.

automatically. It was in its various cultured forms, as dance, as animation, as film, as TV test transmission, as radio dial, met by the twists of dialectical, political critical thought, a pre-articulation of what twists for us today, endlessly: the twisted nematics of the liquid crystal.

The power of the serpentine dancer to twist, the power of Felix to be turned, the power of the radio dial to summon up and cancel out languages, is captured and regularised in liquid crystal. These little animated forms we watch as they twist, in torsion, on screens, on the walls, on our desks, on the gadgets in our pockets. They twist and turn to approximate the colours of nature, when an electrical charge shoots through them. It is as if they have bodies wracked in pain, hit by Tasers that cause them to writhe. Or it is as if they dance, like serpentine dancers, swirling, being movement and colour, shape and evanescence. They are liquid crystals. They twist to participate in the making of the screen's colours. We do not see their twist, only the results. We do not see their colours, only the pixels that they operate.

The liquid crystal, with its twisting capacities, was captured and dominated. Like an unwilling Proteus, these quasi-life forms were interned in machines, in order to reveal our pasts and futures, our worlds in heightened colours on screens. Liquid crystal's fleet mercurial motions are harnessed by CGI software, as function and as look. Its natural opalescence and sheen are appropriated by digital aesthetics, so that scenarios of rapid transformation, fluid motion, can be recreated for delightful spectacular displays. 3D modelling and printing, mobilising the supple power of the liquid crystal, allows, seemingly, a pulling, twisting, stretching, denting and extruding of liquid crystals – as if they were clay. Clay was touched and twisted into shape by hands, sometimes in conjunction with the force of spin. Now the hands touch keyboards, or the screen. On the liquid crystal touchscreen, fingers dance like the Butterfly dancer Annabelle over the surface, flicking, turning, jabbing. The liquid crystals have climbed down from the

screens. They were intimate with the body in earlier days, first appearing as watches and calculators. Lately they have reclaimed that closeness, residing more or less comfortably in every pocket or bag as smartphone, tablet, audio device. They demand to be touched. Touchscreens, the resistive ones, the capacitive ones, or the surface wave ones, have various modes of operating the human body, whose contact is needed to detonate touch events. The resistive screens are content with any hard object to press down and make contact between two layers in order to change the electrical field.

The other modes deploy the human – or any other conductor – and its electrical charges and participation in electrical fields, in order to operate by discharging electricity in the user or mobilising the human to complete electrical circuits or by disrupting the flow of waves. Our electricity is abstracted. The other side of the screen, the side which awaits the touch and monitors the changes in electric state on the screen is composed of rare earth minerals and metals, such as indium tin oxide, which is highly conductive, easy to deposit on the glass as a film – sputtered on in vapour – and optically transparent. The screen is ever thinner, as in Samsung's Super AMOLED screens, using light-emitting and charge-transporting organic materials, which has stripped out another layer and puts the fingers closer still to what is being touched on the screen. We almost reach through to the luminous confection of the display. This luminosity generates its own self, is a self-reflection of light.

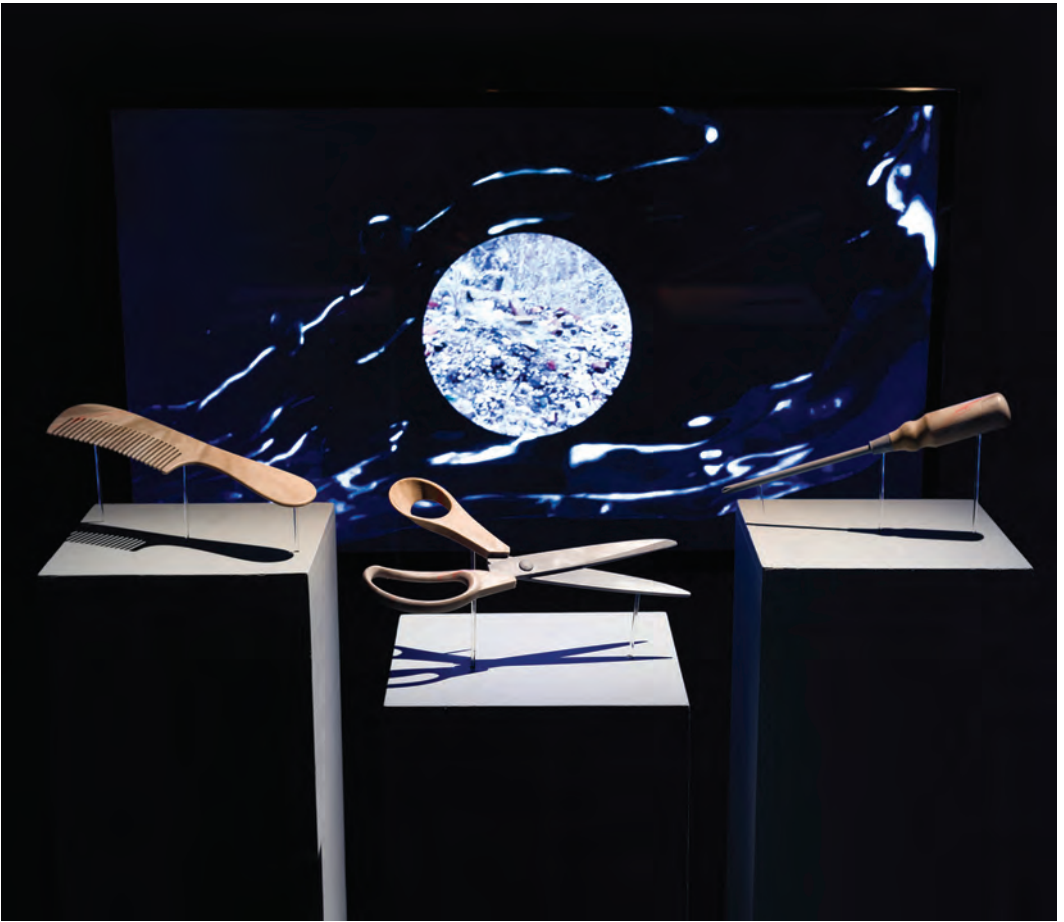
There was a time when we had to press into the screens to make the circuits work and perhaps a ring of prismatic colours would flood around the dent. Now their smooth surfaces keep us out. Our touch leaves a greasy mark that blocks our experience. But our eyes dive in. The technology has now developed to read the body – fingertip, nail, knuckle. We become multiple instruments. Our fingers see as they touch. Our eyes touch as we see. Our body is refigured. We angle ourselves towards the devices and exert the necessary force or have it exerted upon us.

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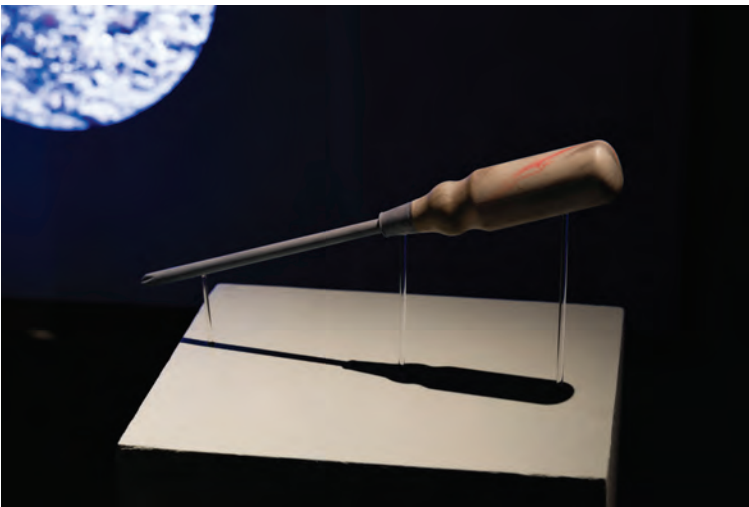
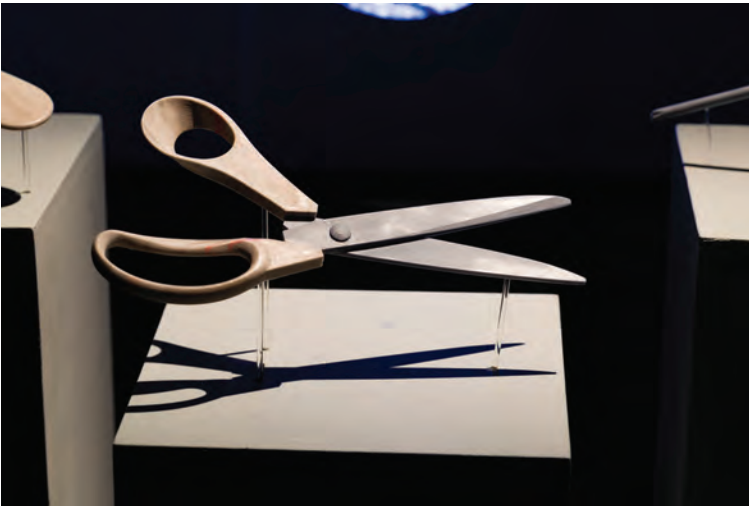
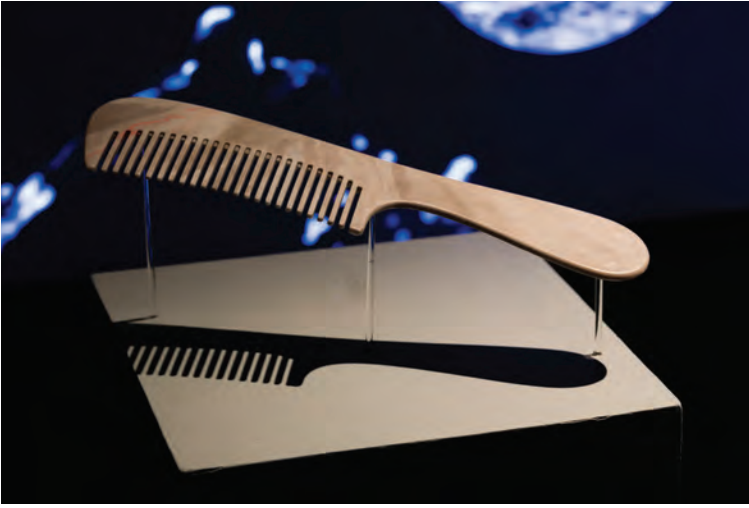
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HOW HAPPY A THING CAN BE



'How happy a Thing can be' is a new two-part work that incorporates both sculptural and video elements. How happy features three personal effects, mundane personal items - a comb, a screwdriver, and a pair of scissors - modes of technology with relative immunity to updates and upgrades. These objects, 3D printed from digital models, are set within the moving backdrop of a screen depicting moving mis-en-scenes that allude to an alternate location for these objects.

The handheld devices co-exist in a corresponding video work in which their digital forms perform a choreographed arch that implies they are being pushed to their limits. Inspired by tabloid breakdowns and mediatized disasters, the objects' paths explore the transient exchange of spirit, in both the human condition and our apparatuses, endowed through the increasingly overwhelming thrust for something more. Their physical and digital iterations are identical, allowing a state that is at once veritable and indescribable, caught up somewhere in the middle blurring the sentimental and the anticlimactic.



'How happy a Thing can be' 2014

3D printed plaster, wax sealant
HD video. Dimensions variable.

Courtesy of the artist and
commissioned by Radar,
LUA and Wysing Arts Centre

Installation view:
Annals of the Twenty-Ninth
Century at Wysing Arts Centre,
2014

Photo: Plastiques Photography

I DON'T WANT TO BE A VEGETABLE
WHAT'S A VEGETABLE ANYWAY SO
SHOW THEM SOMETHING SIMPLE
THAT WAS SHAPED BY LOTS OF
HANDS FOR A LONG TIME AND LOOKED
AT A LOT VERY INTENSELY SHOW
THEM HOW HAPPY A THING CAN BE
HOW INNOCENT AND OURS HOW EVEN
HORRIBLE SADNESS IS FLAWLESS
WE SERVE AS A THING OR DIE INTO
A THING BLISS AND WE THINGS
THAT LIVE BY FALLING APART WE
WANT TO CHANGE TOTALLY IN OUR
INVISIBLE HEARTS ISN'T IT YOUR
DREAM TO BE TOTALLY INVISIBLE
ONE DAY LOOK WE ARE LIVING



How happy a Thing can be, 2014
Animation with Tom Kemp and Maxime Villemard
Models developed with Cay Green
Courtesy of the artist and commissioned by Radar,
LUA and Wysing Arts Centre

WHAT IS THE WEIGHT
OF A THING AFTER
IT LEAVES A HAND?
HEAVY SHIT.

—

WHAT DO YOU CALL
A LETTER WRITER?
SOMEONE WHO'S
GONNA MAKE YOU CRY.



WHAT'S THE WEATHER
LIKE? IT'S RAINING
ON MY FACE.
JUST YOUR FACE?

—

IF I TAKE YOUR
PICTURE WILL MY
PHONE WEIGH MORE?



TELL THEM ALL I KNOW
NOW. YOU CAN SHOUT IT
FROM THE ROOFTOPS AND
WRITE IT ON THE SKYLINE,
ALL WE HAD IS GONE NOW.

—

TELL THEM I WAS HAPPY.

—

IT'S GOTTA BE BULLSHIT.
YEAH, BULLSHIT.



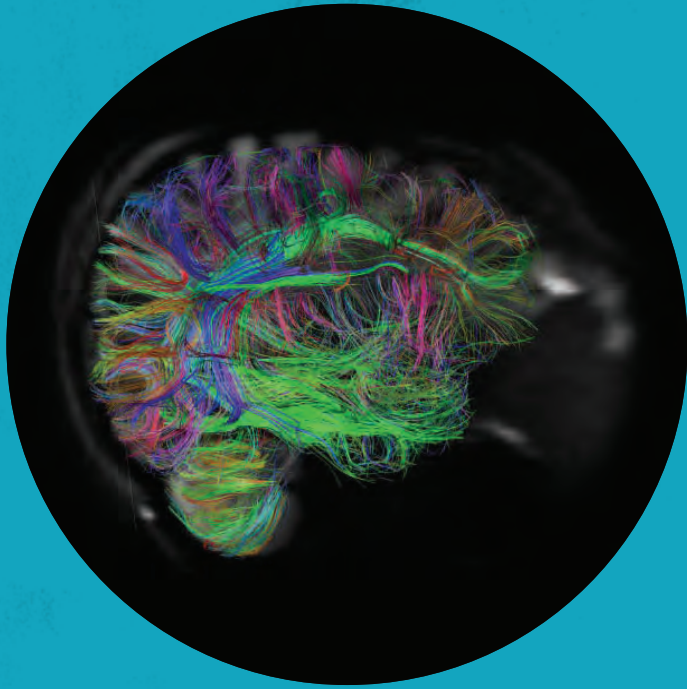
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GREY ON GREY
REFLECTIONS ON THE AESTHETICS
OF CONTEMPORARY THE NEUROSCIENCE

THE POSITION THAT AN
EPOCH OCCUPIES IN THE
HISTORICAL PROCESS
CAN BE DETERMINED
MORE STRIKINGLY
FROM AN ANALYSIS OF
ITS INCONSPICUOUS
SURFACE-LEVEL
EXPRESSIONS
THAN FROM THAT
EPOCH'S JUDGMENTS
ABOUT ITSELF.

SIEGFRIED KRACAUER, 'THE MASS ORNAMENT'¹



|

THESE FRAGMENTS WILL PROBE THE RELATIONSHIP BETWEEN THE
GREY MATTER OF THE BRAIN AND THE BRIGHT IMAGES THAT ATTEND IT.



II

IN *PHENOMENOLOGY OF SPIRIT* (1807), GWF HEGEL DISCUSSES PHYSIOGNOMY AND PHRENOLOGY, TWO SCIENCES THAT DREW CONCLUSIONS ABOUT PEOPLE'S ESSENTIAL QUALITIES AND DISPOSITIONS FROM THE SHAPES OF THEIR EXTERNAL FEATURES – THEIR FACES AND SKULLS RESPECTIVELY.

Hegel's discussion hinges on a distinction between dynamism and stasis – in these sciences 'the movement of consciousness' is ossified into a 'dead thing'. Considered as an external object the brain becomes 'such an indifferent, natural thing that nothing else is to be directly seen in it.'² But for Hegel the brain 'is nothing in itself, much less his [a person's] true reality.'³ Hegel is implying here that when brains are isolated from human activity, when they become objects rather than subjects, they cease to have any true meaning at all, they die. Phrenology and physiognomy reduce subjectivity to external appearance isolated from the living subject's interactions with the world: 'consciousness no longer aims to find itself immediately, but to produce itself by its own activity.'⁴

Phrenology's founder Franz Joseph Gall conceived of the brain as an organ with distinct regions, each responsible for a different aspect of mental life. He travelled across Europe publicly dissecting brains and examining skulls collected from prison and asylum inmates, which were thought to demonstrate

inherent propensities for wickedness or insanity. With its emphasis on empirically observable innate capacities, this new science exhibited a shift from the theological to the biological. But existing hierarchies of race, gender and class were upheld. The act of observing was not a neutral one – cranial bumps can be seen but not heard and the scientist was responsible for ventriloquizing them.

After his death Gall's brain was donated to a fellow scientist, Paul Broca, for examination. It was assumed that an eminent 'man of genius' like Gall would have a correspondingly vast brain. But Gall's was found to weigh a meagre 1198 grams. Broca was forced to account for this anomaly which, like many others encountered in his research, disrupted his claim that brain size was directly linked to intelligence and that middle class white men have larger brains than women, poor people, criminals and 'primitives'. Broca was adept at working around the numerous exceptions to this 'rule'. As Stephen Jay Gould discusses 'data could never overthrow his assumptions.'⁵

BUT LET'S RETURN BRIEFLY FROM BRAINS TO SKULLS. PHRENOLOGY HAD A MASS APPEAL IN BRITAIN IN THE 19TH CENTURY – IT TRICKLED OUT FROM SCIENTIFIC ESTABLISHMENTS AND DOWN FROM THE UPPER TO THE WORKING CLASSES.

1000s of cheap editions of phrenological works circulated, alongside pamphlets and leaflets. Popular lectures, often fronted by practitioners with a flair for showmanship, were well-attended, even in small villages. By the 1840s phrenologists also functioned as materialist clairvoyants, offering advice on the future for a few shillings.⁶

In 1825, John Trotter published a satirical travelogue under the pseudonym Don Jose Balscopo. The novel's protagonist crashes his hot air balloon in the mysterious land of Phrenologasto where he encounters a nation of people with heads resembling phrenological models – their heads shaved, painted white and 'chalked out by black lines into a variety of little fields and enclosures, very much in the same style as we see a Gentleman's estate in England laid out on a map.' The inhabitants of Phrenologasto clothe themselves in images of the skulls of their ancestors; everyone's role in society is determined by the shape of their heads. When Balscopo submits himself to a state examination he is branded an idiot, only fit to serve in the lowest ranks of the army. But eventually he transcends this prognosis to become a distinguished member of society, overturning the nation's assumptions about innate capacities.⁷

Trotter imaginatively extends the logic of the dominant visual technology for understanding mental life to the whole of society. The resemblance of the phrenological heads to the maps used by the landed aristocracy is a pertinent analogy. The property owning classes carve up, survey and label the land, ensuring their continued dominance over it. The land has no inherent properties which designate it as the private property of a particular person or group; the act of mapping confers such meanings on inert matter. Similarly, the phrenologists affix labels in such a way that they seem to inhere in subjects rather than adhere to them.

But what would the contemporary equivalent of Phrenogasto look like? What are the implications of our current visualisations of the brain?⁸

Our contemporary Balscopo might be bewildered to find himself in this mysterious new territory. For there he would not find people with white skulls covered in neat black lines moving around in a recognisably terrestrial landscape, but fluorescent disembodied shapes cast adrift in a featureless black abyss.



FIG. 22.

SYMBOLICAL HEAD
 ILLUSTRATING THE
 NATURAL LANGUAGE OF THE
 FACULTIES.

CAN THE MIND BE SEEN IN THE BRAIN?

ON MARCH 9TH 2014 JACK BELLIVEAU, THE FIRST SCIENTIST TO CREATE A MAGNETIC RESONANCE IMAGE OF HUMAN BRAIN FUNCTION, DIED. IN THE WORDS OF THE NEW YORK TIMES OBITUARY HIS WAS A 'QUEST TO CAPTURE THE QUICKSILVER FLARE OF THOUGHT INSIDE A LIVING BRAIN'.⁹

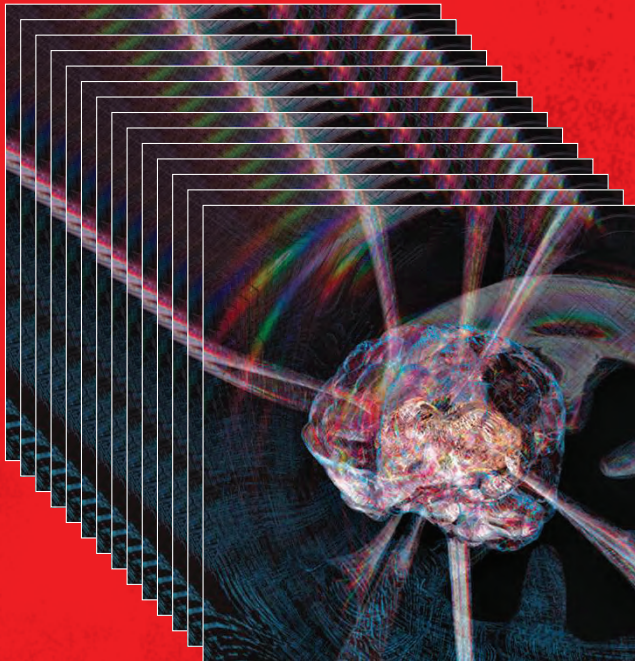
One of Belliveau's images made the cover of *Science* in November 1991. The image revealed an increased volume of blood in the activated visual cortex. Functional magnetic resonance imaging (fM.R.I.) produces images by detecting signals from the hydrogen atoms of water molecules surrounding the vessels that deliver blood to the brain, relying on the magnetic properties of haemoglobin. Although the subtractive method used to obtain the magazine's cover image was already obsolete by the time the journal was published, the image became iconic.¹⁰

George Bush Sr famously declared the 1990s to be the Decade of the Brain. A glance at the New York Times archives during that decade reveals that references to fMRI became increasingly common as the 90s unfolded¹¹ – from initial reports on the existence of this new technology to articles covering research into Alzheimer's, language acquisition, drug use and (more disturbingly) evidence of biological gender difference.¹² The earlier articles, written before magnetic imaging technology had become familiar, highlight the limitations of the procedure. A neurologist at Yale cautions in 1992 that making assertions about the functioning of the brain based on blood flow is 'an enormous leap'.¹³ But these caveats tend to disappear as the decade progresses. The fallibility of the technology fades from view.

The tension between the quicksilver flare of thought and the static dull mass across which it flashes seems to have a visual counterpart in images of the brain, which transform a grey lump of flesh into a colourful, dynamic, digitized picture. But the brightness on display in those images should not be mistaken with the qualitative experience of thought itself. fMRI might visualize brain function but it does not produce images of our emotions and desires, feelings and anxieties, hopes and fears. As Gayle Rubin notes in a different context, biology can only ever tell us so much (as biologists themselves are often the first to admit): 'The belly's hunger gives no clues as to the complexities of cuisine.'¹⁴

But the shimmering colours of these images are imbued with aesthetic significance. We live in a culture in which brightness and darkness, vibrancy and the monochromatic, dynamism and stasis have profoundly emotional connotations.

'No-one can reasonably watch the frenzied, localized activity in the brain of a person driven by some obsession, or see the dull glow of a depressed brain, and still doubt that these are physical conditions,' declares Rita Carter in *Mapping the Mind*.¹⁵ Here the movements and lights that appear in fMRI are directly equated with mental states. But this is a *metaphorical* process. Happy brains do not shine and depressed brains do not emit a dull glow; the dim light produced by the image does not directly correspond to a gloomy disposition (however much our value-laden language suggests otherwise).



IV

DURING HIS CONVALESCENCE AT AN ALPINE SANATORIUM HANS CASTORP, THE AILING HERO OF THOMAS MANN'S *THE MAGIC MOUNTAIN* (1924), PAYS A VISIT TO THE X-RAY LABORATORY. THE X-RAY WAS INVENTED IN 1896, INTRODUCING A RADICALLY NEW WAY OF LOOKING NOT AT BUT THROUGH HUMAN BODIES.¹⁶

The resident doctor hails with confident enlightened zeal this 'illuminated anatomy, the triumph of the age.'¹⁷ Castorp refers again and again to the 'strands with nodules' that appear on his X-ray image: an empirical testament to his illness. He carries his X-ray photograph in his wallet as 'a kind of identification. Like a passport or a membership card.'¹⁸

But the narrative captures the tension between scientific rationality and the queasy, uncanny effect its images produce; the physical is metaphysical. X-rays do not disenchant the world but imbue it with greater mystery. Entering the 'artificial twilight'¹⁹ of the X-ray room with its sparks and sizzles of electrical energy, red lights and green glows, the image that emerges is 'phantom like and hazy, like a fog or a pale, uncertain aura,'²⁰ a 'soft halo of flesh... a web of darker spots and blackish ruffles.'²¹ The procedure has a haunting, mystical quality. By stripping living flesh from the bone, the X-ray provides a glimpse into the grave. It functions as a premonition of death. The milky frame that appears against the translucent darkness is 'sepulchral', 'funereal', a 'gaunt *memento mori*.'²² For Castorp, X-ray images are macabre, moving, otherworldly. He likens the experience to a clairvoyant aunt who saw people as skeletons prior to their deaths.

But these images also provide strange insights into living beings. Gazing at his cousin Joachim's

X-rayed form, Hans is distracted by a 'sack, or maybe a deformed animal... like some sort of flapping jellyfish.' This curious creature turns out to be his companion's 'honour-loving heart'.²³ Hans is deeply moved by this sight; the heart is more than a fleshy organ but the seat of emotions and love. He keeps an X-ray photograph of his beloved in his pocket and presses it to his lips in her absence - 'without a face, but revealing the organs of her chest cavity and the tender framework of her upper body, delicately surrounded by soft, ghostlike forms of her flesh.'²⁴

The neurophilosopher Paul Churchland is similarly said to carry an image of his wife's brain in his wallet. Bruno Latour argues that carrying a photograph of her face would be no more or less rational as this is also a technologically mediated representation, albeit a more socially acceptable one. Neither image provides a direct representation of the essence of subjectivity.²⁵ But the mediations involved here are qualitatively different. The more 'scientific' image is the more abstract. A photograph reproduces the world in a recognisable, if distorted manner, whereas the images produced by brain scans, like the ghostly X-ray visions discussed by Mann, usher the viewer into an alien terrain.

WE ARE NOT REALLY AT HOME
IN OUR INTERPRETED WORLD.



The cover story of the March 2014 edition of *Scientific American* is dedicated to 'The Century of the Brain'. The cover image (see page 77) depicts bright folds of multi-coloured fibres encasing a glowing yellow core. Strange shafts of light and iridescent streaks radiate from a disembodied central globule that coruscates within its obsidian surroundings.

When I look at this image I see a sea anemone floating above a coral reef, a rapturous heart, an oil slick in a dark cavern, a blue fishing net catching a lamp, twinkling embers, an alien spaceship venturing into the unknown. The garish colours employed here do not bare much resemblance to the grey matter in our heads and certainly fail to gesture towards the world beyond it. It is unclear whether the image is generated by machines used to analyse brain function or is an artist's impression. The bold glowing cover picture does not seem vastly dissimilar from the cover image on *Scientific American* that appeared the subsequent month, of distant galaxies.

What does this image proclaim exactly? Perhaps little else than the dazzling innovative qualities of scientific discovery as such – So innovative! So shiny! So cutting edge! Aren't the machines and brilliant minds that power them impressive? And ultimately, of course, beyond our comprehension. The injunction is to gaze in awe, to marvel at this most advanced form of human knowledge.

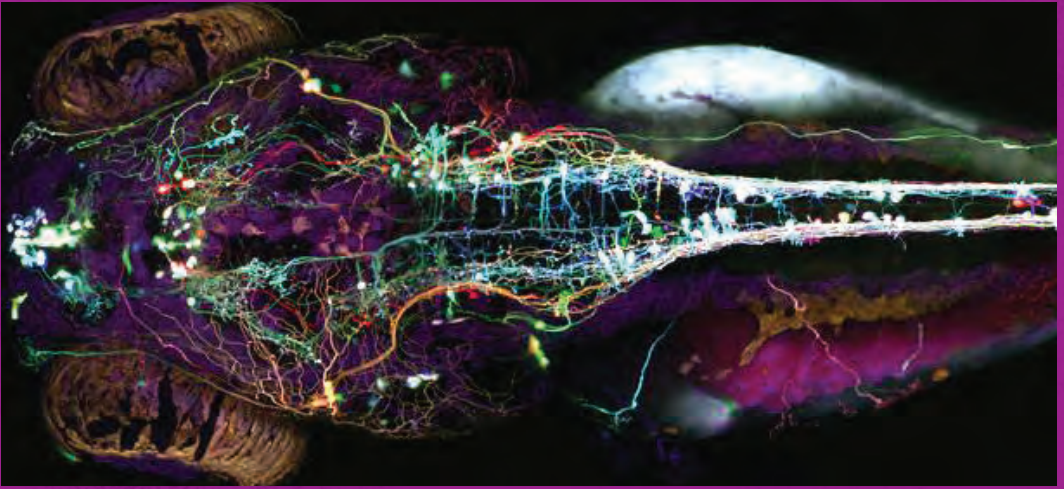
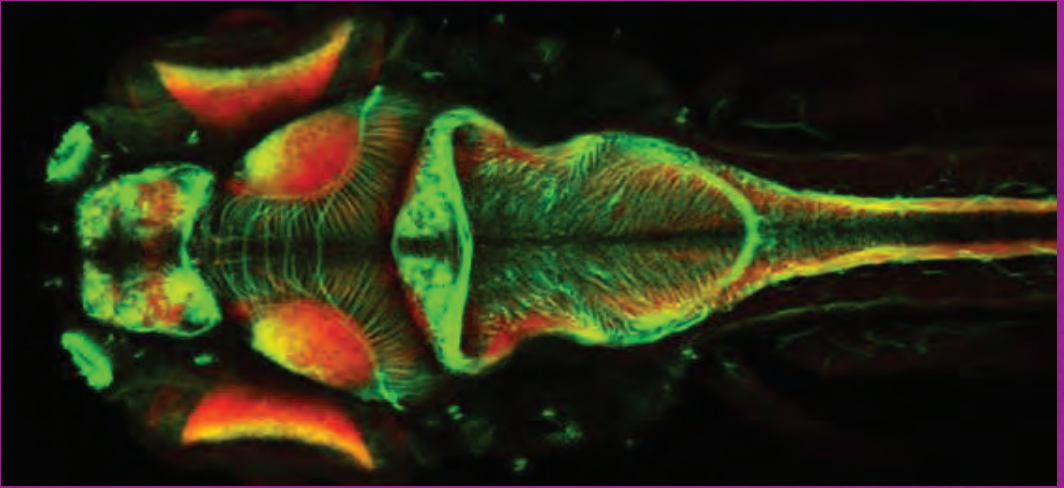
In the *Scientific American* article itself two neuroscientists discuss the emerging technologies that might provide new insights into the mysterious grey lump in our skulls – as it is invariably described in article after article. These scientists are quick to point to the limitations of current brain imaging technologies which they acknowledge are far from transparent representations of consciousness. The article is populated by strange, almost mystical sounding creatures and materials. They discuss needle-like electrodes prodding into the brains of animals in laboratories and molecule-sized materials that might be inserted into the cerebral cortex to track the electrical activity of neurons.

One of the article's authors has experimented with the larval zebra fish, whose transparent flesh allows for its brain activity to be easily observed (although how similar this creature is to a human remains obscure). The fish's neurons were genetically engineered to fluoresce when calcium ions enter the cell. Later the article discusses nanodiamonds, which are capable of registering the electrical fluctuations of a cell and endoscopes which are being developed to peer inside skulls, gaining access through vessels or arteries.

To the lay person – or at least to me – the descriptions of these technologies evoke something intriguing, weird, surprising. They're engaging to read about. But they don't really tell me very much about my brain or myself. Popular science writing is grounded in the promise of something to come – premised on positivist assumptions about scientific discovery. The brain might be grey and mysterious today but tomorrow...? Yet amid all the futuristic-sounding innovations, the problems neuroscience faces are old and stubborn – like the fact that living brains tend to be encased in bone which makes them difficult to see inside. The wholly enlightened earth is radiant with triumphant banality.

In these accounts of new imaging technologies, the language is often as lurid as the images. On my trawl through the *New York Times* archives I came across a long feature written by Stephen S Hall in 1999 entitled 'Journey to the Centre of my Mind' in which the journalist underwent a series of fMRI scans. Metaphors abound.

Images of brain often resemble spaceships circulating in a dark galaxy, but in written accounts of neuroscientific research it is the scientist who is cast as the intrepid explorer venturing into the unknown cerebral stratosphere. Non-scientific or popular scientific accounts of brain function tend to employ tropes from imperialist adventure narratives – the brain is the final frontier to be discovered, and if we follow the colonial metaphor to its logical conclusion, dominated, controlled, exploited.



Hall says he embarked on an 'adventure' into the 'dark wood of cognition' across the 'daunting frontier' into his brain. The scientists, he says, are like pioneers in covered wagons who have now established a 'beachhead on a vast, uncharted continent'. He describes his account as a 'neuronal picaresque' akin to Dante's journey into hell. The image of his brain is 'like those aerial shots of Southern California' or 'like a Chopin impromptu' or like a landscape with a river running through it or like 'the wall of napalm scene in *Apocalypse now*' or like 'a neon sign on a cheap diner'.

The tension Hall describes throughout is between the 'strange commingling of inert anatomy and transcendent human qualities.' But ultimately

despite all the flashes or rivers or folds that he witnesses his brain remains opaque. Those 'voluptuous, serpentine folds of cortex' that he describes so lavishly do not ultimately yield very much. Somewhere, he opines, the brain must harbour childhood memories, the capacity to speak foreign languages, pop song lyrics, the contours of people's faces – 'all nestled and synaptically etched in this bland grey and squishy landscape' – but for all his torturous narrative exertions, for all the bright metaphorical images he laces his text with, the grey squishiness persists in being grey and squishy.²⁶

If a light is too bright the glare obscures more than it reveals.

Alongside those pertaining to colour, the OED contains the following definitions of grey:

LACKING HOPE, PLEASURE, OR CHEERFULNESS;
DISMAL, GLOOMY; SAD, DEPRESSING

LACKING INDIVIDUALITY, DULL AND
NONDESCRIPT; BORING, CHARACTERLESS; (ALSO)
ANONYMOUS, FACELESS. SOMETIMES WITH
CONNOTATIONS OF CONFORMITY OR BUREAUCRACY

But a third definition suggests a possible means of subverting this:

OF A THING: AMBIGUOUS; NOT EASILY DEFINED
OR CATEGORIZED; NOT BLACK AND WHITE;
INTERMEDIATE BETWEEN DIRECTLY OPPOSING
NOTIONS OF GOOD OR BAD, RIGHT OR WRONG, ETC.

'Grey is every theory but ever green is the tree of life'. This often quoted line from Goethe's *Faust* insists that scientific abstraction drains reality of its richness and beauty. But in the examples discussed here, we are bombarded with bright images and florid prose to compensate for the obdurate greyness of concrete nature. Rebecca Comay suggests that the lurid green being proffered in Goethe's formulation invokes 'the shimmer of a life numb to its own suffering and cold to the failure on which it feeds'²⁷: Brightness is incapable of illuminating the greyness of life.

For Comay visions of greyness traditionally 'mark the exhaustion of the present – a faded landscape in which there is nothing to take over and nothing to pass on.'²⁸ Comay explicitly links this monochrome image to the repetitive rhythms and apparent inescapability of advanced industrial capitalism. But she, through a meticulous reading of Hegel, suggests an alternative: 'Far from signalling a simple entropy or atrophy of possibilities, it is

crepuscular grey, not glowing green or gold, that marks the chromatic opening to a new beginning; it is from the ashes of lost opportunity that Spirit quickens.'²⁹

Theodor Adorno discusses Beckett's *Endgame* as the exemplary work of art after the Second World War. Beckett succeeds in capturing the 'bombed-out consciousness'³⁰ that emerges from the debris, a smashed subjectivity that can no longer reflect on itself. But Adorno discerns a glint of hope in Beckett's work: the terrain in *Endgame* is not empty, it is almost empty. An 'oblique light' shines.³¹ Beckett specifies that the action plays out under a grey light. When Clov looks through his telescope he sees 'grey – grey – grey' (or perhaps 'light black').³² The light is feeble, certainly, but it is not identical with darkness. In this near darkness, that might be aligned with the grey described by Comay: 'consciousness begins to look its own demise in the eye, as if it wanted to survive the demise.'³³ This dull chink of light is what constitutes the plot of *Endgame*: 'The tiny bit that is also everything – that would be the possibility that something could perhaps change.'³⁴

For Adorno, the greyness of Beckett's work is precisely where its brightness lays:

"If Beckett's plays, as crepuscularly grey as after sunset and the end of the world, want to exorcise circus colours, they yet remain true to them... Even artworks that incorruptibly refuse celebration and consolation do not wipe out radiance, and the greater their success, the more they gain it. Today this lustre devolves precisely upon works that are inconsolable."³⁵

Adorno discusses the austerity of modernist art, suggesting that a palate that renounces colour has more sparkle than the vibrant glare of much popular culture: 'The higher the quality of a work, the greater its brilliance, and this is most strikingly the case in the instance of those grey-on-grey works of modernism that eclipse Hollywood's Technicolor.'³⁶ A rainbow-feathered stuffed bird of paradise once



functioned as a utopian vision but such an image is no longer tenable: 'The tenebrous has become the plenipotentiary of that utopia.'³⁷

In a tenebrous world, visions of the self as illuminated splotches in the digital dark provide a superficial solace. They map comfortably onto the present terrain - detached from human life, the convolutions of history and experience that shape existence fade into the blackness. In a similar vein to Adorno, Siegfried Kracauer refused to align bright lights and colours with intellectual illumination. He used the following metaphor to describe the lives of white collar workers in interwar Berlin:

"In the Luna Park, of an evening, a fountain is sometimes displayed illuminated by Bengal Lights. Cones of red, yellow and green light, continually recreated, flee into the darkness. When the

splendour is gone, it turns out to have come from the wretched cartilaginous structure of a few little pipes. The fountain resembles the life of many employees. From its wretchedness it escapes into distraction, lets itself be illuminated with Bengal lights and, unmindful of its origin, dissolves into the nocturnal void."³⁸

Popular representations of the brain often have a similarly dazzling function. But behind the images brains continue their fleshy existence. These brains do not live in a nocturnal void but are embedded in bodies that move about in the world.

Attending to dull, squishy reality in all its opacity might paradoxically reveal more about human subjectivity than constantly attempting to proclaim that its secrets have already been laid bare under the cold, harsh strip lights of scientific rationality.

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N A
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J O N
E S

FOUNTAIN OF SHADOWS:
SCHIZO POETICS IN
CONVERGENCE CULTURE

There is an entire technology of power. Even the syntactic, relational, and other meanings proceed from there. The primacy of the micropolitical pragmatics over the phonological, syntactic, and semantic components of language. The primacy of the formations of power over the unconscious.

It is impossible to break the chain of power-hierarchy-impotization-castration without assembling a concrete machine of another type – diagrammatic conjunction of the material, semiotic and social flows according to a nonmeaningful, non-significant, noninterpretative, nonsubjectifying relationship.¹

What would a poetics of nonsubjectifying relationship look like, in the context of a culture which is converging continually on the singularity of language in code? How does it feel to read a text which is emerging only as a result of its assimilation into a converged culture? Where can radical language operate from, when everything in the world is exactly the same?

In this unfragmentary amalgam I look at the role of poetics in turning language into a tactical differential technology, and the continuing necessity of the figure of the schizo in cultural critique – drawing on a tradition which has utilized depathologised schizophrenia since 1970s, and bringing it into contact with what has been described by media theorists such as Henry Jenkins as convergence culture: the increasingly complex relationships between three concepts – “media convergence, participatory culture, and collective intelligence.”² Making use of unconventional type and formatting decisions to emblemize the simultaneity of ‘writerly’ and ‘readerly’ impulses in a performative language practice, I look at the ways a Schizo Culture identified by thinkers around the 1970s, can be read alongside our Convergence Culture as media converge in digital space, and then look at the ways contemporary writers are melding and revisiting schizoid language practices for a convergent era.

SCHIZO CULTURE

“SCHIZO-CULTURE HERE IS BEING USED IN RATHER A SPECIAL SENSE. NOT REFERRING TO CLINICAL SCHIZOPHRENIA, BUT TO THE FACT THAT THE CULTURE IS DIVIDED UP INTO ALL SORTS OF CLASSES AND GROUPS, ETCETERA, AND THAT SOME OF THE OLD LINES ARE BREAKING DOWN”³

It was in the post-Vietnam post-1968 world that William S. Burroughs, R.D Laing, Giles Deleuze and Felix Guattari, among others pointed out the value of a de-pathologised understanding of schizophrenia as a model for breaking down established disciplinary and hierarchical lines. The Schizo Culture conference was convened by Semiotext(e) on 13-16th November 1975 to “narrow the gap between radicalism, philosophy, and art on both sides of the Atlantic”.⁴ The organisers were particularly seeking to ‘overcome the

I must have spent 10 minutes staring at the waving.

A strange sort of body. An implied crouched body, waving with no arm and perhaps nothing except eyes and a nose, perhaps a pale neck which reached down, and up to just above my own head. The hand reaching up from the shoulder, as if to take, but stuck in the motion's groove, the purpose shifting, the hand remaining

contradictions' and note the strong resonances between the radically non-hierarchical operations of New York's conceptual artists such as John Cage and Robert Wilson, and the immersive theoretical approach of continental philosophy from France, in the form of Deleuze, Guattari, Michel Foucault, and Jean-François Lyotard – and the different languages chosen to reflect on them.

At the heart of this link between arts and philosophy through the institutional means of punishment and control, was the idea of chance. Artists such as John Cage used chance operations to break down the control function of language, and open it up to poetry, Foucault highlighted the chance mechanisms of power which had pathologised schizophrenia, and anti-psychiatrist R.D. Laing observed in the schizophrenic's hallucinatory utterances a pragmatic articulation of our struggle with our subordination to chance and fate.

what was interesting to me was making English less understandable, because when it is understandable, well, people control one-another, and poetry disappears...⁵

We do not then see phantasy in its true function but experienced merely as an inclusive, sabotaging infantile nuisance. [...] Phantasy is a particular way of relating to the world. It is part of, sometimes the essential part of, the meaning or sense (le sens: Merleau-Ponty) implicit in action.⁶

The use of a notion of 'schizo' in the present text then – as in Semiotext(e)'s conference – is not to idealise what is clearly a troubling and in itself often punishing condition, but to acknowledge ways random operation and incoherence propose different ways of thinking – eliding realism and hallucination, the uncomprehensible and experiential, with 'phantasy' and 'poetry', as ways of uncoupling mechanisms of control. When nothing is certain, as Deleuze and Guattari affirmed in their subsequent Schizophrenia and Capitalism books, there is no mainstream or centre which can be said to be the focus of power – and this is a useful model for culture to operate in.

STRUCTURALISM > DECONSTRUCTION > CONVERGENCE >

The deconstruction and post-structuralism of modern continental philosophy took thought back to the text – it was the application of the schizoid tendency of disorganization on structuralist thought; the same obsession with the text with which Thomas Bernhard subordinated reality to the fate of language in Correction; language which shared with identity the truth that it fell apart under its own implications.

Correction, in the sense of the novel, involves the breakdown of identity between a concept and its object, and so it shares with dialectic an engagement provoking disunity or otherness.⁷

a man who [...] must force everything he is, in the final analysis, to coalesce in one extreme point, force it all to the utmost limits of his intellectual capacity and his nervous tension until, at the highest degree of such expansion and contraction and the total concentration he has repeatedly achieved, he must actually be torn apart.⁸

IMPOSSIBILITY OF THE OUTSIDE

Perhaps unsurprisingly, the closest the commentary at the Schizo Culture Conference itself came to predicting the importance of convergence in relation to power was

*open, waving,
and the eyes
staring out at
the centre of
me, implacably.

A throat
perhaps:
bulging, as
if containing
the tongue's
most lascivious
workings, but
one which here
began below
the shoulder
and the sweep
of the skeletal
collar bone,
split across the
contradiction
of open lapel
and within this
the chest, and
distended lips
and hence the
mouth's recess.*

delivered by 'a man who has the true gift of incoherence'.⁹ In this talk, Jean-Francois Lyotard anticipated the motion of 'convergence', describing how the working class movement was 'sucked into' and instrumentalised by the dominant political system:

[The working class:] a movement which theorized itself as being localized outside capitalist society was precisely being sucked into that system one should imagine a strategy without exteriority, which as far as language is concerned would not be outside of the discourse of truth, the discourse of power, but which instead of excluding itself, would use the rule of that discourse against itself...¹⁰

The potential for a language which can happen within what Lyotard termed the 'discourse of truth', (from where control and power are exerted) was dependent on finding a form of language of realism which goes beyond or differentiates from 'versimilitude' – the similarity to the real, the production of a form of the recognizably real in cultural form – from a language moment which produces its own reality. This form of a language of non-versimilitudinous, or non-representative, realism, which engages in and forms part of the becoming of reality, is now second nature to us in terms of the reality produced by code, on which culture converges.

Instead of understanding the role of fragmentation and deconstructed language to critique and inform discourses of truth from outside, we can, using Lyotard's non-versimilitudinous model of language conceive of a continuous internal motion of becoming in which language affirms its own truth – containing the meta-statement of its own 'spontaneity, libido, drive, instinct... savagery, madness...' – as an hallucinatory reality to which culture is necessarily subject.

During the digital revolution, up-to the late nineties, it was a commonplace notion that old totemic media of print, television, radio would be demolished and replaced by a new paradigm – from outside. Burroughs saw the existing lines of discipline, consciousness and formal adherence breaking down to be replaced by others in 1970s – and now, with a 'convergence culture' of shared platforms and systematic models, that breaking down has revealed a new realism of language in which technologies, politics and semiotics, along with disciplinary and control structures continually twist or melt back together into the background noise of culture-as-code. The overflowing of the divergent faults within language and identity which delivered the post-modern demise of structuralism and binary opposition, are in a sense logically followed by a convergence culture which forms a codified plane for mapping these divergences – and in turn these must be followed by a tactical and mobile divergence from within which is true to the hallucinatory realism produced by language itself.

CONVERGENCE CULTURE

In a 2012 interview, Kanye West affirms in all seriousness that 'everything in the world is exactly the same'.¹¹ West is referring to his own cultural productions: fashion, music, sculpture (even personal), but simultaneously we can quite seriously understand digital culture as consisting of an insistent 'everything'. An 'everything' of codifiable and irreducible textuality, or information, in which corporate informational giants such as Google and Facebook financialize behaviours, cultures, communications just as they do technologies. The background code of the digital's many dialects of data as analytical

*the teeth point
back into the
throat. Some
impossible
construction
of a mouth I
looked down
into: a gaping
downward from
its lips and
the jaw, into
a tongueless
mouth which
inevitably
consumed the
entirety of the
upper body, and
out to a frog-
like sensually
bulging throat,
the legs
capitulated
under its
insistence,
tapering
away to the
compromised,
but nonetheless*

and control mechanisms, the new literacy as alphanumeric and iconographic hybrid engendered by social media channels, the quantification of locales in terms of instant population estimates – these are signs of a culture converged again as a singular system of signs, inside and pressing at the edge of sprawling and codified text.

In business the term Convergence implies the coming together of four major industries: Information Technologies, Telecommunication, Consumer Electronics and Entertainment. In convergence culture, industry also converges in the practice of everyday life with the human and geopolitical platforms: semiotics, language, sociology, identity etc. The processes by which convergence takes place are everywhere, from the circumstance of a cereal packet character who becomes a the lead character of a film and gaming franchise, whose voice is then supplanted into your sat-nav; to the program of identities a teenager proliferates across her Instagram and her Facebook, in her meetings with school teachers, the edited digital photos she shows her Nan over Sunday dinner, and the slang she uses during a first date; from the layering of territory the stack of virtual worlds nationality, identity, law, information-firewall, to the convergence of consumption and production at work on tumblr and other mixed-ownership media-sharing websites.

Digital convergence is already relational, and diagrammatic in the sense of being a result of the breaking down of old lines of distinction, but it also raises the potential of a totality of control in that it focuses the source of agency upwards into abstract financial-power strata – and that even the matter of grass-roots or resistant movements can be and are subsumed into a larger and more insidious system of financialization. So a converging culture driven both 'from the top' via massive media conglomerates formed from digital convergence industries, and 'from the grassroots' via user created, appropriated, distributed and interpreted content and data, forms a continual mulling of power, similar in diagrammatic appearance to a fountain, or a convection current in which power rises through the centre and tumbles from its outer edges.

“SOME FEAR THAT MEDIA IS OUT OF CONTROL, OTHERS THAT IT IS TOO CONTROLLED. SOME SEE A WORLD WITHOUT GATEKEEPERS, OTHERS A WORLD WHERE GATEKEEPERS HAVE UNPRECEDENTED POWER.”¹²

The mulling of control between the upper-echelons of finance and the lower strata of grassroots activity is a convection in which the central rule is that of the irrepressible abstraction of everything into codified information – data which are drawn up by corporate law, shaken free and embodied and reconnected to the social body by information activists, drawn into the grassroots by collective re-appropriatory cultures, re-re-appropriated and pushed up for mainstream political and commercial means, corporate gains. In this sense, codification is the radiator of culture, pressing it upwards.

*in the context
of this almost
complete
degree of
intransigence,
boot prints,
each static in
the way of boot,
just as the wave
waves in the
way of a hand.
The whole body,
as if crouching
over those boot
prints, thrust its
front edge out.
An insistence
to that thrust,
like a crotch
pushed forward
insistent except
also – and in
keeping with
the nature of
the body traced
between the
constellation of
the evocations*

CONVERGENCE AS MOTION

This movement is integrally linguistic in nature, and only possible within language. Just as the work of digital artists engaging deeply with convergence is textual also – exerting through code the potentials of experimental language practice in converged media. The Ubu-web entry for Takeshi Murata's film Silver describes how his work "twists and stretches a sequence from an old movie into a psychedelic odyssey--a fitting afterlife..." Indicating how the codified rendering of analogue film opens the door to a movement and transformation which is not cutting/splicing, but instead operates by altering and deconstructing the syntactical structure of the movie file – by removing 'key frames' as grammatical devices; a continual and uninterrupted ambient poetics of movement:

FRUSTRATING THE GAZE, HER BEAUTIFUL FACE NEVER STAYS STILL LONG ENOUGH TO REALLY BE LOOKED AT. INSTEAD, IT KEEPS DISTORTING TO MONSTROUS PROPORTIONS OR TURNING INTO LIQUID REFLECTIONS ... MURATA'S TECHNIQUE INVOLVES DIGITALLY COMPRESSING THE FOOTAGE SO [IT] ... RECORDS ONLY THE NET DIFFERENCE IN MOVEMENT FROM ONE FRAME TO THE NEXT. ATMOSPHERE AND AMBIGUITY PREVAIL HERE." ¹³

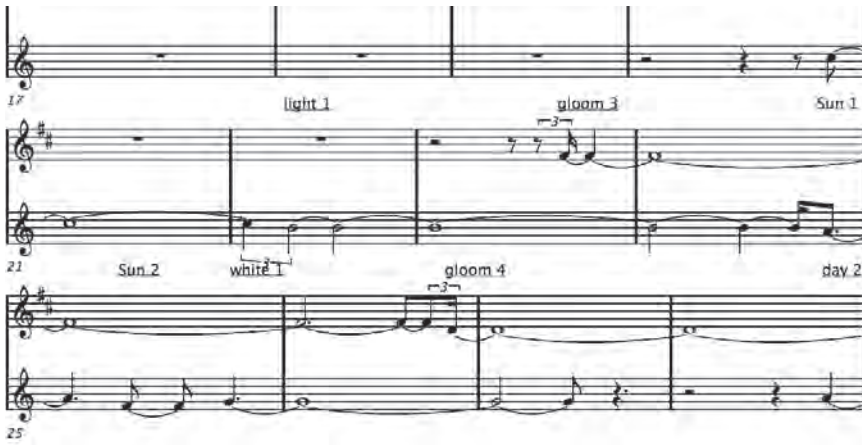
Atmosphere and ambiguity prevail in our continually present treatment of alphanumeric and iconographic language in social media, where entertainment and communication converge in the now. Comment feeds are home to multiple readings of a simple image – we become analytical anthropologists of the social present. The simultaneous operations of control and analysis take place upon a reality which is becoming, and this is the feverish activity of the collective poem we hear spoken in the public space when people talk with each others' words as though in agreement but of course not at all, clinging to our individuality it dissolves.

ART OF CONVERGENCE CULTURE

Artists have explored the convergent character of culture as an impulse combining controlling and analytical forms of text. In *Unsound Method* (2010), Tim Etchells reveals that Joseph Conrad's novel *The Heart of Darkness* is a musical score, where the frequency of the words applicable to lightness and darkness form a syncopated rhythmic relation to one another – setting up a series of non-binary oppositions and bifurcations which occlude, reflect and dissolve the original rhythms and interplays of the text.

*of eyes, a nose ,
and movements
in the case of
the wave of
the hand, or
stillnesses in
the case of the
boots – tenuous
to the point
of dissolving
its form
completely, for
reasons which
I will recount:*

*Firstly, because
with the lips of
the mouth and
the drawn down
sweep of the
open lapel and
beneath them
the skeletally
pale collar bone
– then also a
leather belt and
beneath it the
hips insistently*



Sophia La Fraga reworks Beckett's *Waiting for Godot* as emoji-text in *W8ING* (2014), converging the conundrum of Beckett's language into the codified language of txt-speak – for example equating the ambiguous 'Godot' with an 'unknown ID' icon – and converging the theatrical voice with the immediate and performative nature of digital literacy. These convergences embrace the new ambiguities of codifiable texts and uses them as a program for new interfaces with reality – allowing the textual to play out in continual movement: as with the voice of the actor, so the utterance in txt.



LANGUAGE CONTROL FINANCE

As Benjamin Bratton notes, the word 'program' is used to describe the protocols of working together that systems have, and that mapping of relations are 'stacked' into a variety of different territorial possibilities. A program is essentially the manifestation of the linguistic nature of control observed by Burroughs – but, Bratton affirms, the linguistic nature of control has been diffused and converged among programs linking an immense plurality of layers through which our identity is evaporated – the number of functions layered upon the individual 'user' as node in the system.

*thrust in such
a way as to
distend the
belt itself – this
same distension
that forms the
lips' gaping and
the mouth's
entire exposure
– and as the hips
immediately
gave way back
to the neck,
the nose, the
eyes – and the
skull-like brow
overhanging,
rendering the
body anticipated
between belt
and that area
immediately
below the
nose and eyes,
excepting only
a portion of
the neck and
the gesture –*

...words are still the principal instruments of control. Suggestions are words. Persuasions are words. Orders are words. No control machine so far devised can operate without words, and any control machine which attempts to do so relying entirely on external force or entirely on physical control of the mind will soon encounter the limits of control.¹⁴

As robotics and Cloud hardware of all scales blend into a common category of machine, it will be unclear in general human-robotic interaction whether one is encountering a fully autonomous, partially autonomous, or completely human-piloted synthetic intelligence.... Ask yourself: Is that User "Anonymous" because he is dissolved into a vital machinic plurality, or because public identification threatens individual self-mastery, sense of autonomy, social unaccountability, and so forth? ... Given the schizophrenic economy of the User - first over-individuated and then multiplied and de-differentiate - this really isn't an unexpected or neurotic reaction at all. It is, however, fragile and inadequate.¹⁵

Our modern 'touch' interfaces and visual surveillance mediums have not only failed to break down the link between language and control, but have made concrete, through 'programing' the complete convergence of structures of language with those of semiosis, emotion, identity.

Burroughs was right to speak of the breaking down of established hierarchical lines and Schizo Culture as the dominant means of evolution for his time, but now we are within the broken down remains and these remains have been sucked back into a system of programatic power - the upwards motion of what Franco 'Bifo' Berardi's calls semiocaptial,¹⁶ where 'signs produce signs without passing through the flesh' and 'Monetary value produces monetary value without first being realised through the production of goods' - towards and into finance, where the *feeling* of text has become ethereal, abstracted from the ambiguities of its production and literally un-real.

CASCADING LANGUAGE

The untimely new gesture of the schizo is to re-introduce the madness, ambiguity and fatefulness of language into the contemporary cognitive machine's interleaving of behavior, technology, culture and semiosis - not by breaking down, but by cascading within. An hallucinatory and realist language for our time is one which is dissolving in itself and its background 'codes' even as it is combining everything.

The continental, and post-structural, philosophers' deep immersion in theoretical language, combining individual, social and political agency - and an insistence on the hallucinatory realism of the text - is an ideological state where always-already codified languages are rescued from the void of meaningfulness, into a technological field for a diagrammatic play. Here bifurcation and divergence lead to an ambiguity in motion similar to Murata's 'psychedelic odyssey' of datamoshed film, removing the stabilising syntax or vocabulary. The immersive and experimental mode of writers like Felix Guattari, and contemporary writers like Tao Lin and Keston Sutherland in their own way also (as I will attempt to show later), take us back into language as a site of distribution - echoing the ways in which the poetry of the Language School of poetics affirmed the 'realist' multiplicity and conflict of text:

*signifying what?
- of the hand
- transparent.*

*S e c o n d l y
because this
would place the
boots - almost
a foot in front
of the eventual
placement of
this upper part
of the face. It
was almost as
though the body
of the crouched
figure had been
poured, or if not
poured, then
the body had
itself fallen, and
then yielded as
that which has
been poured
yields, perhaps
on impact:
the upper
face dropping*

Whose realism? Whose reality? the realities that writing deals with comprise a social body that can best be conceived as being made up of conflicting – often violently clashing – codes... Unresolved conflict at the heart of the real underscores the value of embodying multiple perspectives and discourses within a work – instead of singling out and harnessing it to the burden of ‘standing for’ an uncontested reality.¹⁷

In terms of language and power in academic and art circles, the convergence of continental theory and U.S. art rhetoric is, of course, fully made. Indeed, the current language at large in the arts, “International Art English” (IAE)¹⁹, is a linguistic stew so heavily influenced by the continental philosophical tradition – that it mimics the problems of translating French post-structuralist word-play into English.

[The artist] centres in her work a deal with a political and sociocultural reality, with objects, images, texts that move and disturb the status by questioning its meaning and appearances, by overturning the relations between the work and its space, and by instituting the viewer as an essential component of the work’s sense.²⁰

Many tendencies that IAE has inherited are not just specific to French but to the highbrow written French that the poststructuralists appropriated, or in some cases parodied (the distinction was mostly lost in translation). This kind of French features sentences that go on and on and make ample use of adjectival verb forms and past and present participles. These have become art writing’s stylistic signatures.²¹

This twisting together of traditions in language, to produce what Alix Rule and David Levine ‘quite seriously’ define as a ‘new language’ is schizophrenic in its nature and production of newness – unreliable, uncodifiable, threatening, and formed around an integrally specific and problematic existential experience. It is the case that IAE is a Lyotardian anomaly operating among a codifiable culture, being essentially and integrally ‘nonmeaningful, non-significant, noninterpretative, nonsubjectifying’ but also interior in the sense of its centrality to ‘power’ and relation to finance. As with the schizophrenia identified by Deleuze and Guattari, the power of differentiation here is deployed as a form of elite drawing of lines, de- and then re-territorialising at will – a language of and for verisimilitude in which the ‘key-frames’ of truth are dissolved.

DIVERGING IN CONVERGENCE

It is into the context of the all-as-text and text-as-technology implied by convergence, that a contemporary schizo poetics exercises the madness of language as a political and social agent of multiples. A schizo poetics which divulges its place within convergence culture is one in which language is in a constant state of becoming not-itself – and instead a dysfunctional part of the flow of data into capital through technology, semiosis and communication.

The schizo poetic interjects a problem or glitch within mainstream codified language. In its refusal of static identity, its bifurcation into multiples, its dissolution

Nothing here is representative; rather, it is all life and lived experience: the actual, lived emotion of having breasts does not resemble breasts, it does not represent them¹⁸

*furthest but
yielding least, the
rest succeeding
almost solely in a
wave – signifying
what? – as it
cast backwards
over the gaping
jaw and belt-line
gaping, the whole
torso falling away
into the mouth or
crotch with those
other portions
of it lost forever.

Thirdly, because
the bottom half
of the face was
separated from
the upper part
– the eyes, and
the bridge of the
nose – by a neck
– nonetheless
capitulating almost
completely its
status as a neck*

the contemporary schizo poet is at once emblematic of the temporal qualities of the convergent media network, and at odds with the commodification of the persona. As Jenkins described in relation to identity-making in *Convergence Culture*:

"EACH OF US CONSTRUCTS OUR OWN PERSONAL MYTHOLOGY FROM BITS AND FRAGMENTS OF INFORMATION EXTRACTED FROM THE MEDIA FLOW AND TRANSFORMED INTO RESOURCES THROUGH WHICH WE MAKE SENSE OF OUR EVERYDAY LIVES."²²

Keston Sutherland's poetry reflects convergence with a shift in his poetic style, doing away with the 'zig-zag and somersaults of fragmentation' in favour of a deeply melded lyric which converges the romantic, the political, the sexual with beligerance and anxiety, knowledge and naivety – as an unbroken, not-versified flow. Ostensibly *Odes to TL61P* (2013) is mostly a prose work, but Sutherland himself questions the exactitude of the term 'prose' to describe something which could at an time be other:

Cooking the booklets in cream over the flames of a steamy and amorous anaemic in a crematorium, or bitterly masturbating for a magic bearhug from bond markets enduring freedom, or just bugging out on leverage in Merryl Lynch, it's the same old same old up the you know what; Brief contact is not irritating.²³

I wonder whether they might not at the same time... be something other than prose, too? Prose cannot normally be imagined to have porous edges liable to be penetrated or broken through by lines that suddenly qualify as "verse"; I don't know how to conceive it yet, but the function of that smashable edge must be somehow to introduce a generic contingency or blur, so that we are never fully "in prose".²⁴

Sutherland's is not simple convergent writing by virtue of its ambiguity between prose/verse – the 'smashable edges' in his work and the violently recontextualised vocabularies he uses form a schizoid poetics which is active and alive to diagrammatic readings. His work implies his discontents as slippery non-codifiable programs of relation problematising a cross-media system of information, entertainment and control with sexuality, anxiety, fury and jouissance of language taking the place of infernal logics.

The radical ambiguity of texts here, and as is necessary at the between-state of the program, and in the freefall of language devolved from its syntactical and hierarchical structure, is one which acknowledges and enacts the depressive, dissolutionary abjection. Kristeva highlights the slang and base-ness in De Sade and Celine as integrally abject forms of identity creation language, for example – observing the movement towards an affirmation of identity which is neither the author's own, nor rejected. In the context of the programmatic relation, the text is itself a between-state of identity and context, the social-media realm is one in which identities which are at once our own and not, and prose stylists revisit the abject as a kind of realism for semicapital conditions.

by virtue of its position above the gaping mouth; its continuation above the eyes, up to the skull's brow, and its length. Were it not about the width of a neck which rose up to those parts which were – in the context of a body which has relinquished everything but implacability – at the site we anticipate or demand implacability, and here found it. (The nose implacable in the long term, across the course of a life, the eyes implacable in the short term, in the course of a

In Taipei (2013) the novelist Tao Lin's use of abjection and dissolution are integral to the continuity of his central character Paul's becoming, being at once diverging from and converging in culture. Tao Lin depicts an outsider lifestyle – on drugs, depressed, and when in relationships, they are dysfunctional on the point of collapse at the peak of their intimacy – in a language, and depicting a detournment or twisting of commercial branding and individual identity which points to the unsustainable realism and exhaustion of mainstream culture. In the character's conversations, as with the life of the text, the hallucinatory and the depressive, the manic and the freakish emerge from and drop back into their cultural context, and are interchangeable with the flows of the real:

the conceit that they existed because a young man in Taipei, while eating a bag of Chicken McNuggets, allowed himself (despite knowing this would definitely increase his unhappiness) to realistically imagine his next binge, when he would have two bags. Paul and Erin were constructed by the young man's unconscious, for verisimilitude, as passersby in the peripheral vision of his imaginary next trip to McDonalds.

Paul and Erin discussed their movie in a dialogue that sometimes overlapped with their inner monologues, which they sometimes introduced to the dialogue, or abandoned to focus on the dialogue, or both externalized, like pets into a shared space, to observe.²⁵

The life of this language is continually coming into being as distinct, unique, and exerting a one-ness drug and madness experience which is as strikingly convergent as, for example, Burrough's Naked Lunch was strikingly fragmentary. The notion of fading, converging with the background or unconscious of reality, but also the continually divergent – the power with which the real hallucinatory consciousness impacts upon the world, in a continual slow time-lapse of text.

"[PAUL] FELT CONTINUOUSLY AROUSED 'SOMEWHERE,' INCLUDING SOMETIMES, IT SEEMED, OUTSIDE HIS BODY, A FEW FEET IN FRONT OF HIM, OR FAR IN THE DISTANCE, IN A CERTAIN STORE OR AREA OF SKY, OR IN AN OVERLAP, SHIFTING IN AND OUT OF HIS CHEST OR HEAD OR THE FRONT OF HIS FACE."

The fragment is dead, certainly, as a means of disruption – for who can fragment liquid, break vapour? This death of the negative of convergence leaves us intimately understanding without knowing the returning convergence at work in the differentiation of the schizoid treatment of language, where chance and fate are in becoming as an innate inter-relation of ambiguous and transparent forms. These are not tactics of 'bringing together', or of 'breaking apart', but of temporality in which the bringing together is an idiosyncratic and uncodifiable, illogical concentration – a fountain of shadows. A poetics of energy, transference, and meaning falls apart only as it becomes is the usefulness of the schizoid obsessions with language which enable it to become – meaning to no end other than to disorganize and decode, or uncode the body or current in its upward motion – a fountain of shadows.

conversation.) So beneath instead the furrow that falls between nose and upper lip – the face's neck, if the entire face were a body, where the chin throat and jaw were a chest.

... This would appear to be borne out by the wounds, implacable in their own way and not very much out of proportion to my own, and also, or rather – the soft rain mingling with the iridescent motion of the wound itself resulting in a flow – which I could relate to, nothing more.

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S T E
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VOICE HEARING,
BICAMERAL MINDS AND
THE BLACK STACK

AN EARLIER VERSION OF THIS ESSAY WAS PART OF ONGOING *ELECTRONIC VOICE PHENOMENA* BLOG (WWW.ELECTRONICVOICEPHENOMENA.NET). THERE PROVED TO BE SUBSTANTIAL RESONANCE BETWEEN THIS ESSAY'S THEMATICS AND THE AUTHORS PRESENTATION AT THE TORQUE SYMPOSIUM. THIS TEXT IS THE OUTCOME OF THAT OVERLAP.

THIS ESSAY WAS ORIGINALLY WRITTEN IN THE CONTEXT OF ELECTRONIC VOICE PHENOMENA – A PRACTICE USEFUL FOR THE ATTENTION IT DIRECTS TO ALTERITY. PUSHING PAST THE FIELDS ESOTERIC AND OCCULT TRAPPINGS PERMITS A FOCUS ON ANOTHER MARGINAL EXPERIENCE LADEN WITH WEIRDNESS – HEARING A VOICE WITHOUT AN OBVIOUS SOURCE OF EXTERIOR EMANATION. DECLARATIONS AND COMMANDS, OBVIOUSLY NOT OF ONE'S OWN VOICE, ISSUING FROM WITHIN YOUR OWN SKULL. UNRAVELLING WHY SUCH AN EXPERIENCE IS ERRONEOUSLY COMMENSURATE WITH ALTERITY POINTS TO AN UNDER ACKNOWLEDGED WAY OF ATTUNING TO ONES IMMEDIATE ENVIRONMENT.

With that facet of our psyche acknowledged this essay will explore what conditions, principally technological conditions, are conducive to alternative phenomenological dispositions to immediacy. Technology is deemed inseparable from being human, and accordingly considered in broad terms. Much of this essay's ambition is complementary to extended mind theorisations (elsewhere elaborated in this publication). The first aim is to enable speculation on how the technological mediation inherent to our daily lives might speak through us in new ways. Our waking hours are modulated by the edifices and infrastructures wrought through and by our technologies, and those same modulations set the parameters for what degrees of action (and change) are possible to us. To step outside those parameters, should they be unacceptable to us, or indeed should necessity

demand it, entails finding new flows of thought, premonitions of alternate modes of being-in-world, different subjectivities. Such a fundamental reorientation regarding ones technologically saturated world has been declared an imperative by scholars of the post humanities (most stirringly by Rosi Braidotti¹) - this essay's second aim seeks to link this imperative to historical precedent for such reconfigurations of mind.

Hearing voices is a symptom of schizophrenic patients. It numbers as one of many forms of hallucination which the schizophrenic subject may experience. Hallucinations are categorised within the 'positive symptoms' of schizophrenia. NIMH² distinguishes 'positive symptoms' thusly: "positive symptoms are psychotic behaviors not seen in healthy people". There is a sense of surplus here,

1. Braidotti, *The Posthuman*.

that the experiences of hallucinations, delusions, and ‘thought & movement disorders’ are excesses which non-pathological cognition never needs to buffer. **Hallucinations are not limited to hearing voices**, but they are the most prevalent register of hallucination diagnosed in schizophrenic patients. More importantly however has been recognition (accentuated in the last three decades) that voice hearing is not limited to patients experiencing schizophrenia. The Hearing Voices Network³ developed following the research of two Dutch psychiatrists, Marius Romme and Sandra Escher, who had revealed that many more members of the population heard voices than had ever been previously estimated⁴. The Hearing Voices Network is an important initiative allowing those who hear voices to cope with their experiences by naming the voices they hear: identifying them through historical or emotional points of reference, and imbuing the communication with meaning. Perhaps most importantly, its a process which provides therapeutic benefits to the patient without entailing an attendant psycho-pharmaceutical regimen. Professor Lisa Blackman worked with the group during its formative years. For Blackman “voice hearing is **a modality of knowing** (that) cannot be reduced to irrationality or disease”.⁵ Blackman’s earlier research with the Hearing Voices Network⁶ establishes that the symptomatic classification of voice hearing in conventional psychiatry cannot contain or explain the many occasions and circumstance wherein voice hearing is part of the human experience.

The non-pathological framing of auditory hallucination is a central part of Julian Jaynes’ maverick manuscript on the origins of consciousness *The Origin of Consciousness in the Breakdown of the Bicameral Mind*.⁷ Jaynes’ thesis is transfixing: in his view, prior to approximately

1000BC humans were not conscious as you and your contemporaries are conscious! Through conducting a cognitive archeology of early western civilisations he arrives at the conclusion that consciousness was radically different prior to the advent of written cultures, phenomenologically akin to command and response utterances relayed between separate entities housed within the same skull! It’s a radical claim, one that evinced skepticism among critics, and it remains no less contentious today. (William Burroughs⁸ and Richard Dawkins, in the *God Delusion*⁹ have respectively attested to the influence and notoriety of the hypothesis). Jaynes’ thesis is here adopted as plausible insofar as it affords scope for speculation upon our present relation to technology. In Jaynes account technological disruption, in the form of writing, was the impetus for the change in consciousness. Jaynes identifies the lack of what we could deem ‘the self’, or subjectivity, in cultural artefacts from ancient civilisations. He melds this (elsewhere noted¹⁰) absence of contemporary self consciousness with the theories of schizophrenia available to him when he wrote the book in the seventies (it’s worth noting that many of Jaynes predictions – pertaining particularly to aural hallucinations – were confirmed by later brain imaging research¹¹). From this he posits the bi-cameral mind – a metaphoric conception of mind based on a brain where the two hemispheres were partitioned and not an integrated communicating unit.

Bicameral humans instead operated by means of automatic, nonconscious habit-schemas. When habit was insufficient to “novel circumstances or stressors facing the human”, the stress gripping the Bicameral subject caused neural activity in the dominant, habitual, hemisphere to be modulated by auditory hallucinations emanating from the silent hemisphere. **In ‘do or die’ crunch moments**

2. “What Is Schizophrenia?”.

3. “Hearing Voices Network.”

4. Romme and Escher, *Accepting Voices*.

5. Blackman, *Immaterial Bodies*.

6. Blackman, *Hearing Voices*.

7. Jaynes, *The Origin of Consciousness in the Breakdown of the Bicameral Mind*.

8. *Class On Creative Reading* - William S. Burroughs.

9. Dawkins, *The God Delusion* p350.

10. Heller-Roazen, *The Inner Touch*.

11. Sher, “Neuroimaging, Auditory Hallucinations, and the Bicameral Mind.”

Bicameral Humans would hallucinate the orders requisite to survival. Jaynes' cites the attribution of volition to Gods in ancient iconography (and within the Homeric *Iliad*) as evidence for such experiences, reasoning that persistently hallucinated voices would be collectively attributed to some consistent emanation. In Jaynes' account verbal communication and societal coordination provided the first consensual hallucination. Two things from Jaynes thesis are relevant to this essay's enquiry. Jaynes elaborates that the hierarchical organisation of societies during this period (10000BC – 1000BC) were likewise determined by the tendency to hallucinate orders from a loci of subjectivity perceived as 'other' to one's internal habitual schema. This resulted not just in a panopoly of polytheist entities, but also god-kings and the rule of law ubiquitous to Mesopotamian (and other contemporaneous) civilisations. Second is Jaynes' impetus for the morphing of Bicameral cognition into our 'modern mind'. A lamentation of black swans (environmental tumult and writing-as-disruptive technology among them) caused Bicameral cognition to malfunction. Oracles, divination and other cultural mechanisms mushroomed to help societies of individuals accustomed to holding private dialogue with their gods cope with their internal voices falling silent. Writing was crucial in the breakdown of the Bicameral mind because it **weakened** what had been an exclusively auditory culture prior to its advent. This resonates with other scholars¹² who have stressed writing as disruptive technology capable of rewiring its users.

Jaynes' thesis, entertained as plausible, suggests that the reoccurrence of a mind reorganisation is possible again, given the right conditions. Which is not such a radical claim if you've read Sherry Turkle's earlier technologically-evangelic texts¹³ or are acquainted with entheogenic manifestos that treat psychedelics as 'brain technology'.¹⁴ Speculation on whether our consciousness can be transformed with the aid of some technological

prosthesis has captivated the imaginations of the counter culture, philosophers, and libertarians in equal measure. Timothy Crow's concept of 'cerebral torque'¹⁵ presents the emergence of prehistoric neurotypicality (schizophrenic versus 'properly lateralised' brains) which followed in the wake of genetic changes evincing brain lateralisation.

In Crow's account genetic inscription precedes societal consequence – in Jaynes' account externalised inscriptions provokes both psychic and societal reorganisation. For both authors schizophrenia presents a phenomenological edge case of import. Their respective periods of investigation cover the first two phases of Robert K Logan's succession of extended mind technologies: speech, writing, math, science, computing and the internet. Logan considers each extended mind technology as informatic systems that increase in complexity and thus auto-catalytically ensure the generation of their successor. Jaynes' work is an interesting foil to Crow's speculation that schizophrenia (or mis-lateralised brains) is the 'price paid for language'. Instead Jaynes presents a detailed account of societal infrastructure that grew around a now superseded paradigm of communication and coordination. It would be hard to assert whether the emotional, intellectual and creative capacities today considered as impaired in schizophrenia (at least in Crow's account) would have been likewise aberrant or non-functional in a prior extended mind paradigm such as the Bicameral Brain society described by Jaynes. In the latter's account there developed numerous unintended consequences out of 'language' but they were only made evident when writing disrupted the shared means of parsing reality. In the parlance of the complexity theory discourse which underpins Logan's figuration of extended mind, Jaynes thesis can be read as a detailed and rigorous rumination on the psychic fallout of a bifurcation point in the informational complexity of early humanities extended mind.

12. Such authors might include Marshall McLuhan (1964), Walter Ong (1982), Neil Postman (1985), Merlin McDonald (1991)

13. Turkle, *The Second Self. Life on the Screen*

14. Doyle, *Darwin's Pharmacy*.

15. Crow, "The Cerebral Torque and Directional Asymmetry for Hand Use Are Correlates of the Capacity for Language in Homo Sapiens."

In so doing, it provides a benchmark for what changes other informatic extended mind overhauls could entail. It's the attunement to alterity, and the alignment of corporeally disruptive technology to societal upheaval and crisis in Jaynes' account that suggest his framework as pertinent to evaluating contemporary circumstances. The contention from here on out is that we might just be approaching another cognitive reorganisation – and so clarity about what criteria constitutes comparable conditions is important. The Bicameral subject faded because the human subject interacted with a changed exterior world, prompting signals within the brain to be more integrated. This is the contention of Jaynes, that the two brain hemispheres would increasingly relate to one another as parts of a whole, rather than purely Bicameral.

Integrated is the key concept here – it suggests the tantalising prospect of what might be gained by reading the work of media-ecologists who leaned towards informatic discourse alongside the thesis of Integrated Information. This mathematical theory, developed by Giulio Tononi¹⁶ and recently extrapolated by Max Tegmark¹⁷ provides determining criteria of the point at which a system becomes conscious¹⁸ – with integration of information key.¹⁹ If consciousness is a measure of the integration, or an epiphenomena coupled to the level of integration in a given system, what does that mean for animals (humans) that can both enroll external tools (today possessed of their own inherent information) into their body schema, and who have an ability to develop societal and infrastructural abstractions – that provide a measure of persistence – based on tools where there is a baseline saturation point of competency? Integrated Information Theory dangles the possibility of a continuum of informatic comprehension, between our external world and the wetware mechanisms by which that external world comes to be sensible and malleable to us. What that has to do with 'the self' or the 'modern

mind' relative to what (potentially) preceded it in the Bicameral Human is that prior changes in that integrated information continuum may have produced different 'selves' (for want of a better word).

To conceive of the 'modern mind' parsing reality as a system of brain-body-world is consistent with the embodied cognition perspective of cognitive science. The idea has gained purchase with some neuroscientists and AI researchers, precisely because it lets you conceive of an organism's existence in its immediate environment in ways different from the "brain in the vat" conception that the cartesian mind-body split (and its conceptual descendants) entails. Gilbert Simondon's theory of individuation²⁰ offers conceptual purchase on the "**-world**" portion of the brain-body-world system. Individuation is the process by which subjects become distinguished (as in distinct, rather than renowned) from their environment. In Simondonian terms, what the subject individuates from is termed the pre-individual: a set of extra-bodily forces – a milieu – including societal norms, technology, and interactions with human and non human others. Importantly, the pre-individual precedes and exceeds any individuated entity. Simondon considers technology as a fundamentally inseparable part of being human. His 'general phenomenology of machines' emphasises the agency of technology and resists accounts which treat technology as mere utility. Technology is inherent to how 'we are' in the world around us. Simondon's 'pre-individual' goes a step beyond a comparable concept: Jakob von Uexküll's UMWELT.²¹ The UMWELT was nicely described by Dawkins in his 'middle world rumination', which is quoted at length.

16. Tononi, "Consciousness as Integrated Information: A Provisional Manifesto."

17. Tegmark, "Consciousness as a State of Matter."

18. Again Jaynes was prescient in this regard – Christian Koch posits the measure of consciousness as correlated to the level of integration inherent to a system – <http://www.wired.com/wiredscience/2013/11/christof-koch-panpsychism-consciousness/>

19. Tegmark adds three additional criteria - independence, dynamics, and utility principle

20. Simondon, "Gilbert Simondon."

21. von Uexküll, "A Stroll Through the Worlds of Animals and Men: A Picture Book of Invisible Worlds."

“WHAT WE SEE OF THE REAL WORLD IS NOT THE UNVARNISHED WORLD BUT A MODEL OF THE WORLD, REGULATED AND ADJUSTED BY SENSE DATA, BUT CONSTRUCTED SO IT’S USEFUL FOR DEALING WITH THE REAL WORLD. MIDDLE WORLD — THE RANGE OF SIZES AND SPEEDS WHICH WE HAVE EVOLVED TO FEEL INTUITIVELY COMFORTABLE WITH — IS A BIT LIKE THE NARROW RANGE OF THE ELECTROMAGNETIC SPECTRUM THAT WE SEE AS LIGHT OF VARIOUS COLOURS. WE’RE BLIND TO ALL FREQUENCIES OUTSIDE THAT, UNLESS WE USE INSTRUMENTS TO HELP US. MIDDLE WORLD IS THE NARROW RANGE OF REALITY WHICH WE JUDGE TO BE NORMAL, AS OPPOSED TO THE QUEERNESS OF THE VERY SMALL, THE VERY LARGE AND THE VERY FAST.”²²

Both the Umwelt and Simondon’s individuation are expansive in terms of what they encompass – the human subject is but one of many entities individuating in the world. For the purposes of this essay I’m conflating one’s self with one’s individuation, and a reading of that theory would elucidate that some nuance is elided in such a conflation.²³ Individuation lets us entertain the self as we assume one another to experience it: as a process, not the definitive outcome. This consequential figuration of self is somewhat aligned with neuroscience and cognitive science. Both approaches assure us, in their own way, that ‘the self’ is an epiphenomena of the mechanisms of cognitive activity. Simondon’s inclusion of technology within his milieu of exterior forces (that co-constitute our interior sense of self - **our individuation**) allows us to comprehend beyond the phenomenological limitations which Dawkins

intimates in the above passage. As the breadth and complexity of our instrumentation sophisticates the topography of ‘middle world’ accessible to us is transfigured. We should expect this to impact our sense of self, given the feedback occurring between the world exterior to our perception and our construction of our own ‘middle worlds’. From a Simondonian perspective, you could consider writing as a new technological factor in the pre-individual fields which the Bicameral Subject was accustomed to individuating from.

The slow development of writing into a **ubiquitous technology** reordered pedagogy, politics, societal organisation and many other domains which were likewise part of the collective pre-individual. Each brain-body-world system could integrate the sum total of incoming information in different means. Daniel Dennet likens the reorganisation

22. Dawkins, “Why the Universe Seems So Strange.”

23. One might more productively consider the self as the provided interface we have to our individuation

to the epiphany one can experience shifting from procedural programming to coding in LISP.²⁴ Dennet's contribution is important as it suggests that abstraction (in the form of writing) could change perception more fundamentally than the genetic changes that permitting lateralisation and language in the first place. The Bicameral subject began to atrophy as it was supplanted by a different register of consciousness. Jaynes was working archaeologically and there are limits to how far you can believe educated and rigorous guesswork – for guesswork it shall always remain. But maybe we could sketch how a comparable crisis of utility confronts our contemporary subjectivity:²⁵ the rational sense-of-self? This is not a discussion of how the internet massages and tweaks your neural plasticity, but more an overview of how the sum effects of the present day technological condition might resemble the conditions which accompanied the millennia long breakdown of the Bicameral mind. The 'year 0' is accordingly further back than the advent of computing and the internet. Simondon's analysis suggests the state of industrialised labour at the turn of the 20th century as a point of origin.

This period roughly approximates to western society in **the aftermath** of decades of industrial revolution – a period where an assemblage of technologies had become embedded into everyday life and practice. Time had been disciplined. Social strata were shifted, independent of the need for plague or war. Within this period of technological rupture, and corresponding afterglow, Simondon contends that an embodied relationship to technology had been lost. Simondon deems that 'corporeal schemas' were requisite to a **knowing**, rather than utilitarian (or reactionary), relationship to technology. Said schemas were lost in the shuffle, following industrial revolution. A marker was laid down in terms of how technology operated within the pre-individual milieu.

The turn of the 20th century, roughly concurrent with the aftermath of aforementioned corporeal rupture, was also a period of intense interest as far as historians of the psychological sciences are concerned. It was in this period that empirical interest in mediumship, seance and mesmerism and other spiritualist pursuits was to irrevocably alter the trajectory of the psychological sciences. Lisa Blackman's research²⁶ of this period takes us a step beyond the contentions of the Bicameral Brain. Jaynes' efforts established voice hearing as a vestige of a since supplanted mode of consciousness. To Jaynes, fringe and para-psychological aspects of cognition were remnants left over from the Bicameral Brain period, **like the appendix of the mind. The flux of mind intimated by individuation lets us entertain that those proclivities are not hard coded for redundancy, but perhaps latent faculties awaiting the right environmental affordances.** Blackman's scholarship focuses on how topics which we today consider the preserve of parapsychology – telepathy, hypnotic suggestion, communicating with the dead – were serious topics of research.

The rationale which saw those experiences dismissed as marginal was explicitly tied to constituting the normalised subject – the baseline or ratified individuation if you will – with which we are accustomed to today. She notes that "new technological forms and practices demanded a subject who could 'pay attention' in ways which were integral to new labour and educational practices".²⁷ A subject that could impose their will on reality was closest to ideal in that regard, and all else that didn't fit as snugly found itself pathologised, a trajectory that intensified in the latter half of the last century.²⁸ Where Jaynes endeavoured to depathologise voice hearing, Blackman's work (and that of Luciana Vieira Caliman²⁹) unearths **the reason why** voice hearing was pathologised, unpicking the gendered and colonial assumptions

24. Dennett, "Julian Jaynes' Software Archaeology."

25. No assumption is made that everyone possesses the same subjectivity – but there is the assumption that one subjectivity is more predominant and homogenous than most. This is a not an unproblematic assumption

26. Blackman, *Immaterial Bodies*.

27. *Ibid.*

28. Caliman, "A Biologia Moral."

29. *Ibid.*

of a subject capable of imposing their will on reality. It helps account for some of the more effusive and occluded forces operating within the pre-individual field from which a subject can emerge. These are aspects which this essay has neglected to cover in the depth they require, but which are crucial to account for. It's those viscous and uneasy to account for factors that have firewalled aspects of human phenomenological experience from the same empirical enquiry applied to other unknowns. In other cases they have hobbled the mechanisms of enquiry. Moreover it highlights the psychological (or psychic) consequence of technologies that was becoming ubiquitous in peoples lives and which was significantly reordering labour practice, their daily infrastructure and surrounding environment.

Let's consider that the ubiquity and indispensability of disembodied (in Simondon's meaning) technology to everyday existence first experienced during the post-Industrial period has intensified since the invention of computers and subsequent digital media and communication technologies. Let's entertain that this period is comparable in trajectory and intensity (if not yet equivalent in duration) to the period which saw the breakdown of the Bicameral mind in terms of a powerful change to the pre-individual milieu. The driving imperative in removing the pathology of voice hearing lets us

accept that there are faculties and functions of mind which escape the bounds of 'what once made sense'. Such acceptance may be crucial to better adapting to our digitally mediated existence.

The Jungian model figures individuation as how the individual self develops out of an undifferentiated unconscious. **If the 'individual self', the modern mind (one of many potential individuations), is on the wane, in terms of the purchase it affords us on our new technological milieu (like the Bicameral individuation that preceded it), then it follows we need new frameworks, new metaconcepts – in short, alternative individuations.** A crucial step to formulating such individuations involves acknowledging the psychic continuum between our minds and our digital technologies. If we're taking Simondon's work as our model for psyche, there's no need to invoke the singularity and panpsychism (though it would no doubt be intriguing to do so).

Let's entertain that there is a homology between neurological loops that produce perception, computational loops that produce outputs from delimited inputs and individuating loops that produce subjectivity in tandem with our exterior socio technological milieu. Joe Banks' work on Electronic Voice Phenomena highlights the practice as indicative of the brain's pattern seeking

TYPE OF LOOP	BOUNDING CONDITION	TYPICAL LOCATION
Simple & indefinite	No bounding conditions	Event loops in GUIs, servers ...
Simple & definite	Bounding conditions determined by a finite set of elements	Counting, sorting, input and output
Nested & definite	Multiple bounding conditions	Transforming grid and table structures
Recursive	Depth of possible recursion (memory or time)	Searching and sorting of tree or network structures
Result controlled	Loop ends when some goal has been reached	Goal-seeking algorithms
Interactive and indefinite	Bounding conditions change during the course of the loop	User interfaces or interaction

prerogative. Faced with a random stream of noise the human brain imposes pattern and order on what it hears, discerning voices and artefacts that are not present on the media (a process described as auditory pareidolia and apophenia). Banks' ambitious contention is that all aesthetic knowledge is indebted to fundamental pattern recognition mechanisms comparable to apophenia, thus 'the capacity to form such illusions is shared by all people as an important part of normal perception'.³⁰ And here is an intimation of consensual hallucination once more, again helping us fathom how Jaynes' Bicameral Human might ever have existed.

If the brain is considered as an information computing unit then one can reason that these faculties emerged in order to help us make sense of a complex and noisy world. The contrast with hearing voices in technological media, so the case against the veracity of EVP states, is that this innate illusory perception is permitted to stray beyond it's boundary conditions. Apophenia of this sort is superficial access to one facet of the schizophrenic form of individuation which both Jaynes and Crow made use of. In Deleuze and Guattari's long co-writing collaboration schizo-analysis is employed for the access it provides to generative surpluses and 'lines of flight' that exceed the presumed operative delimitations of a given body – be that a corporeal, institutional or abstract body. Author Grant Morrison, spoke of Chaos Magick initiates employing Multiple Personality Disorder (MPD) as a lifestyle choice³¹ choice [likely as a means of attaining something akin to Robert Anton Wilson's model agnosticism³²]. In both the practice of EVP artists and the disposition of Morrison's chaos magick initiate there is a flaneur like figuration of a subjects capable of sampling a register of perception not universally supported or engaged with. By toying with the gates and threshold of ones perceptual feedback loops novelty can be unveiled.

In many of the instances described previously there

is a subject gorging on apophenia - albeit in delimited form (only in the occult trappings of Chaos Magick is schizophrenic perception figured as a habituated practice designed to reorient ones disposition to the world). Accounting for what curtails ongoing engagement with this register of reality seems relevant. Boundary conditions, as described in Adrian MacKenzie's typology of loops³³ (reproduced above), can frame such delimiting factors. In an effort to understand the agency of digital loops (a means of algorithmic computation and thus production) MacKenzie posits that understanding the boundary conditions by which loops are delimited grants useful purchase on digital processes which might otherwise evade perception – whether by dint of their speed or their execution nested within stacks of software. In the aforementioned homology of loops, this methodology is of most relevance to individuating loops that produce subjectivity in tandem with our exterior socio technological milieu. Seeking boundary conditions in the latter category requires the greatest effort given that we're dealing with fuzzy categories like societal norms, optimal patterns of labour fomented by technological affordances & market imperatives, and cultural zeitgeists creolised into accepted wisdom. But we might find it productive to seek the boundary conditions which a given individuated subject cleaves to. It could account for why a commonality of sense-of-self exists. It could go some way towards answering the question which Lisa Blackman pursues in much of her recent research - "how do we live singularity in the face of multiplicity?" For each loop, there are boundary conditions which determine its termination. For instance, some pre-individual boundary conditions are identifiable in the registers of cognition and perceptual experience bracketed as pathological or paranormal, including possession, schizophrenia, mesmerism and voice hearing.

Entertaining the homology between differently instantiated loops and their respective boundary conditions is important to reconciling ourselves

30. Sutcliffe, "To Wage War With Ghosts: Joe Banks Of Disinformation Interviewed."

31. Metzger and Morrison, Book of Lies.

32. Krassner, Paul. A Paul Krassner Interview With Robert. Anton. Wilson – High Times, March 2003 issue

33. Mac Kenzie, Making Data Flow: On the Implications of Code Loops

to the unacknowledged faculties and functions of mind mentioned previously. The pattern recognition loops at the root of our perception evade conscious apprehension – we are never aware of the fact that some of what our eyes see is partly imaginary. It's a de-privileging of individual volition that may be entirely appropriate to existing and surviving as an interplanetary species. Importantly, the critical discourses of cultural studies, feminist studies, science and technology studies (and others with affinities to the 'posthumanities') direct our attention to the non neutral production of systems – a fact that counters the 'single engineering paradigm' idea that they provide a panacea to the ills of the world – as advocates of algo-regulated governance would advance. We can posit that there exists loops of pattern detection and response which likewise evade our conscious apprehension at many levels – neurological, technological, societal. This patchwork of nested loops are stitched together by our bounded self and make an ever present sense to us because we possess a standardised individuation. Here again entertaining a notion of psychic continuum is useful: there may be no material link between these digital loops and our neural wetware, but the former constitute that from which our individuated self emerges. Mike Jay,³⁴ in a discussion on schizophrenic influencing machines, notes that the psychosis of a century ago appears remarkably prescient relative to our coexistence with technology today.

“OUR WORLD IS NOW MEDIATED
IN PART BY TECHNOLOGIES
THAT FABRICATE IT AND
PARTLY BY OUR OWN
MINDS, WHOSE PATTERN
RECOGNITION ROUTINES

WORK CEASELESSLY TO
STITCH DIGITAL ILLUSIONS
INTO THE PRIVATE CINEMA
OF OUR CONSCIOUSNESS.”

This sounds quite similar to Brian Rotman's examination of “subjectivities operating in electronically patterned infrastructure”.³⁵ Rotman is another author who considered how technology could change our conscious selves. Over the course of 'Becoming Beside Ourselves'³⁶ Rotman drills into what codifying speech, a contiguous analog experience, into discreet symbols entailed.³⁷ He extrapolates out these ramifications to 21st Century digital media and its capabilities of making many more registers of corporeal experience discrete. His research drive is in the same ballpark as Jaynes and Simondon. He is intriguing to our purposes because he articulates what a future individuation might resemble. For Rotman, it is a parallel self – a hypothetical future subjectivity emerging alongside parallel computing: something that he believes will radically reorient our internal self's relation to the pre-individual field exterior to it. Rotman considers body-brain humans as kinaesthetic, corporeal, entities. As such this future orientation is engaging bodily capacities which already inhere within us all – said capacities have been merely awaiting the appropriate ensconcing affordances in order to be made manifest. We don't yet possess that individuation, but Rotman deems we can discern it in what he calls “ghost effects”: media effects, technologically induced agencies, emergent epiphenomena of mind plus pre-individual technologies.

Following Rotman's exhortations we should seek areas where 'ghost effect' hauntings may transpire, sites of contestation which perhaps foreshadow the breakdown of the post Bicameral mind. The

34. Jay, *The Reality Show*

35. Rotman, *Becoming Beside Ourselves*, 128.

36. Rotman, *Becoming Beside Ourselves*.

37. Logan also followed a similar enquiry in 'The Alphabet'

detection of such sites can be aided via the work conducted on 'Stacks' and "Stacktivism". In said discourse, "'The Stack' designates "the chain of interconnected activities and technologies of current and historical significance that spread far beyond the individual".³⁸ It affords the necessary agency to technology, and retains a concern for the subjects entanglement with increasingly ubiquitous technologies. In the stack, subjects become Users, as in the figuration deployed by Benjamin Bratton.³⁹

Bratton likewise deploys the language of individuation, and his latest piece on the Black Stack makes a case, in the context of the "just-so" stories entertained thus far, for several conditions which one might identify as correlative to those that precipitated the Bicameral Breakdown millennia ago. Bratton's account of the Black Stack, a conceptual edifice yet-to-come ("not the platform we have, but the platform that might be"⁴⁰), treats the User as one of seven infrastructural layers. In so doing Bratton teases out the nature of existing within vertical stacks and traditional nation states (whose horizontally delimited territories operate perpendicular to the Stack). Furthermore, Bratton identifies the geopolitical complexities of stack existence as entailing crisis for those who inhabit the position of the User:

"THE STACK (AND THE BLACK STACK) STAGE THE DEATH OF THE USER IN ONE SENSE: THEY DO SO BECAUSE THEY BRING THE MULTIPLICATION AND PROLIFERATION OF OTHER KINDS OF NONHUMAN USERS (INCLUDING SENSORS, FINANCIAL ALGORITHMS, AND ROBOTS FROM NANOMETRIC TO LANDSCAPE SCALE), ANY COMBINATION OF WHICH ONE MIGHT ENTER INTO A RELATIONSHIP WITH AS PART OF A COMPOSITE USER."⁴¹

These composite users, constituting a disposition perhaps better suited to thriving in the today's techno-social landscape, echo technological affordances pulling forth the bodies latent proclivity towards parallelism, just as Rotman speculated might happen.

"THE POSITION OF THE USER THEN MAPS ONLY VERY INCOMPLETELY ONTO ANY ONE INDIVIDUAL BODY. FROM THE PERSPECTIVE OF THE PLATFORM, WHAT LOOKS LIKE ONE IS REALLY MANY, AND WHAT LOOKS LIKE MANY MAY ONLY BE ONE."⁴²

In framing it thusly Bratton re-articulates the problematic how does the subject cope with 'living singularity in the face of multiplicity'. The 'linear self' individuation made perfect sense against a backdrop of a passing epoch of technology (language-writing-maths). This triumph was remarkable in how it suppressed capacities within the human brain-body-mind system that were amenable to non-sequential modes of parsing reality. The question of how do we maintain singularity in the face of multiplicity is inverted, begging instead the quandry of "why persist in 'sequential-self' individuation?"

Bratton considers that "the neoliberal subject position makes absurd demands on people as Users... (and) elaborate schizophrenias already take hold in our early negotiation of these composite User positions."⁴³ The positive symptoms of schizophrenia, surplus processes which the existing common individuation never need buffer, present themselves as cookie-cutter alt-individuations which suddenly seem more appropriate to our current context – as indeed Mike Jay's account of influencing machines noted (albeit somewhat tongue in cheek). Moving in parallel with Jay's, Bratton's rigorous analysis spins out the stakes

38. Jay, "On #Stacktivism."

39. Bratton, "The Black Stack | E-Flux."

40. Ibid.

41. Ibid.

42. Ibid.

43. Ibid.

of seeking alternate individuations into the shifting, crisis riven, geopolitical stakes of our times – tumult that may usher forth new individuations. Many of the issues at stake in Bratton’s discourse are topics taken up and engaged by critical technology artists, including the keen minds in the orbit of Stacktivism. EVP as praxis, process or methodology, can intervene in this field through its powerful phenomenological link to historical alternate individuations – voice hearing and the posited prior register of consciousness that it once instilled.

In *Immaterial Bodies: Affect, Embodiment, Mediation* Lisa Blackman infers the processual coping evident within the Hearing Voices Network as “an experience of the self as more divided and distributed, of the ‘other’ as part of me, and of living with automaticity as part of the spectrum of experience”. Automatism (perhaps best evinced in the studies of automatic writing) is another concept that Blackman excavates, and it intimates another route to seeking shadow individuations relevant to future subjectivities.

“A SENSE OF AUTOMATISM... EXPERIENCES WHERE A SUBJECT MIGHT FEEL THAT THEY ARE BEING DIRECTED OR GOVERNED BY AN IMPERCEPTIBLE FORCE OR AGENCY, OR EVEN BY A SECONDARY PERSONALITY.”⁴⁴

That speaks to the sense of being weighed upon by our data doubles, a ghost effect well surfaced by data artists (for instance, *Networked Optimisation*⁴⁵ provides a poignant intersection of the receding and advancing technological paradigms discussed in this essay). Such data personhoods are described by Bratton as “an aggregate profile that both is and is not specific to any one entity”. The data emissions you incur through interacting with distributed systems can do work when combined in aggregate with others, independent of your volition, but with likely consequence for your future degrees of agency or action.⁴⁶ Within the pre-individual field

of digitally patterned subjectivities there are likely many automatisms which we don’t acknowledge. Such automatisms are perhaps ‘ghost effects’ which evade perception because their boundary conditions haven’t been explicitly named, perhaps cannot be named, either because their delimiting factors are proprietary statistical profiles, or precisely because their boundary conditions care not for delimitation of a body to which we are accustomed (say for instance, our encapsulating membrane of skin). Automaticity describes the phenomenological encounter with automatisms. As such is a valuable methodology to deploy in understanding the frission of nascent system subjectivities which may result from alternative individuations.

Integrated Information Theory posits that “consciousness is the way information feels when processed in certain ways”. If consciousness is what it feels like when information is being processed in certain ways, what then is Automaticity? The unconscious brain is still processing that information, we just don’t ‘feel it’. Automaticity designates the liminal encounters with information processing (of which we are unaware), transpiring among the distributed systems that comprise ones extended mind. Automaticity and extended mind could be fruitfully combined to describe the phenomenological qualities of systems subjectivities. We might imagine those uncanny encounters with digital technology & systems, when they ‘move you’ without your willing it to be so, as instances of extended mind automatisms. The aforementioned data doubles constitute unconscious information processing that affects our lived existence, albeit not to the same intensity & integration as the unconscious computation proceeding within our bodies and inside our skulls. Should some future arrive where those distributed systems are sufficiently integrated with our wetware then perhaps something like a Borg like collective consciousness would be on the cards.

A more likely alternative than that existential body horror is an accommodation of the anticipative

44. Blackman, *Immaterial Bodies*.

45. *Networked Optimization*.

46. Burrows, “Living by Numbers: Metrics, Algorithms and the Sociology of Everyday Life.”

intelligence and predictive regimes of Google and other leading machine learning vendors. Such a future arrives with no fanfare – a Ballardian shrug at the prospect of “dynamically-priced queues for confession-taking priests, and therapists and brain cycles”.⁴⁷ As those feedback loops cease to be abject they are rendered less amenable to extended mind automatisms.

What has been presented and discussed is the possibility that a neoliberal subjectivity, or sense of self, presently finds itself at odds with its surrounding technological milieu, and it must adapt or die like the Bicameral Mind before it. At times this essay has taken too much liberty in presuming a homogeneity of ‘sense of self’ among the subjects of any given population, not to speak of the diversity of senses-of-self distributed globally. What the author would assert without caveats is that our subjective selves are coupled with, and co-constituted by, systems. These are both systems that are recognisably mechanistic in their materiality – such as digital technology – but also forms of organisation that have generated from systems thinking – logistics to name but one example. The Stacktivism discourse,⁴⁸ Critical Engineering⁴⁹ and Grey Media⁵⁰ are useful in elaborating upon the latter. With that noted, presuming a homogeneity of a ‘sense of self’ has been necessary, as if computing and the internet are to provide the technological tipping points for an individuation better suited to survival as a transplanetary species, then the Eurocentric⁵¹ origin of both technologies (and the bureaucratic organisation that accrued around them) merits accounting for and a critical disposition. Automaticity, with its genealogical links to the period which first cast the mold of the attentive subject, provides an intriguing entry point for those who wish to trace the topology of future embedded and embodied system subjectivities.

47. Levchin, “DLD13 Keynote.”

48. “Stacktivism.” <http://stacktivism.tumblr.com/>

49. “Critical Engineering.” <http://criticalengineering.org/>

50. Fuller and Goffey, “On the Usefulness of Anxiety, Two Evil Media Stratagems.”

51. Here designating the tendency of America to fall afoul of the same epistemological privileging that the European discourse is guilty of.

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D E
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MIND

TWIST

TOP VIEW.



MIND-TWIST-WANDERING

PROPOSAL FOR:
PALAIS DES BEAUX-ARTS
BRUXELLES. 1975

- 2-VIDEOTAPES.
- 2-ELECTRICAL TURN-TABLES.
- BLACK SAND OR SAW DUST



20'
VIDEO IMAGE.
2-ONE HOUR
TAPES.
SPINNING
HEAD
VIDEO TAPED
WHILE SPINNING
SUSPENDED
FROM ROPE
UN-WINDING.



VTR
BLACK
PLYWOOD
CYLINDER
DECK

BOTTOM

EXCERPT FROM SOUNDTRACK

“PERHAPS I SHOULD HAVE STAYED ON THAT ROAD - THAT ROAD BACK THERE - SEE IT - SEE HOW IT WAS CROSSED OVER...DOUBLE CROSSED IN TWO PLACES... I MADE A DETOUR - CHANGED DIRECTION. WHY DID I FEEL A CURVE COMING, IT WAS A STRAIGHT COURSE? BUT I MADE A SLIGHT TURN - THEN THE MOMENTUM STARTED - I MADE ANOTHER SLIGHT TURN, THE MOVEMENT THEN WAS CIRCULAR - EACH OPERATION DESTROYING THE PRECEDING ONE. AND THAT LAND...ALL THAT LAND AHEAD OF ME, FINALLY GOT TO ACTUAL SPACE - ACTUAL TIME. I LET IT ATTACK ME - OVERPOWER ME - I LET IT TURN MYSELF IN ON MYSELF. FIRST TWIST, THE DETOUR THAT STARTED THIS CONTINUED, CIRCULAR PATH - THIS ROAD THAT GOES NOWHERE...HOW I REMEMBER THAT FEELING - THAT TEMPTATION TO TWIST MY MIND - TO TWIST MY THOUGHTS AROUND - I'M SURE IT'S LIKE COMMITTING MURDER, BECAUSE I KNOW THAT IT TAKES A TWISTED MIND - A MIND THAT CAN TURN AGAINST ITSELF...TO STAY ON THIS COURSE. I WANTED TO SHOW YOU STRAIGHT, CLEAR LINES BY NOW - ALL THIS TRAVELLING - I WANTED YOU TO LOOK DOWN A CLEAR ROAD AND SEE THE BEGINNING AND THE END; TO SHOW YOU A THOUGHT WELL TRAVELLED IN SPACE - BUT I'M SHOWING YOU THIS AS IT IS, I WANT YOU TO SEE WHAT TAKES A TWISTED MIND TO RECOGNIZE.”

Excerpt from: Mind-twist- wandering. Spinning video unit # 2.
Internal ideas. Stereo track # 1. monologue. Stereo track #
2. Past work dealing with internal systems. (Body performance)

Perhaps I should have stayed on that road - that road back there - see it - see how it was crossed over. Double-crossed in two places. I made a detour - changed direction. Why did I feel a curve coming?

Sketch Book West Coast Summer 1969

untested materials
against the grain
firing line
document undisturbed stationary objects
start with end-product . . . break-down/reverse
static form unaffected by time-system
counterbalance

burning up energy - digestion of food h.u.
ice-cuts - lights submerged
aerial formations - bodies push through crowds - amass 5 minutes - spread and hide under cover 5 minutes - reunite - continue process
fishing holes cut in ice . . . fish for one day . . . photograph catch
food depletion piece
artist as matter

burning up weight
close up - breathing in cold weather
- 5 minute film
1 week weight tabulation - list of foods - intake - effects of food on body weight
structure a plan that can effect predetermined chemical change in body
record through electron microscope - make 4 4 colour slides
scope - make 4 from helicopter
project on snow from helicopter
increase magnification x 360,000

it was a straight course. But I made a slight turn - then the momentum started - I made another slight turn, the movement then was circular - each operation destroying the one preceding.

body fighting infection (documentation)
transparency on light box
pressure course - staple rows of sandpaper on floor - use balsam wood 2' x 4' - subject wood to specific pressure - exhaust material

guard making simple formations around projected image of cancer cell projected to 300' x 600' in snow
parking lot - rent space in predetermined formation - photograph from top - take license numbers from cars bordering space - get addresses - draw new configuration from addresses

film - top view of artist on scale showing weight - artist begins sawing 2' x 4's by hand - 2 hour stationary camera - artist returns to scale - weight loss recorded
catalyst barrier - withholding catalyst from compound - wooden barricade - show photo of faulty barricades (model form) - hypothetical results of spill-over

all that interior land... that space inside myself....

catalyst barrier - insufficient postage
body fighting infection
controlled environment

limb loop - sliding into an embankment
large maze - excavated
armed guards

track for increasing heart beat
proposal for Evil Knievel - Salt Lake Desert, Utah

I let it attack me - overpower me - I let it turn in on myself. First twist, the detour that started this continued, circular path - this road that goes nowhere.. How I

hire a guard - daily report becomes art document
trained trench - 3-day surveillance
guarding ground

track for reaching 80 miles per hour swimming race for artists (proposal for museum sponsorship) positions of racer determined by preliminary times
- diagram at finish

combined distances of broad jump by 10 major artists measured out on cloth tape - sold in reels
testing ground for Jessie Owens
300 lb. pressure required for release

retention piece
obstacle course
project for 1 year seclusion
projection pit

remember that feeling - that temptation to twist my mind - to twist my thoughts around - I'm sure it's like committing murder, Because I know now that it takes a twisted mind - a mind that can turn against

X-ray of digestive tract (GI series)
video - slow intake of liquid
documentation of exercise showing burning up of energy

bins of different compounds which when added to water solidify
distributional barrier
fluorescent substance on landscape

200 foot drop
erosion - tissue
ecological bridge
lug of war

take a hill
fasting project
final assault practice course
rooting section - diagrams - card section

itself...to stay on this course. I wanted to show you straight, clear lines by now - all this traveling- I wanted you to look down a clear

ground mutations - drill - marching
rench system based on attack diagram of Pearl Harbor

edition: ground manoeuvres (drill formations) military shoes with '4' diagonal grooves down sole and heel
physical characteristics

physical limitations
distance endurance
pressure/pushing down on matter/
PSI/ouehups

projection of infected wood cells on snow from helicopter
correlation of projected image and forms -
rephotograph

road and see the beginning and the end; to show you a thought well-traveled in space.- But I'm showing you this, as it is, I want you to see what takes a twisted mind to recognize.

mm slides of land mass before
ow projected from helicopter onto
shly fallen snow of same area -
photograph

reatating skin tissue (layers) with
nd strata
litled film (8 minutes) documenta-
ion of indentation made on forearm
ile rolling over cording and twine
pseup)

untitled film (10 minutes) documenta-
tion of forearm rolling over warm
asphalt and plaster - slow dissolve
onto land.

Sketch Book January 1970
Matched hybrid for digestive tract -
red zone (cranberry-apple) yellow
zone (pineapple-orange) blue

bucket brigade
magnets
thumb print blowup
back stop
family tree
physical limitation becomes objective
bruise

4 colour print on cowhide
stress position
stored material
wooden leg
multiple land grafts
reading position for second degree
burn
limitations with

Perhaps I should have stayed on that road - that road back there - see it - see how it was crossed over..Double-crossed in two places..

Sketch Book 1967

stakes similar to those used by land surveyors to be made out of stain less steel - these markers plot segments of an existing situation simulated field viewing station in field receding currents viewing stands used by "East Coast Light and Paving Company" directional viewing station endless field

feeding trough angled hedge mass activator - diachondra planted to converge upon excavated piece - or spreading outward - mass coverage converging troughs of diachondra

I made a detour - changed direction. Why did I feel a curve coming, it was a straight course. But I made a slight turn - then the

dead furrow standard plow turns soil to the right gallery as completed field octagonal viewing station surrounded by octagonal currents

ice plant sump visual connectors

rotating conveyor belt distributes wooden panels horizontally across floor area gallery acres

momentum started - I made another slight turn, the movement then was circular - each operation destroying the one preceding. And that land...all that land ahead of me. finally got to actual space -

tractor tracks work for a Long Island paving contractor counter-wedge pure pigment submerged system

seasonal change sculpture affected by life process colour changes

actual time. I let it attack me - overpower me - I let it turn myself in on myself. First twist, the detour that started this

a construction that lies dormant half the year - shows itself - fades out

Yellow Sketch Book April 1968 white sand with black streaks inverted earth layers air layers condensed in scale (drawing) ripple marks in sedimentary rocks

continued, circular path - this road that goes nowhere..How I remember that feeling - that temptation to twist my mind - to twist my thoughts around - I'm sure it's like committing murder, Because

coloured aggregate

place all ingredients of Whitney Museum into hour glass - subject to a process of mixing - counter-conic - interbreed two structures - decomposed Whitney and Modern all museums stacked up in order of perspective distance in relationship to location of base structure string out horizontally analyze material ingredient of connecting objects - this determines substance of pile

chemical dictates shape - responds only to gravity, extension and inertia subject chemical elements to alternate forces chemical break-down stable elements inverted decomposed Whitney subjected to a process of reconstruction impurities quantitative analysis

combined mixture of vertical wall support and horizontal floor support the pure Whitney submerged strata dead slide decomposed objects - book series - paper pulp/powdered ink/colour break-down solid to powder ruptured salt flat decomposed walls

I know now that it takes a twisted mind - a mind that can turn against itself...to stay on this course. I wanted to show you straight, clear

375 square feet of flooring removed in five stages - removal sold by the lineal foot - prices upon request ecological complex

interaction of units that do not normally involve each other Maine projects isotherms cut into field until complete field is removed

protruding test cores subsoil placed on top of top soil 2 photos of Manhattan - each with extremely different temperatures

dividing the divider bounded boundaries salt flat to be removed by wind action melting forest

lines by now - all this traveling- I wanted you to look down a clear

frozen lake project zonal cuts

cut and fill a perfectly straight cut showing only direction

saw-dust inside cut on frozen lake artificial plankton

road and see the beginning and the end; to show you a thought well-traveled in space.- But I'm showing you this, as it is, I want you

to see what takes a twisted mind to recognize.

L A W
R E
N C E

A B U

H A
M D A
N

AURAL CONTRACT:
FORENSIC LISTENING AND
THE REORGANIZATION OF
THE SPEAKING SUBJECT

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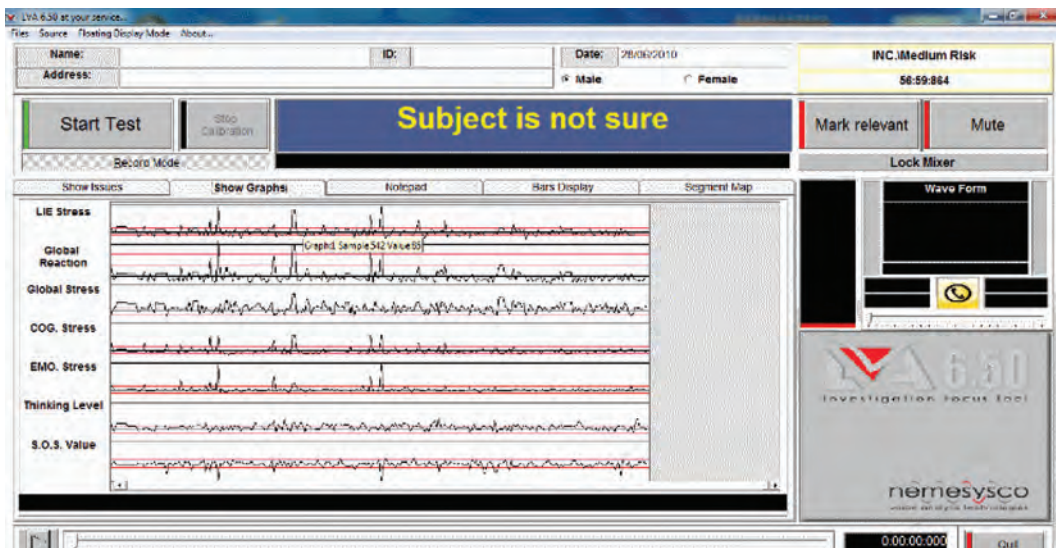


Fig. 1. "Subject is not sure." Screenshot from Layered Voice Analysis 6.50 which examines micro fluctuations of voices to corroborate what the subject is saying. Source: www.LVA650.com

In an article titled "Mengele's Skull," Thomas Keenan and Eyal Weizman suggest that in the mid-eighties international justice entered a new era. The authors claim that unlike the seminal 1961 trial in Jerusalem of Adolf Eichmann, which was archetypal of an era defined by eyewitness testimony, in the mid-eighties international justice became a stage for a different type of narrative; "a second narrative, not the story of the witness but that of the thing in the context of war crimes investigation and human rights."¹ The authors claim that what catalyzed this new era into existence was the exhumed remains of the German SS officer and Nazi physician Joseph Mengele.

One year before the forensic examination of Mengele's remains, a piece of legislation was passed in British criminal law which unknowingly also marked a crucial and forensic shift in the conventions of testimony. The 1984 Police and Criminal Evidence Act (PACE) ordered all police interview rooms to be equipped with audio recording machines, so that all interrogations from then on would be audio-recorded instead of transcribed into text. The passing of this law unintentionally catalyzed the birth of a radical form of listening that would over the next twenty-eight years transform

the speaking subject in the process of law. This legislation fundamentally stretched the role of the juridical ear from simply hearing words spoken aloud to actively listening to the process of speaking, as a new form of forensic evidence. This essay is dedicated to understanding the type of listening that this moment in 1984 inaugurated; I seek to amplify both its origins and its role in the contemporary juridical and political forums, in which we see the fragile balance of fundamental human and civil rights predicated on listening and the voice, tipping into an uncertain future which calls into question the very means through which we can negotiate politics and the law.

NINETEEN EIGHTY-FOUR

Code E of PACE was seen as a solution to claims that the police were falsifying confessions and altering statements made during interviews, as prior to this point all statements were simply written down "verbatim" by the police officers and then signed off on by the suspect. Were it not for a handful of linguists practicing a rare strand of forensic phonetic analysis, PACE would have remained a simple and transparent article of legal reform. Instead, the act exponentially increased the use of speaker profiling, voice identification, and voice

prints in order to, among other things, determine regional and ethnic identity as well as to facilitate so-called voice lineups.

Prior to PACE, if it was suspected that someone's voice was on an incriminating recording - for example a bugged telephone conversation in which there was discussion of an illicit act, or a CCTV surveillance tape of a masked bank robber shouting "Hand over the money" - that person was asked to come to the police station and give a voluntary voice sample. After PACE, doing so was no longer voluntary, and all such recordings were added to a growing audio archive of cassette tapes. This archive quickly became accessed by the little known scientific field of forensic linguistics; this unexpected convergence thereby added the voice as a new medium through which to conduct legal investigations. Soon the forensic listener was required not only to identify voices, but to investigate background sounds in order to determine where, with what machine, and at what time of day a recording had been made - thus enabling a wide range of sonic frequencies to testify. Legislation similar to PACE was adopted by many other countries in the mid-1980s, resulting in the permanent installation of audio recording machines in police interview rooms around the world. As in Britain, these policies resulted in the establishment of independent forensic audio labs, and today there are even postgraduate university programs devoted to the field.

Cassette recorders placed in all police interviews reorganize the voice as evidence and therefore PACE, as we will see throughout this essay, is for my research what Mengele's skull became for Keenan and Weizman, i.e., representative of an epistemic and technological shift that emerged in the mid-eighties and which gave rise to new forms of testimony based on the analysis of objects rather than witness accounts. Yet in the case of forensic listening there is a crucial difference: here there is no clean shift from witness account to the expert analysis of objects because the witness account and the object under investigation are the same thing. The voice is at once the means of testimony and the object of forensic analysis. JP French Associates, the United Kingdom's most

prominent independent forensic audio laboratory, has worked on over 5,000 cases since 1984. Its founder, Peter French, told me in reference to PACE that "whereas up to that point [...] I had a trickle of work coming in, all of a sudden it was as though there had been a thunderstorm and it started raining cassette tapes."² However, this overnight transformation of the voice as a legal object of investigation must be seen in the greater context of the role of the voice in law at large. In other words, would this thunderstorm have happened if the voice was not already such a central part of legal negotiation and process? Moreover, it is this very fact of the voice as being central to the formation, mediation, and practice of the law that makes it such a complex article of evidence. It is my argument that the PACE legislation formalizes a regime of listening that was always present within law: that the initiation of audio recording machines in police interview rooms drew upon, brought to the surface, and professionalized a way of listening to the voice specific to political and legal forums.

JUST VOICES

For the law to acquire its performative might, it must be delegated to the voice. For the law to come into effect it must be announced and it must be heard. Writing alone is inadequate to carry out the burden of legislation, which must first be committed to speech. As a site where speech acts, the trial allows us to understand how the voice serves to activate certain forms of governance and control.

In the United States Supreme Court to this day there is a vocal tradition that I find quite revealing: when the clerk enters the courtroom at the beginning of the day he/she inaugurates the proceedings by striking the gavel onto the woodblock then waiting for silence, before announcing, "the Honorable, the Chief Justice, and the Associate Justices of the Supreme Court of the United States" — and then, for four seconds, he/she interrupts his/her own speech and sings out "OYEZ OYEZ OYEZ" — before returning to his/her declaration that the court is now sitting and that God is now blessing the honorable court. Then with a second strike of the gavel he/she sits down. In this situation, we see the means by which the law is vocally summoned into existence.

A legal space is endowed with the right to carry out justice only when certain announcements are made. These announcements, in combination with other oaths and speech acts, function as a juridical amplifier, the switch that makes legally inaudible speech audible. These acts operate through the voice in order to transform words from the normal conditions of communication to the extraordinary conditions of testimony. And yet something more than the speaking of words is found in the clerk's call. In those four seconds when his annunciation shifts from a prescribed set of spoken words to the ineffability of nonverbal sounds - "Oyez Oyez Oyez" - we see that it is not simply language that legislates but also the extra-linguistic elements of the voice itself.

The legal action habeas corpus offers us some insight into the use of the voice as both a verbal and a nonverbal instrument. This ancient writ, which translates to "may you have the body," stipulates that a person under arrest must be physically brought before a judge. The judge must see and hear the suspect live. The voice is a corporeal product that contains its own excess, with this corporeal excess announcing to the court the absolute presence of the witness. This bodily excess of the voice resides not in its linguistic functions, but in its nonverbal effects; such as its pitch, accent, glottal stops, intonations, inflections, and impediments. As byproducts of the event of language, these effects reveal other kinds of evidence, evidence that may evade the written documentation of legal proceedings but does not escape the ears of the judge and of those listening to a trial in the space of the courtroom.

These paralinguistic elements of testimony produce a division of the voice, which in turn establishes two witnesses within one voice: one witness speaks on behalf of language and the other on behalf of the body. Often the testimony provided by each of these two witnesses is corroborated by the other, but they can also betray one another - an internal betrayal between language and body, between subject and object, fiction and fact, truth and lie. This betrayal exists in a single human utterance in which the self gives itself away. This splitting of the voice into two selves, or into two witnesses, can also be seen as

an extension of the well-established legal principle of *testis unus, testis nullus*, which translates to "one witness, no witness," and which means that testimony provided by any one person in court is to be disregarded unless corroborated by the testimony of at least one other. The law, it seems, requires a certain doubling of testimony, and this doubling even extends to the single witness. In the eyes of the law, the testimony of the single witness, whether the suspect or the survivor, has to be split into language and its bodily conduit for it to be considered testimony at all.

This doubling of testimony marks the terrain which was occupied by forensic linguists and acousticians within the field of law after 1984. In the cases of forensic listening that I will discuss here, we will see how these professional listeners became the expert witnesses speaking on behalf of the paralinguistic attributes of a person's testimony. After 1984 these were the people called in to corroborate and resolve the inherent division of the legal voice, formalizing an acoustic practice inherent to jurisprudence.



Fig. 2. One of René Laennec's original stethoscopes.
Source: Science Museum/Science & Society Picture Library.

AUSCULTATION

The audio cassette recorders at the center of the PACE policy show how technology is also inextricably linked to what I claim is a historical audio event. The phonograph, the first machine to ever record and reproduce audio, is usually cited as the technology that revolutionized listening and persists to continually condition the way we listen today. Yet the mode of listening and audio

discourse employed by these forensic analysts of sound, despite their dependence on technologies for voice recording, owes its origins more to a piece of technology that predates the phonograph: the stethoscope.

The invention of the stethoscope by René Laennec in 1816 formally inaugurated the practice of auscultation (listening to the inner sounds of the body). Laennec's work to classify the sounds of the body is a major contribution to medical diagnosis and the image of the stethoscope is now a symbol of the medical profession at large. As an international symbol of medical treatment the stethoscope communicates medicine as a terrain of care and a space where the concerns of the patient can be heard. It symbolizes the human communication between doctor and patient. Yet its material legacy is quite different. What the stethoscope actually did was to allow the doctor to bypass the testimony of patients and instead communicate directly with their bodies. It was a technology that allowed doctors to no longer depend on the subjective accounts of their patients' illnesses.

Understanding how to interpret sounds from hearts, stomachs, and lungs meant that the doctor could communicate with the objective truth of the body, as this emerging acoustic lexicon was thought of as a collection of voices which, unlike the speech of the patient, didn't lie; these were voices which couldn't dramatize, embellish, and exaggerate their condition. The stethoscope shifted the medical ear from listening to the patient's self-diagnosis to listening to the sounds of the body.

Just like forensic listening, the stethoscope pits the subject against itself as simultaneous testimonies can be emitted from the body and from the speaking voice. In auscultation there exists a very literal example of this doubling of the voice. Egophony is the name given to the process whereby, while listening to the lungs with a stethoscope, the patient is asked to say the letter "e." If the lungs are clear, the doctor listening with the stethoscope will detect the spoken "e" ("ee") as sounding like an "ee." Adversely, if the lungs contain fluid or a tumor, the patient's spoken "e" will sound like a phonetic "a"

("ay"). The "e" sound is transmuted to an "a" sound through the body.

This "e" to "a" transmutation shows us the ways in which the voice becomes doubled in the medical ear and how one voice can produce multiple accounts of itself. The example becomes increasingly literal when we examine the name for this auditory event, egophony. Literally ego - "the self" and phone - speech sound. Yet this self-identifying speech sound (ego-phony) could also be understood as ego-phony - the fraudulent self. And when we combine all these definitions we arrive at a name for a form of listening that almost perfectly describes the intentions of auscultation, i.e., detecting a fraudulent (phony) speech sound (phone) which betrays the self (ego).³ The paradox of the stethoscope is that it simultaneously produces an objective distance from the patient and a deeper proximity to their body. As a nonelectronic device it simply connects a material path through which vibrations can be channeled from the inner body of the patient directly to the eardrums of the doctor. This distanced yet deep material form of human contact is also characteristic of forensic listening, whereby one listens not to the semantics of language but to the molecular constitution of individual phonemes.

This shared practice of listening which transmutes subject into object reveals a direct lineage from auscultation to forensic phonetics. Auscultation offers the law, as it offered medical practice, the promise of amplifying the objective aspects of an otherwise deeply subjective account of an event. Yet in such cases one can adequately listen to only one aspect of the voice at a time; the qualities of the voice as object mute the subjective and semantic enunciations or vice versa. The shift from one form of listening to another can happen insidiously and invisibly and yet, as we will see throughout this essay, its political impact and effect on the listened to populace can be radical.

During my 2010 interview with the forensic linguist Peter French he told me: "Last week, a colleague and I spent three working days listening to one word from a police interview tape."⁴ Statements

like this exemplify French's radical approach to both listening and the theoretical paradigms that surround audio culture. Unlike many sound theorists who focus on sound's ephemeral and immaterial qualities, French's approach is markedly material. The contemporary dominant school of audio culture is heavily influenced by Don Ihde's 1976 text *Listening and Voice: A Phenomenology of Sound*, which puts forward the impossibility of fundamentally grasping sound.⁵ The continuing prevalence of this school of thought is demonstrated in the 2009 book *Sounding New Media* by Frances Dyson, who states in the introduction: "As Don Ihde pointed out decades ago 'a sound is always multiple, always heterogeneous, being neither visible or tangible, sound is never quite an object, never a full guarantor of knowledge.'" ⁶ Yet French's formulation renders sound dissectible, replicable, physical, and corporeal in its object quality. What allows French's radical approach to sound is the forensic intensity at which he listens, which allows the audio object to reveal a large amount of information as to its production and its form: the space in which it was recorded, the machine that recorded it, geographical origin of the accent, as well as details of the age, health, and ethnicity of a voice.

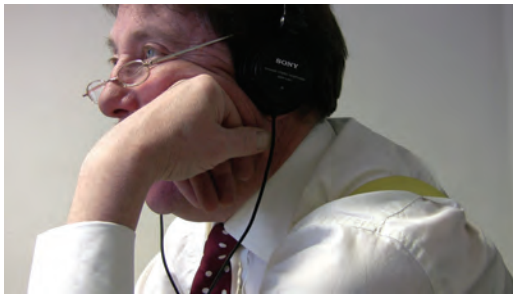


Fig. 3. Dr. Peter French profiling a voice.
Photo: Lawrence Abu Hamdan, 2009.

Yet as with all cases of legal, social, and ethnic profiling, French walks a thin ethical line. Ironically, what allows French to maintain his credibility in a time in which law enforcement increasingly reaches out to forensic linguistics in odious forms of surveillance and profiling that target huge swathes of the population, is his ability to listen better. French understands the limits of what can

be detected through the voice and therefore avoids exploiting the law's generally increasing demand for the empty promises of forensic science and its ignorance regarding their practical capacity.

Forensic listening is now being applied more than ever before. Its application is primarily on two fronts: speaker profiling of asylum seekers and developing voice-activated algorithms for the security industry. Today it is applied on such a scale that law enforcement agencies and security services cannot often afford the expert listening of people like Dr. French. Hence, frighteningly, we are entering a time in which there is both an overcapacity demand for the governance of the voice, and an inadequacy of authentic means of producing such a governance. In other words, we have now entered a sorry phase where bad listening (and therefore bad evidence) is flooding the forum.

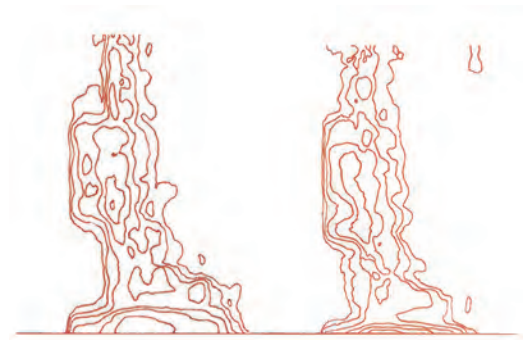


Fig. 4. "Two You." The image documents voiceprints (voice fingerprints) of two different voices saying the word "you." The means by which one can read this image and make comparisons between the two different voices is by understanding that the horizontal axis is time and the vertical axis is frequency. The contour lines then illustrate the amplitude of a specific frequency at a specific time in the pronunciation of the word "you." In the use of cartographic techniques to produce voiceprints we can see clearly the interrelation of the control over both voice and territory. Image source: Ira M. Freeman, *Sound and Ultrasonics* (London: Random House, 1968).

JURIS-DICTION

What we will understand as I develop explanations of the most recent and prolific examples of forensic listening is that it is not simply governance of the voice that has been made more pervasive but also the employment of these modes of listening in the control of territory and the production of space. Their use as agents of spatial control is made clear if we take a closer look at legal terminology and practice, in order to see how forensic listening becomes a technically instantiated and formalized process of fundamental legal concepts. If we divide the term "jurisdiction," which connotes a territorial range over which a legal authority extends, we see that "juris" refers to a legal authority or right and "diction" refers to speech. "Diction" in linguistics is also defined as the manner of enunciating and uttering sounds and words, indicating not simply speech but the process of enunciation and amplification of words. By understanding the etymology of the term jurisdiction, we see that the law itself operates as a speech space in which those within its range of audibility are subject to its authority.

As a fundamental principle of legal governance, jurisdiction reveals to us the power of sound in the construction of the space and time of the law. Much like the radio in the workplace, the audio medium affords the law a means of controlling space and interpolating its subjects while remaining predominantly out of sight. In the following example we will see how the law's practices of auscultation are radically remixed and used to amplify the scope of the legal frontiers of a given juris-diction.

By 2003, the United States and the United Kingdom were entrenched on two fronts in the War on Terror. These wars forced mass migrations that became the catalyst for immigration authorities around the world to turn to forensic speech analysis to determine if the accents of asylum seekers correlated with their claimed national origins i.e., to see whether people originated from areas which would mean that they were legitimately entitled to asylum. On a scale similar to the 1984 PACE act, this produced a huge proliferation of forensic listening, this time employed to help determine

the validity of asylum claims made by thousands of people without identity documents, particularly in Australia, Belgium, Germany, the Netherlands, New Zealand, Sweden, Switzerland, and the United Kingdom.

In most of the countries listed above the protocol is as follows: a telephone interview is organized between the asylum seeker and a private company run by forensic phoneticians based in Sweden: Sprakab. Using anonymized analysts (which many claim are actually former refugees with no linguistic training) the claimant's voice is elicited, recorded, and analyzed and subsequently a report is produced and given to the immigration authorities. The confidence in, and the rapidly increasing predominance of, this kind of investigation within immigration law is troubling, given that its accuracy has been called into question by many forensic linguists, phoneticians, and other practitioners around the world.⁷ One of the main concerns of this group of linguists is to advocate for the idea that citizenship is a bureaucratic distinction and that the voice is a socially and culturally produced artifact that cannot be tidily assimilated into the nation-state.

In undertaking extensive research into this politically potent form of listening I heard many shocking accounts of vocal discrimination and wrongful deportations - none more so than that of Mohammed, a Palestinian asylum seeker who, after having the immigration authorities lose his Palestinian identity card, was forced to undergo an accent analysis to prove his origins. During his deportation hearing he was told by the asylum tribunal that he was lying about his identity and the judges paid particular attention to the way that he pronounced the word for tomato. Instead of "bandora" he said "banadora." This tiny "a" syllable is the sound that provides the UK border agency with the apparent certainty of Mohammed's Syrian origin: a country only twenty-two kilometers away from his hometown of Jenin in Palestine. Therefore, in designating this syllable as a marker of Syrian nationality, the border agency implies that this vowel, used in the word tomato, is coterminous with Syria's borders. The fact that this syllable

designates citizenship above an identity card that contradicts it forces us to rethink how borders are being made perceptible and how configurations of vowels and constants are made legally accountable.

Locating this Syrian vowel in the speech of a Palestinian surely proves nothing more than the displacement of the Palestinians themselves. In other words, the instability of an accent, its borrowed and hybridized phonetic form, is testament not to someone's origins but only to an unstable and migratory lifestyle, which is of course common among those fleeing from conflict and seeking asylum, often spending years getting to the target country and living in diversely populated camps along the way. Moreover, it should be remembered that in such camps one may want to conceal the origin of one's voice because of the continual fear of persecution.

When calling for ways in which to implement better practice in cases of language analysis for the determination of origin of undocumented and illegal migrants (LADO), forensic linguist Helen Fraser says that we "need to clearly separate linguistic data from potentially biasing background on the applicant's 'story.'"⁸ Clearly in this expression of objectivity we see how linguists want to auscultate the accent and go beyond the potentially traumatic and pathetic "story" of a person's flight; preferring to find in their speech another type of testimony. However, my argument is that for adept forensic listeners this accent object (linguistic data) should also be heard as a "story" in itself, one that could reveal an account just as traumatic. In other words, for listeners who are not content with drawing a border around a single phonetic article, the accent should be understood as a biography of migration, as an irregular and itinerant concoction of contagiously accumulated voices, rather than an immediately distinguishable sound that avows its unshakable roots neatly within the confines of a nation-state. In the clear distinction between biographical data and linguistic data, we see how this policy is used as a practice which does not seek to excavate the life of an accent, and ultimately only highlights the virtual impossibility of locating its place of birth.

Like all practices of auscultation, the forensic analyst's can be understood as operating in the excess of the speaker's intentions. Yet due to issues of mimicry, contagiousness, and survival, the life of an accent is possessed to a greater or lesser extent by every living person it has ever come into contact with, especially influenced, of course, by the one voice with which it is presently in dialogue. Such a cartography of a voice is thus further complicated by the very presence of the cartographer and his/her own voice. In the case of Mohammed, his rejected status is owed to an interviewee whom Mohammed claims was an Iraqi Kurd and whose Arabic dialect was so different to his that he had to shift his way of speaking simply to be understood and to understand.⁹ Listening is never simply a passive, objective, and receptive process, but rather an act that plays a fundamental role in the construction and facilitation of the speech of the interlocutor (whether subject or object). Therefore what becomes amplified in such investigations is not the true identity of the sonic object under investigation but the political potency of the listening itself and the agency of the listener. In other words, the results of this forensic listening tell us little about Mohammed's accent but a great deal about the contemporary political context in which this audio investigation participates.

The form of listening that is presented in the case of Mohammed shows us that in its attempt to move away from the subjectivity of the speaker and to objectify their voice, another layer of subjectivity becomes established: that of the expert listener or interpreter of sounds. The forensic listening paradox is perfectly performed in this case, whereby in an attempt to hear objectively, the listener's own subjectivity emerges and is made distinctly audible (through the way his listening acts upon and transmutes the subjectivity of the interviewee). This then allows one to ask the question: as an intersubjective process, can listening ever be objective? Will listening always be tainted by the subjectivity of that which listens? In attempting to answer these questions we quickly reach the fundamental paradox and the empty promise of forensic listening. Perhaps the only way to detach oneself from any given situation is to listen, as

Dr. French does, to a single syllable for three days, until the sound becomes completely abstracted from humanity and the culturally preprogrammed prejudice of the ear.

THE RIGHT TO SILENCE

In attempting to establish a correlation between voice and citizenship we encounter another vocal legal paradox. In criminal charges against a citizen of the United Kingdom, the criminal is afforded the right to protection from self-incrimination; commonly known as the right to silence (or in the United States as Miranda rights). This is a fundamental legal right not to speak if you feel that your speech would in some way incriminate you. When hearing the specific words of the right to silence issued by the police you know that your voice has been placed in custody and that your voice has crossed the threshold between normal conversation and liable speech. However, with speech profiling becoming a more and more widespread form of investigation, it is not only our words that can incriminate us but the phonological content of our voices as well. Therefore, just as our speech is being mutated by the legal system we must ourselves fight to rephrase the legal diction so that it remains transparent about the ways in which our voices are placed under custody and investigated. My proposal for altering the way the law speaks to us entails changes from the moment of one's arrest onwards, and therefore entails amending the right to silence. In the United Kingdom, the revised version might read: You do not have to say anything. But it may harm your defence if you do not mention when questioned something which you later rely on in court. Anything you do say, including the way you say it, may be given in evidence against you.

Yet even if these alterations to the right to silence were to be made, we would still need to understand that this fundamental legal right is only afforded to the citizen; the asylum seeker, for example, has no recourse to silence, as the burden of proof lies not with the prosecutor in such cases but with the claimant themselves: in other words, if they don't speak they will be deported. Without the right to silence, the asylum seeker is forced to speak to the law; they must make themselves audible to the

system and yet they remain without control over the conditions of how they are being heard. What they do retain, however, is the human right to freedom of expression and it is my argument that this policy of listening contravenes this fundamental right.

These forensic speech analyses force us to redefine our right to freedom of speech, a concept that must now be extended to encompass not only the words we speak, but also the sonic quality of our speech itself. The voice has long been understood as the very means by which one can secure and advocate one's political and legal interests, but these recent shifts in the law's listening affirm that the stakes and conditions of speech have altered in a nontransparent way. This shift is seemingly minute yet, as we see in the voice analyses of asylum seekers, can have a dramatic impact on people's lives. Therefore, the more radical the practices of listening at the core of legal investigations become, the more they herald the advent of a moment to redefine and reshape the political conventions of speech and sound in society. Now it seems that the battle for free speech is no longer about fighting to speak freely, but fighting the control over the very conditions under which one is being heard.

THE WHOLE TRUTH

The latest development in forensic linguistics, and hence the closing example of this essay, is the product of the combined labor of mathematicians and speech scientists to produce computer algorithms that allow users to automatically profile voices for a variety of different applications. The most prominent of these applications is "voice stress analysis," the premise of which is that, through a frequency analysis, the physiological conditions of stress are made audible by the nonverbal elements of a voice. This technology is said to be able to determine all sorts of psychological verdicts based on jittering frequencies, glottal tension, and vocal intensity, all regardless of language.

At Delft University in the Netherlands a team of linguists and computer scientists are developing a kind of "trauma-o-meter" application for emergency calls whereby the algorithmic listening software would determine the priority of a call depending

on the level of stress detected in the caller's voice. The idea behind this is that the tension of the vocal chords produce "jitter," which in linguistics relates to fluctuations in pitch, and that the level of stress a person is undergoing can be observed in the intensity at which these minute fluctuations occur.

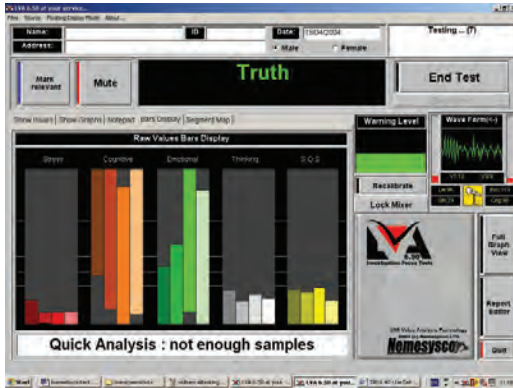


Fig. 5. Screenshot from Layered Voice Analysis 6.50 which examines micro fluctuations of voices in order to corroborate what the subject is saying. Source: www.LVA650.com.

Therefore the scale of the emergency is legible as affect on the body that witnessed it. Regardless of what is being said, the first response to the event will then be a response to the body of its witness. In building a hierarchy of trauma this machine also produces a chain of command that situates the paralinguistic aspects of the voice as an authority over the words that the caller wishes to relay. The stress the body undergoes here is considered the objective truth of the event; yet in my next example these same physiological attributes are taken to reveal the opposite - a lie.

A piece of software called Layered Voice Analysis 6.50 (LVA 6.50), developed by Israeli company Nemesysco Ltd, is the major application of this new form of forensic voice profiling: it is currently employed as a lie detection method by the Los Angeles Police Department, Russian and Israeli governments, and insurance companies all over the world. In the United Kingdom, Harrow council and many others are using it to measure the veracity of benefit claims made by disabled citizens. Harrow council claims they have saved roughly £330,000 of benefit payouts in the first seven months of

using this software.¹⁰ Lynn Robbins, director of the company Voice Analysis Technologies LLC, the main retailer of the software, told me in an interview that based on analysis of the body as it resonates through the voice, LVA 6.50 can not only determine whether a person is lying, but is able to deliver a whole series of verdicts - detecting, for example, embarrassment, overemphasis, inaccuracy, voice manipulation, anxiety, and whether or not the interviewee is attempting to outsmart his/her interlocutor; in the future, I was told, it will even be able to hear sex-offending tendencies.¹¹

Commander Sid Hale is piloting the software for the Los Angeles Police Department and explains: "Unlike the polygraph we don't need to cooperate with the suspect, we don't need to wire them up with skin responses or respirators, it does it in real time."¹² This idea of being able to access the body of the person who is the object of one's interest without touching it is very attractive to law enforcement agencies, just as it was to doctors who first used the stethoscope at the beginning of the nineteenth century. Reports from that time say that one of the benefits of the stethoscope was that it meant doctors no longer needed to press an ear to the patient's body, and hence it provided them with a hygienic distance from the potentially diseased patient. In LVA 6.50 we see how this technology produces and appropriates this hygienic, physical, and objective distance. One key, politically sensitive effect of the fact that LVA 6.50 can operate without physical interaction - the voice analysis might be conducted during a telephone conversation, or using a prerecorded sample - is that testing can be undertaken without the consent or knowledge of the subject.

In the context of borders and prisons, this hygienic distance allows the authorities to access the emotional and bodily content of the noncitizen (e.g., the prisoner or refugee) without needing them to formally enter the society of citizenship. At the border this test can be performed before a person formally enters the country, or even before they leave their country of origin - meaning that LVA 6.50, in making use of the hygienic distance of audibility, enables the extension of the border itself.

This software simultaneously extends the range of the law's juris-diction while also designating those who must remain beyond its range of responsibility/audibility, differentiating between those to be afforded the rights of a citizen and those to be denied those rights, and the possibility of claiming refugee status.

Although in the legal context there has never been a need for an ear to be pressed against the suspect's body, the principle of habeas corpus, as discussed above, requires that the subject be brought physically before the law (e.g., in an interrogation room or courtroom) in order to have a legal hearing. Yet we could easily imagine how LVA 6.50 would eradicate the necessity for the physical presence of the suspect, as it requires only a voice to access the corpus. In this sense, LVA 6.50 short circuits the process of habeas corpus, using an algorithm and a visual interface to give the law access to what a person's body is "really" saying as they speak, even if that body is thousands of miles away.

This distance-producing (voice stress analysis) machine is not only designed to distance the user from the subject of analysis; it also works to remove or minimize the presence and role of the user (the interrogator, insurance broker, border guard, etc.). In an interview situation, the visual interface flashes up its verdicts as the interviewee speaks. This machine thus promises to listen on behalf of its operator, reducing or putting into question their interpretative and intuitive capacities. In this sense this technology not only mutes the words of the speaker, but also deafens the listener. And although a direct lineage can be traced from the stethoscope to voice stress analysis technologies, the removal of the necessity for the operator to listen articulates the fundamental break with auscultation as a practice. Auscultation shifted a mode of listening from the speech to the body yet it still required listening at its very core and in fact inaugurated a new epistemology of listening that is still taught to millions in the medical profession today. Though it practices auscultation, LVA 6.50 does not teach new ways of listening; in the microscopic analysis of the frequencies of the human voice it can hear beyond the range of human audibility and therefore

it excludes the possibility of building new auditory skills. Unlike the work of forensic listeners like Dr. French, its means of listening does not hold the potential to increase, fine-tune, and augment human auditory experience.

Not only does LVA 6.50 listen on behalf of its user, but in its registration of emotional content (anxiety, aggression, fear) this software feels on behalf of its user as well. Using this software the interviewer no longer needs to be sensitive to the psychological condition of his subject.

The machine thus produces apathetic operators who listen to neither words nor tone of voice, and therefore minimizes the extent to which the interviewer dirties themselves with the subjectivity of the interviewee. This machine is so attractive to law enforcers because it recognizes the fundamental flaw of previous modes of forensic listening: that in objectifying the voice the one who causes its objectification becomes amplified in the process - i.e., that the subjectivity of the speaker is replaced by that of the listener/interpreter/aural investigator. In order to produce the laboratory conditions for justice and a completely objectified realm of listening, law enforcement recognizes that listening must be relegated to the machine. Yet in voice stress analysis there still remains the glitch of the subject contaminating the legal laboratory, as these algorithms first have to be programmed by people who could have bigoted ears and economic agendas. To produce a verdict the algorithm needs to learn the logics of those verdicts - e.g., in order for it to profile the voice of a sex offender it first needs someone to teach it the vocal attributes of a sex offender.

In response to the astounding claims of LVA 6.50's highly sensitive and microscopic listening, a group of speech scientists and mathematicians in the department of phonetics at the University of Stockholm closely examined the product's technical patent and reverse engineered the software in order to test its scientific credibility. The idea that the machine would work "regardless of language"¹³ was taken seriously by the group, who tested the software using only vowel speech

sounds and single phonemes. Interested to see how the machine produced its wide range of judgments the group used the pure object of speech; de-subjectified voices speaking only vowels without thought or semantics. After months of testing the machine and collecting large amounts of data they understood that the software was operating on a very basic level of amplitude and found that it simply had to do with a person's capacity to hold a steady pitch and volume. They also claim that the distinctions between the various verdicts (e.g., between embarrassment and attempt to outsmart or excitement and inaccuracy) are arbitrarily placed along this scale. According to their investigation, the claim that the technology functions as a lie detector is bogus; one of the mathematicians working on the reverse-engineering project told me that its logic was akin to "a horoscope or a prophecy" in its pseudoscientific nature.¹⁴

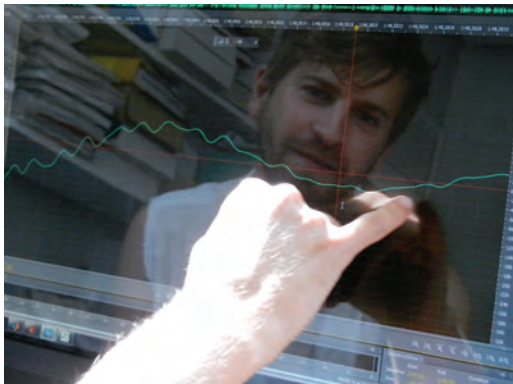


Fig. 12. "This is what the truth looks like." Andreas Takanen at the department of phonetics at the university of Stockholm shows the inner algorithmic/horoscopic workings of LVA 6.50. Photo: Lawrence Abu Hamdan, 2009.

Though the mathematician was using an analogy of the horoscope as a means to scientifically discredit the software, for me the term horoscope resonated differently. I found the analogy of the horoscope useful because of the ways in which it introduces "fate" into the above discourses of legal, ethnic, and social profiling to which forensic listening dedicates its ears. Just as the horoscope removes the agency of people and insists that their fate rests on the alignment of the stars, LVA 6.50 removes the agency of the listener and the speaker and allows a machine

with apparently very little interpretative potential to forecast our place within a predetermined cosmos. What we can learn from the horoscope analogy is that the human actor is not required here; if simply speaking individual vowels, phonemes, or babble can reveal our true intentions then our actions are irrelevant. Without even acting the software reveals the script that is within us.

LVA 6.50 amplifies the dark phrenology of the voice which is operative today. Regardless of whether they scientifically work or not, pieces of software which use the voice as biometric tool deeply confuse its role as a conduit for language and negotiation. Simply by virtue of the fact that insurance companies, government councils, and police departments use these forms of listening offered by LVA 6.50, the software is weaponized, regardless of its credibility amongst the scientific community.

In the sites where speech acts it is our speech which is under attack. The promise (empty or not) of LVA 6.50 or of LADO (the accent analysis of asylum seekers) to reorient the speaking subjects contained within any given jurisdiction is already underway. In this essay I have intended to relay a certain history of legal listening that begins with listening to words and accounts, moves to a type of listening that doubles the speaking subject into two parts (words and speech sound), and culminates, through increasingly degraded forms of listening, in the total eradication of the speaking subject. We arrive at an uncertain future of the voice and a moment to question its very legitimacy as both an object of legal investigation and the means through which the law becomes enacted. Assuming an increasing proliferation of these emergent and mutated strands of forensic listening forces us to ask more general questions about the role of the voice as a central legal infrastructure: will it still be a fair and just hearing when nobody is listening?



Figs. 6 – 11. Screenshots from Layered Voice Analysis 6.50 which examines micro-fluctuations of voices in order to corroborate what the subject is saying.
Source: www.LVA650.com.

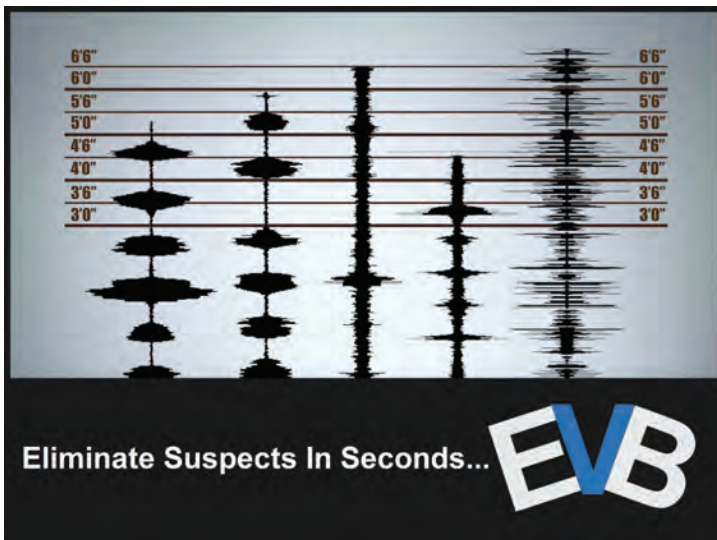


Fig. 13. Promotional image for a voice biometrics software.
Source: <http://easyvoicebiometrics.com>

R E F E R E N C E S

1. Thomas Keenan and Eyal Weizman, "Mengele's Skull," 7 Cabinet, no. 43 (Fall 2011): 61-67, at 62.
2. Audio recorded interview with Dr. Peter French, York, 2010.
3. Etymologically speaking the word "egophony" seems to have been subject to its own "ee" to "ae" transmutation, as medical dictionaries suggest egophony is a compression of the original aegophony and that the aego derives from the Greek for goat (aix/aig-), which in turn is derived from the goatlike sound made by the phoneme whilst it is being auscultated by the doctor. While perhaps not literal this bestial etymology is also somewhat revealing of the intentions behind auscultation, as it is an effort to avoid all the disorientating subjective embellishments that language provides as it reduces speech to a prelinguistic state; an animal binary where in which the voice is used to express only pleasure or pain.
4. Ibid., P. French - Interview.
5. Don Ihde, *Listening and Voice: A Phenomenology of Sound* (Athens, OH: Ohio University Press, 1976). 13
6. Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009), 5.
7. See Diana Eades, "Applied Linguistics and Language Analyses in Asylum Seeker Cases," *Applied Linguistics*, vol. 26, no. 4 (2005): 503-26.
8. Helen Fraser, "The role of linguistics and native speakers in language analysis for the determination of speaker origin. A response to Tina Cambier-Langeveld," *The International Journal of Speech, Language and the Law*, vol. 18, no. 1 (2011): 121-30, at 123.
9. Interview included in Lawrence Abu Hamdan, *The Freedom of Speech Itself* (2012), audio documentary.
10. "Using Nemesysco LVA technology in the Department for Work and Pension, UK-ITN news clip," uploaded February 2, 2010, <http://youtu.be/QwjadfV0c00>.
11. Audio recorded interview with Lynn Robbins, London 2012.
12. "Nemesysco's Investigation Focus Tool Video," National Geographic, uploaded August 28, 2012, <http://youtu.be/6nvXHQuUoOQ>
13. See the LVA website, <http://www.lva650.com/faq.html>, last accessed September 2013.
14. Audio recorded interview with Andreas Takanen, Stockholm, 2012.

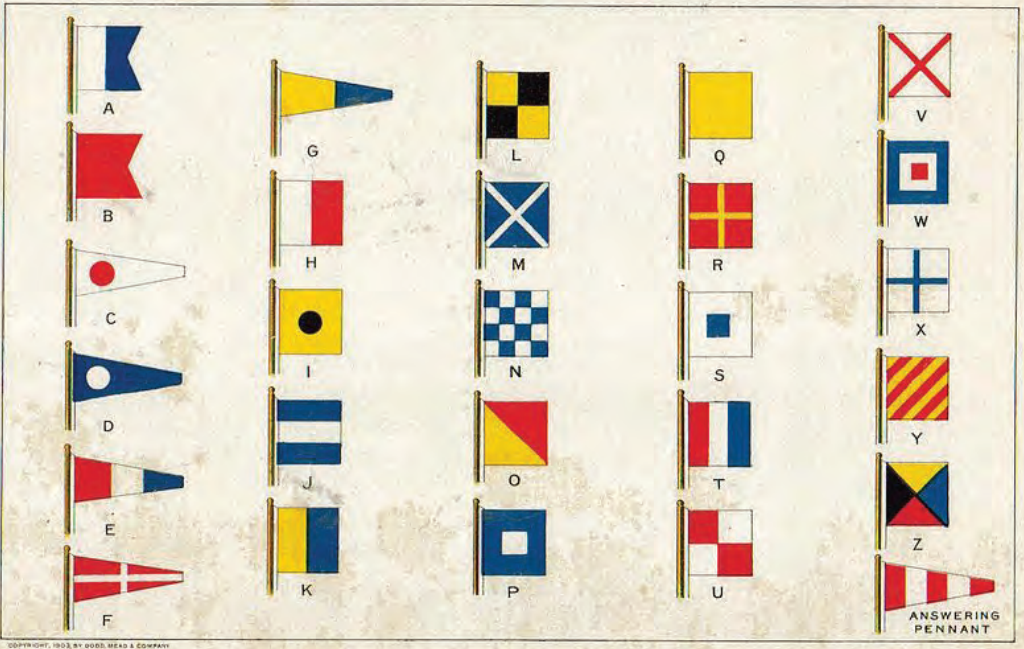
H O L L Y
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I W I S H T O C O M M U N I C A T E
W I T H Y O U :

A N A N A C H R O N I S T I C R E A D I N G O F
H A N N A H W E I N E R ' S C O D E P O E M S

INTERNATIONAL SIGNAL CODE



Are you alive? I touch you.
The Pool, H. D., 1915

What does the acronym, CJD mean to contemporary UK English speakers? Or BZ to a particularly informed English speaker? Mad cow disease, perhaps? An incapacitating chemical agent, weaponized by United States after WWII, perhaps? What could the lettering BED mean other than the last rest place of the day? When the first two are verbalised in the correct alphabet code we get the phrases, 'Charlie, Juliette, Delta' and 'Bravo Zulu!' Again a trail of associations takes us into various readings. Charlie and Juliette, personified, get together and book plane tickets. A Zulu warrior is patronised in a greetings card. A child gets the imperative command in the too late hours of the evening. Or maybe that's just me. What do we see in this image?



It looks like the Ukrainian flag on its side, so my comprehension of the symbol grasps towards my weak reading of contemporary politics. Because I'm a linguistic creature, a modern human, I look for patterns of meaning in and beyond words. I'll improvise meaning and continue to interpret or look for it even beyond the given translation. When decoding mystery encryptions, or even when reading 'ordinary' language, there's always an element of fantasy, or magical comprehension – clairvoyance

perhaps (Benjamin 1933). The verbal equivalent of the above symbol is the alphabet symbol, 'K', or spoken properly, 'Kilo'. In *the International Code of Signals* this symbol is shorthand for a ship's signal, 'I wish to communicate with you'. As a flag, hoisted into position, this symbol is the starting point for any communicative exchange and establishes the format of the proceeding transmission. Such a ship-to-ship preamble might go like this:

KILO: I wish to communicate with you...
in Morse code / in semaphore / in torch and flares

What the Kilo flag tells me is that before the reason for and the means of communication comes the desire. As a social being, the impulse and the capacity to communicate feel pretty coincident; they both underscore most of what I do as a poet and a person (non-mutually exclusive positions). Like a lonely ship at sea, I'm freighted with the compulsion to make contact with another wandering body. Not much time passes between my sending signals into the world. These signals might contain particular information but what they are actually *signalling* is my hankering for communication. Maybe I wouldn't be so quick to make that leap of likening a nautical flag symbol with everyday social mediating or poetic utterance, if the International Code didn't already make the communication between two vessels read like the personal dialogue of two intimate subjects:

The first person singular 'I' desiring contact with a 'you' likens the phrase denoted by the Kilo flag to a form of a lyrical address. In other words it sounds like the act of one subject appealing through language to another. We can hear the same impulse to appeal to a listener in the initial call of Shelley's ode to a skylark:

Hail to thee, blithe Spirit! (Shelley, 1820)

The hail from the desiring subject pulls the as-yet heedless and unnamed into a listening dynamic. Their identity as the target of the message is determined by the very act of the call. This is communication at its most basic form, and the gesture that lurks behind every signal.



FOXTROT: I am disabled! Communicate with me! [my exclamation]

I might say that the desire to communicate is embedded in code itself, or should that be the instruction to communicate? Where code demands a performative realisation of its encryption, then the instruction within the code, KILO, is to translate it into a process of interpellation.

In the early stages of her career, Hannah Weiner (celebrated East Coast poet, performance artist and intermittent clairvoyant) committed her practice to appropriating sequences of text from a nineteenth-century edition of *the International Code of Signals for the Use of All Nations* and composed them into lines of poetry for both page and performance. Throughout the 1960s Weiner orchestrated elaborate happenings that saw mass enactments of seafaring signalling.

The performances took place in (land-based) public spaces and poetry festivals, similarly letting collective bodies talk to each other in personal messages of lack and desire, featuring the U.S. Coastguard with alphabet flag hoists, semaphore signalmen, torch light, megaphones and flares. In what must have been an unintelligible spectacle, the various forms of man and media transmitted communiqué in sequences of standardised messages that rendered them lyrical ballads touching on slap-stick erotica, pathos, bathos, whimsy, pastoral, and caprice. Take for example this amatory re-telling of 'Romeo' and 'Juliet', no longer trapped in alphabet code but once again badly communicating lovers.

GIA Juliet: *This is my best point*
 SHJ *Some swell*
 XOR Romeo: *Thank you*
 GDS *May I begin to?*
 GIT Juliet: *The sooner the better*
 MFO Romeo: *Entrance is difficult*
 MFD Juliet: *Try to enter*
 KZU Romeo: *I am in difficulties; direct me
 how to steer*
 DOX Juliet: *You should swing and enter
 stern first*
 HBK Romeo: *What is the nature of the
 bottom or what kind of
 bottom do have you?*
 HAY Juliet: *Double bottom*
 ODI Romeo: *Stern way. Going astern*
 LK Juliet: *Go astern easy. Easy astern*
 ODI Romeo: *I am going full speed*
 HC Juliet: *It is not safe to go so fast*
 KZY Romeo: *It is difficult to extricate*
 BK Julie: *Is anything the matter*
 VLA Romeo: *Cock broken or damaged
 (Weiner 1982, 10)*

In 1982 selected sections of Weiner's works of poetry derived from *the International Code of Signals* were compiled and published in the book, *Code Poems*. Each chapter – 'Romeo and Juliet'; 'Any Chance of War'; 'Want Men'; 'Follow Me' – behaves like a passage of dialogue, or mini conversation. To my reading there are some sections that perform as much melancholy, affect or comedy as any sonnet, ballad or verse.

CJD *I was plundered by a pirate*
 CJF *Describe the pirate*
 CJN *She is armed*
 CJP *How is she armed?*
 CJS *She has long guns*
 CJW *I have no long guns*
 BLD *I am a complete wreck (Weiner 1982, 19)*

Weiner manufactured found phrases from a system of impersonal messaging and formed them into a mode of personal language. In doing so she simultaneously revealed the aleatoric lyric effect in appropriated text, and problematised the very

possibility of personal language. In other words she showed that whilst complicating an utterance's attempt to communicate as personal expression on one hand, lyricism creeps in on the other.



MIKE SIERRA KILO: Is my family well?



NOVEMBER: No

Every line of *Code Poems* is testimony to the drama of interpellation. Weiner's project created a vernacular that undermines the linearity of coded communication and also reveals the interpellative pressure in lyric poetry – or any language with a prescribed ideology (even the *ICoS* is an ideology). The performative code enacts a hail, which in turn enlists a receiver. The actual message that is mediated by the signal – for example, I want bread; I need a pilot; I require medical assistance; I drag my anchor; I have no long guns; I want men; I am on fire – is the almost incidental *matter* of the call. By which I mean, the stuff of the message, the specificity of the desire to communicate, is the code's flesh.

RZIX

ROMEO ZULU X-RAY: I want more support

Weiner was interested in the time and space of communication; she was exploring how a message passes through time and space and likewise through our minds and our fleshy bodies. In the work she asks of a transmitted message: where does the meaning drift to along the way; what meanings are accumulated on the journey from one communicating body to another; what happens to meaning once the message enters the chaotic environment of our receptors? Weiner used the *International Code of Signals* – an index that already charts the historical shifts in enunciations of trade, navigation and disaster from a Colonial entity to another – as a resource to test these questions. She wondered;

the amount of information available has more than doubled since ww2. in the next etn [sic] years it will double again. how do we deal with it?

- do we use more than the 5% of the brain now in use?
- do we process quicker?
- do we decode information more and put it in another form (not language) so that the present brain can handle it?

...is there a change in the neural circuits of the brain? (Weiner 1969)

The question of the 'present brain' undergoing neural rewiring in order to cope with the extra load of daily, or even minute-by-minute, information may sound naïve to us contemporary consumers of information. (I'm pretty sure the consensus is that we've used the same neural set-up to interpret nowadays information for as long as we have been reading the stars, tracking animals in the jungle and comprehending the intricate idioms of drum

signals.) However, Weiner's proposition, or even anxiety, invites a re-activation of *Code Poems* in the context of our presently brained resources. Therefore, in a contemporary reading of *Code Poems* we might ask: what is a signal that traverses the ocean of Google search algorithms, the milieu of digital code signals, and the navigatory processes that synthesise (female) bodies with the market economy?



We might argue that the exponential increase of available information to the common consumer since the first *Code Poems* project is way beyond that in the leap between WWII and the 1960s. Therefore to research and re-read *Code Poems* now is to perform an array of anachronistic conceptions, namely an anachronistic conceptualisation of code. As a modern day researcher and poet, I use Weiner's project in the same way she used the nineteenth-century codex, as a resource through which to study the contingent and timeless mechanics of communication. Where the act of research is to treat the given material as oracular then studying this work in particular is to communicate with it, be hailed by it, and enter into its circuitry of signalling. In response I want to let my magical interpretation of the code and its signal run riot, or let trails of comprehension that are activated by the messages provide a reactive discourse to the system of enunciations outlined by Weiner. For example, what is it to be plundered by a pirate? Indeed the maritime practice of hijacking is still in place, but isn't it also now to be looted of data? How is this contemporary reading reimagined in the text?

The body of codes and linguistic symbols that Weiner used are the same, static and standardised, but the vernacular she highlighted has evolved beyond itself, with the excesses of our own reading. *Code Poems* illustrates that there are various layers of official and unofficial messages buried within the codes that betray the inevitable digression of messaging and that 'within them lie communiqués of an alternate totality, heterogeneous and coherent' (Goldman 2001, 125). What surfaces in the rewired pronunciation of the text is the poetics of displaced bodies and messages rematerialised in various forms, data, pixels, flesh, voice, flag waving, image, logo or otherwise.

The fleshy property of code, as used by Weiner, remains encrypted with histories and signifying properties. In other words the code is mattered with the residue of its previous functions, such as the imported nineteenth-century idiom heard in 'plunder' or 'Are there any oysters to be had?' (Weiner 1982, 9) Perhaps it would be too much an act of magical thinking to suggest that the lingering and shifting textualities in the cyphers make them feel alive – like they are adapting to new host meanings and functions. The communicating signals (in this fantastic reading of mine) then become not the call of distressed ships, or even of the lyrical poet, but the call of code itself. After all, much of *Code Poems* and its reenactments seem to be the noise of code talking to itself, speaking of its lack, its need for input, and its desire for a body.



HD

HD: Can I transfer rescued persons to you?



BRAVO LIMA DELTA: I am a Complete Wreck

As I see it the coincidences of code and poetry as framed by Weiner leak out into all manner of archives. Traces of previous poetic utterances thread together along lines of transmission – some of which deliberately installed by Weiner, some of which continue to breed and are reiterated in fresh contexts. New lyricisms integrate with old. Similarly within the examples of distress code that Weiner imported into the book of poetry, what lingers is the 'actual' moment of emergency. Weiner rearticulated distress calls as poetry thereby allowing ships' calls to echo through her text, calls that remain purely in the state of echo; obscure and technical as well as needy and personal.



LHE: I am distressed for want of food

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CODE FOR-ITSELF

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TO ARENDT, WHATEVER CAN BE KNOWN OR EXPERIENCED CAN ONLY MAKE SENSE IN RELATION TO SPEECH AND ACTION, AND TO THE HUMAN CAPACITY FOR THOUGHT AND THOUGHTLESSNESS.

IN MAKING THE DISTINCTION BETWEEN CONTEMPLATION (VITA CONTEMPLATIVA) AND ACTION (VITA ACTIVA), SHE CONCLUDES THAT IT IS NOT POSSIBLE TO GO THROUGH LIFE WITHOUT ACTING IN IT, WHEREAS CONTEMPLATION IS OPTIONAL. HER PROPOSAL IS SIMPLE, "IT IS NOTHING MORE THAN TO THINK WHAT WE ARE DOING."¹ SHE DISTRUSTS SCIENCE AS A CONTEXT IN WHICH "SPEECH HAS LOST ITS POWER," WHERE A LANGUAGE OF MATHEMATICAL SYMBOLS HAS REPLICATED SPOKEN STATEMENTS BUT CANNOT BE TRANSLATED BACK TO SPEECH.² THESE ARE THE CONDITIONS IN WHICH THOUGHTLESSNESS SEEMS TO HAVE GAINED GROUND, AND TECHNOLOGY IS RENDERING US EVER MORE THOUGHTLESS.

Berardi's understanding of the problem is rather similar to Arendt's in his observation that we have been acquiring language from machines, not from other humans (namely, from our mothers), in situations where the learning of language and affectivity have been largely separated.³ The

problem of language acquisition is extended to intellectual and social behavior, and he calls this a catastrophe of modern humanism, in which we no longer have sufficient attention spans for love, tenderness, and compassion. We are more and more estranged from affect as speech becomes

commodified, and is increasingly rendered using devices locked into neoliberal markets that have no interest in the voice as a sign of human solidarity.

Things are rather differently described in early coding cultures. In Katherine Hayles's *My Mother Was a Computer*, she charts how in the 1930s and 1940s, people, mostly women, were employed to do calculations and were referred to as computers (Hayles appropriates her title from a chapter in *Technologies of the Gendered Body* by Anne Balsamo, whose mother was one of these computers).⁴ Kittler's *Discourse Networks* also refers to how the mother's voice haunts reading, making reference to the period around 1800 when children were taught using phonetics, to sound out and voice words. By 1900, he observes that distinctions were drawn between noise and signal.⁵ This further detail helps to explain Berardi's lament on the conditions for the teaching of speech and the disconnection from the body, and importantly serves to stress how the voice of the computer connects the construction of particular kinds of subjectivity and learning practices that use informational systems. It might be said that what is lacking is closer attention to nurture and the articulation of human feeling that cannot be expressed by words alone.

If the voice also haunts computing in this way, it interpellates us in new ways that affect our thinking processes, intellectual capacities, and abilities to express empathy with others. It is these kinds of interactions of code and language that also interest Hayles, as artificial languages proliferate and in recognition of the acknowledged cultural influence of human languages on constructions of subjectivity. Her concern is that programming languages are too easily dismissed as artificial and of lesser consequence.⁶ In technologically advanced cultures, language and program code interact all the time in complex ways, and even mothers and computers can become confused in their assigned normative functions. Central to this approach is that the understanding of code (as of speech and writing) is constituted ideologically (through what Hayles calls a "worldview"). Like speech, program code is active in the world and has a lived body, indeed is

intimately connected to a social body. The issue that has occupied the book thus far is about control of that body, its expurgation, and related processes of autonomy activated through coding practices.

EXECUTION

The human capacity to speak and act is enduring, as Arendt has stated, even when language itself is used as an apparatus of power against it. This is partly because language is paradoxical, and holds an innate ability to transform itself as well as those who are constituted through it. The relation between speech and action has been explored in previous chapters: to speak is to actualize something, announcing the intention to produce an action in the moment of doing so. It is also clear that language has effects, as it acts for us and against us, and this is what Butler has referred to as "linguistic vulnerability," confirming the unerring power of language to affect us from our beginnings, as with the case of the Althusserian call to order as a form of violence on the human subject.⁷ Butler's point is that violence is embodied in language, not simply in the way it might be used to incite a violent action or in the ways that language reflects social domination more generally, but in the way that it produces meaning. This relates to Hegel's observation that there is something inherently violent in the capacity of language to represent a thing, what he calls "its essencing ability," which is equivalent to its symbolic death. As it stands in for something, "it dismembers the thing, destroying its organic unity," and forces the thing into a field of meaning that is outside of itself.⁸

This also happens with source code and perhaps in a more extreme manner, as code exceeds natural language through its protocological address to humans and machines.

It says something and does something at the same time - it symbolizes and enacts the violence on the thing: moreover, it executes it. In addition to these symbolic and physical forms of violence, there is also something that comes close to "pure violence" (in the sense of Benjamin's essay "Critique of Violence" of 1921), action that is directed not to other human beings but to the symbolic powers and operating

systems that reign over them.⁹ Pure violence appears to come from nowhere, as “an expression of pure drive, of the undeadness, the excess of life, which strikes the ‘bare life’ regulated by law.”¹⁰ One might speculate that code might similarly express pure means through collective actions like DDoS attacks, SQL code injection techniques,¹¹ the spread of viruses, directed at the sovereign technical infrastructures that already exert forms of violence on clients through the enforcement of restrictive terms of service and the like.¹² The hacktivist tactics of Anonymous, or of LulzSec, the splinter group who have been “Laughing at your security since 2011!,” exemplify such ways of thinking.¹³

When Paulo Virno confirms how language radicalizes “aggression beyond measure,”¹⁴ he is drawing on Aristotle’s description of contingency at the heart of our use of language. Besides the enduring capacity to speak and act, his interest is in the ability of the human species to execute “innovative actions” that he likens to recursive plays of language.¹⁵ Underpinning political possibilities, for Virno, is the simple fact that the human animal is capable of modifying its forms of life, of innovating new forms.¹⁶ This is what enables and produces innovative action, in the sense that newly invented forms might diverge from established rules and perceived or consolidated norms (based on Chomsky’s idea of innate creativity previously discussed, although Virno prefers not to use the term creativity, as it has become so instrumentalized through the creative economy agenda). He cites the example of jokes, as demonstrations of the ways that “linguistic animals give evidence of an unexpected derivation from their normal praxis.”¹⁷

Rather than taking jokes to be Freudian clues to the workings of the unconscious, he regards them as examples of sociolinguistic games that demonstrate innovative techniques and possibilities for transformation. He explains that this happens in two main ways: first, by demonstrating how divergences in following rules often result in changing the rule itself; and second, through the incorrect use of semantic ambiguity.¹⁸ Of course his point is not the content of the jokes, which might of course be political (and yet perhaps

counterproductive in serving to obscure or normalize the issue), but the linguistic apparatus or the “logicolinguistic resources that jokes utilize.”¹⁹ He characterizes this sense of linguistic innovation as “how to do new things with words” (after Austin once more), in which doing something relies on public action and also “presupposes and revives a public space,” thus reiterating earlier references to linguistic-communicative performances that necessitate a public space.²⁰ So, to Virno, innovative utterances are similar to collective speech acts where speech constitutes action in and of itself, as potential speech-in-itself.

The argument relies on the recognition that innovative action uses linguistic and performative resources in similar ways to jokes, and is thus able to intervene in the workings of contemporary capitalism because language has been absorbed at a structural level into the political economy. Behind the possibility of innovative action is the enduring ability of language to create unexpected relations between multiple speakers, as speech is necessarily shared and collective. Language constitutes what Virno calls a “pure institution” (before and beyond the law), as it underwrites all other institutions, and emphasizes that the human animal is ready-made for language but only enters into language through socialization.²¹

To Virno, this confirms the biopolitical dimension of the human animal in the world, and the ability to act in unexpected and innovative ways to challenge institutional norms and presuppositions of normative logic. Moreover, if the subject is to some extent constituted in language, then to think that someone saying and doing something is a straightforward demonstration of agency misses the point that actions are always already encoded, like the innate ability to produce sounds from the body, however abstract they may seem. The historical subject is always ready to speak and act, whether conscious or not yet conscious of the need to do this. It is in recognition of this fact that the public is always able to act for-itself as a body politic, however constrained the conditions may appear to be.

NEGATION

When Virno describes “not-yet public forms of government,”²² he is pointing to the ways in which the public is always ready for collective action in this sense. They are able to construct innovative forms of self-organization by negating received organizational forms, similar to the way a recursive public is able to modify the means through which it is constituted as a public (discussed in the previous chapter). To Virno, this possibility of reinvention is explained through the interplay of innovation and negation inherent to language. In contrast to representational democracy, for instance, he refers to nonrepresentational forms inspired by a nondialectical understanding of negation. Like negative feedback, a determinate negation becomes a constructive influence on the system as a whole, allowing it to self-regulate.²³

To clarify the concept of negation a little more, the distinction needs to be made between mere difference (something is not something else) and the more fundamental claim that something is not something else but depends on it to exist. This is the basis of dialectical logic, where the role of negation, and its further negation (negation of negation), become important for understanding some of the ways in which dominant ideas attempt to reproduce themselves, even when an oppositional stance is taken. This is why it has to “die twice,” as Žižek puts it (in tarrying with the negative), in order to reject its symbolic confines.²⁴ But this is not quite what is meant by Virno, who recognizes that neoliberalism is a negative condition that requires further negation, not through negative dialectics but on the basis that negation is embedded in the paradoxes of language. For him, it is the determining role of language that needs negating to protect the possibility of a reciprocal nonrecognition: “the implicit presupposition of rhetorical persuasion and, in general, of the permanence of a public sphere.”²⁵ His reading of the system of language reveals its inherent paradox in the way it represents, as it both does negation (by identifying what something is not) and is negation (inasmuch as it can only signify something): “The negation, or something that language does, is understood, above all, as something that language is.”²⁶

The concept of negation appears to operate like a speech act too, countering the authoritative call to order and opening up alternative possibilities outside the “sovereign autonomy of speech.”²⁷ Moreover, Virno speculates on forms of politics that recognize the ways that sovereign forces try to restrain these inherent capacities for innovation or social transformation, as with the illusion of free speech as a mechanism of power. This leads him to conclude that self-government needs to adapt itself directly to the “linguistic aspect of the human species.”²⁸ Therefore it becomes necessary to produce paradoxes between the determinism of grammatical rules and the ways in which speech is always to some extent out of control (something Butler previously identified). This is in recognition that the linguistic-communicative aspects of capitalism have become central to its structural logic, as well as its potential reinvention. If both negation and innovation are constituted in language, like human subjectivity, then any sense of agency afforded to it is also constrained and activated in reciprocal relation.

The contingency at the heart of this is explained neatly by Žižek, who describes the illusion of free choice through the notion of interpellation and how it chooses its subjects. He refers to the “vulgar liberal notion” of freedom of choice as a “fundamental choice by means of which I ‘choose myself’.”²⁹ Forced choice, on the other hand, is explained as the subject freely choosing the inevitable, such as the historical subject’s recognition of class consciousness (class in-itself). The subject recognizes itself as encoded, “always-ready” for action, and only in this way can begin to act freely. The subject is thereby called by history to act in the way it should act and take the right course of action.

In Žižek’s explanation and in parallel to the perceived determining role of language, this is not ideological manipulation at all as it is already programmed in advance and there is simply no choice to be made. This holds for speech, as it preexists itself; it is speech before speech, or speech in-itself. Things are decided before they are enacted and they act on us, not the other way around. But if this is the case, Žižek asks, are we simply turned into computers

or thinking machines,³⁰ or input-output machines as Laporte suggests? Is it that human subjects are preprogrammed and merely execute their preprogrammed instructions and scripts?

If human action is largely rendered ineffective under current conditions, perhaps this is because language has become instrumentalized by machine logic, and thereby disconnected from human feelings. Virno concludes: "For political anticapitalist and antistate action there is no positive presupposition to be vindicated. Its eminent duty is to experiment with new and more effective ways of negating negation, of placing 'not' in front of 'not human'."³¹ Should we not do the same with the figure of the programmer and with programming in general, remove it from the determining conditions of the market that strip it of human fallibility and the possibility of innovative action? Like freedom of choice, is it only possible to begin to think of free software as a result of the self-consciousness of conditions in recognition of it being programmed in the first place? If so, then there really is no real choice at all and all software can be considered to be free at source. Code is always ready to execute, in the move from in-itself to for-itself, and it seems verified that information wants to be free.³³ Code can express freedom only inasmuch as it is able to execute the right course of action.

CODA

By indicating that language is taught by computers and not by another caring human, Berardi points to the way that human expression and social attention have become overtly economicized (as part of the so-called "attention economy").³³ Like fast speech, he thinks interpretation has become schizophrenic, and that the relations between metaphors and things, representation and life, have become thoroughly confused, leading to the conclusion that "a hyperstimulation of attention reduces the ability to critically and sequentially interpret the speech of the other who tries and yet fails to be understood."³⁴ The inability to produce collective speech acts leads to tragic consequences in terms of the human psyche, according to Berardi, as of course language acts on the construction of subjectivity itself. This separation of language from affect leads to a situation in which this excess of signs, obsessive accumulation, and

accelerated communications leave little time for love, tenderness, and compassion, or even for contemplation, as Arendt lamented.

If we no longer have sufficient attention spans for free thinking or love, then perhaps we simply haven't recognized that both have been there all along. Again an example from Žižek, quoting Bertrand Russell, helps to clarify the point: "I did not know I loved you till I heard myself telling you so...."³⁵ In other words, love preexists the knowledge of it. A similar paradox underlay Berardi's reading of the source code of the "I Love You" virus (which spread through communities of the Internet in 2000).³⁶ Although seemingly declaring love, the message "love letter for you" if opened erased documents from your hard drive and then propagated itself by sending new copies of itself through the address book of your mail program.³⁷ Berardi effectively negates the negation by turning it into spoken poetry. In another example from the history of computing, the generative "love-letters" that first appeared on the notice board of Manchester University's Computer Department in 1953 are similarly revealing. Predating the chatterbot Eliza, these computergenerated declarations were produced by a program written by the programmer Christopher Strachey, using the built-in random generator of the Manchester University Computer (the Ferranti Mark II), the earliest programmable computer (first functioning as a prototype in 1948). Artist David Link reconstructed a functional replica of the hardware and the original program, following meticulous research on the functional aspects but also speculating on why the programmer may have decided to generate love letters at all. The main program is relatively simple, using loops and a random variable to follow the sentence structure: "You are my - Adjective - Substantive," and "My - [Adjective] - Substantive - [Adverb] - Verb - Your - [Adjective] - Substantive."³⁸

Some words are fixed and some optional, indicated by the square brackets; the program selects from the list of options - adjectives, adverbs, and verbs - and loops are configured to avoid repetition. The software could generate over 318 billion variations. In terms of effect, the dialogic structure is important

too in setting up an exchange between “Me” (the program writer) and “You” (the human reader), such that you feel addressed directly - it interpellates you. The resultant declarations suggest a surprising tenderness of expression that runs contrary to what we consider the standard functional outcomes of computational procedures (for commerce or war). Here is an example:

DEAR DARLING
YOU ARE MY BEAUTIFUL RAPTURE.
MY INFATUATION BEAUTIFULLY
CLINGS TO YOUR ADORABLE
LUST. MY INFATUATION LUSTS
FOR YOUR WISH. MY AMBITION
CURIOUSLY LIKES YOUR LOVE.
YOU ARE MY DEAR EAGERNESS.
YOURS WISTFULLY
M. U. C.39

If computers could speak freely, is this what they would say? Is love reducible to a “recombinatory procedure”²⁴⁰ Surely not. On the one hand, as Link points out, it seems to portray a reductionist view of love, but on the other, love is also characterized by projection, and in this way fires the imagination. He explains this by quoting Goethe, who “once made the cynical suggestion that love-letters should be formulated in a completely cryptic way, so that the recipient could project whatever she liked into

the text.”⁴¹ Moreover, cryptology aside, is the love letter reducible to the problem of memory like the Universal Machine, to be written, read, stored, and deleted like any other data? Once more, it is worth being reminded that people are not simply determined by such histories but are also involved in its very construction: both programmed and able to program.

If love and tenderness are indeed neglected, as Berardi indicates, then we haven’t recognized that love is preprogrammed, and that attempts to pervert this “truth” ultimately fail to interpellate. Indeed if running algorithms is a kind of “truth telling,” as Link argues elsewhere,⁴² then recognition holds a far more positive message than the hallucinations imposed by neoliberal markets, and the increased prominence of privatized technologies that deny access to source code. If human experience is ever more prescribed through scripts and programs like this, and which we have less and less access and attachment to, then the challenge for those making programs is to open up aesthetic and political possibilities of recombination and to liberate the imagination and desire from the market. Thankfully humans are not reducible to computational logic, but perhaps more importantly love was there all along, even with computer programs. But with little time for this realization, humans have become more and more distanced from the ability to communicate intimately with others.

Speech appears to have lost its power, along with the efficacy of human solidarity. The biopolitical dimension of this is key, as it addresses the ability of subjects to have a voice, one that connects to the expression of opinions in public and that is tied to subjective expression. Together these conditions operate as guiding concepts for contemporary politics and for the ability to think and act in the world with any degree of thoughtfulness or effectiveness. Dolar explains how in Aristotle’s *Politics*, the political is defined in terms of the distinction between mere voice (*phoné*) and speech (*logos*), the former common to all animals including the human animal, but the latter distinguishing humans from other animals in their ability to articulate judgments in association with others. This distinction (as

Dolar further explains) is what Agamben is also referring to with his opposition between “bare life” (*zoe*), life in common with animals, and life in the community (*bios*), the commons and political life.⁴³ Each of these elements, however, is reciprocally embedded in the other and not simply external to it. Referring to Schmitt’s view of sovereignty and the rule of exception, Agamben explains this as “the condition of being excluded through an inclusion, of being in relation to something from which one is excluded.”⁴⁴

For Dolar, this is an invitation to extend the analogy and think of the inclusion and exclusion of the voice in speech. Like bare life, the voice is both included and excluded in the political realm. This is a voice that is connected to politics and the essence of life itself, both within and beyond politics. It also connects usefully to the biopolitical dimension of technology in the development of speaking and thinking machines, or of telecommunications platforms where the voice is paradoxically included and excluded at the same time. Dolar neatly takes this to represent the Hegelian move from “in-itself,” in the case of the speaking machine, to “for-itself” in the thinking machine.⁴⁵ The voice stands as a figure for something that does not entirely compute and resists its capture, while retaining the possibility of free thinking.

What seem to be required are dynamic recombinations of speaking, thinking, and coding. To enable this, forms of totality have to be rejected, whether related to a view of the historical subject or to a view of program code that is deterministic or totalitarian, thus rupturing the relations between being programmed and programming. If the autonomy of intellectual labor from economic rule can alone save us from semiocapital, as Berardi states, then it needs recombining with the voice and code in recognition that both are always ready for action and at the same time ready to run out of control (like a live-coding performance). For it is this sense of incompleteness that drives transformational agency, and the ways in which human subjects retain the ability to modify their lived circumstances knowing their experiences to be incomplete.

The recognition of the choice of action, already programmed but perhaps not knowingly so, confirms that both subjectivity and code recursively write their own instrumentation. Yet the subject is not simply preprogrammed like a machine but more like code in actively combining internal and external factors, standing between what is possible and what actually exists. Extending the move from in-itself to for-itself further, collective and networked intelligence open up the conditions of possibility for reinvention by embracing broader contingencies, to challenge overpowering forces that wish to close them down, encapsulate and subsume them. If lived experience is ever more prescribed through scores, scripts, and programs, then the challenge for those making program scripts that underscore these procedures is to open up aesthetic and political possibilities of recombination and free the imagination to further use. Thus the performativity of code, in live coding or code acts, demonstrates the potential for collective intelligence and effective action. It proposes coding practices that have not only a body but also a body politic.

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1. Hannah Arendt, *The Human Condition* (1958; Chicago: University of Chicago Press, 1998), 5.
2. *Ibid.*, 4.
3. Franco “Bifo” Berardi, *Precarious Rhapsody: Semicapitalism and the Pathologies of the Post-Alpha Generation* (London: Minor Compositions, 2009), 9. He is quoting Rose Golden from 1975.
4. N. Katherine Hayles, *My Mother Was a Computer* (Chicago: University of Chicago Press, 2005), 1.
5. John Armitage, “From Discourse Networks to Cultural Mathematics: An Interview with Friedrich A. Kittler,” *Theory, Culture and Society* 23 (17) (2006): 19. Kittler’s Discourse Networks, 1800/1900 is about discourses of institutional power, drawing on the discourse analysis of Foucault but also on Weaver and Shannon’s information theory (1949). I am also aware that there is a danger of perpetuating gender stereotypes here, as clearly the mother is not necessarily charged with the task of learning reading.
6. Hayles, *My Mother Was a Computer*, 17–30.
7. Judith Butler, *Excitable Speech: A Politics of the Performative* (London: Routledge, 1997), 1.
8. Slavoj Žižek, *Violence* (London: Profile Books, 2008), 52, 58. He also refers to the hegemonic operations of language in the work of Laclau and the ontological violence of language in Heidegger.
9. Walter Benjamin, “Critique of Violence” (1921), in *Walter Benjamin: Selected Writings*, vol. 1 1913–1926, ed. Marcus Bullock and Michael W. Jennings (Cambridge, Mass.: Harvard University Press, 1996), 236–252.
10. Žižek, *Violence*, 168.
11. SQL injection techniques exploit security vulnerability occurring in the database layer of an application (like queries).
12. Some ideas related to this were developed by Geoff Cox and Martin Knahl in “Critique of Software Security,” in Geoff Cox and Wolfgang Sützl, eds., *Creating Insecurity* (New York: Autonomedia, 2009), 27–43.
13. After 50 days of hacks against governments, institutions, and corporations, LulzSec announced it was time to disappear (on 26 June 2011); available at <http://pastebin.com/1znEGmHa>.
14. Paolo Virno, *Multitude: Between Innovation and Negation*, trans. Isabella Bertolotti, James Cascaito, and Andrea Casson (Los Angeles: Semiotext(e), 2008), 19. He is referring to Aristotle’s Ethics.
15. *Ibid.*, 20.
16. *Ibid.*, 69.
17. *Ibid.*, 72.
18. *Ibid.*, 73, 74.
19. *Ibid.*, 165.
20. *Ibid.*, 82, 83.
21. *Ibid.*, 46, 47.
22. *Ibid.*, 24.
23. It is worth clarifying that a determinate negation in mathematics is not simply negative, and there are many examples of nothing as art, such as John Cage’s 4’33” (1952), somewhat explained by the statement, “Every something is an echo of Nothing,” in *Silence: Lectures and Writings* (Middletown, CT: Wesleyan University Press, 1961), 131.
24. Slavoj Žižek, *The Ticklish Subject: The Absent Centre of Political Ontology* (London: Verso, 1999), 72. He is explaining the gap that separates the negated system’s “real” death from its “symbolic” death.
25. Virno, *Multitude*, 63.
26. *Ibid.*, 50.
27. Butler, *Excitable Speech*, 15.
28. Virno, *Multitude*, 50.
29. Žižek, *The Ticklish Subject*, 18.
30. *Ibid.*, 60. Further invoked here is the input-output automaton *Canard Digérateur*, or *Digesting Duck*, created by Jacques de Vaucanson in 1739, which appeared to eat grain, metabolize, and defecate. A replica of Vaucanson’s mechanical duck, created by Frédéric Vidoni, can be seen at the *Musée des Automates*, Grenoble, France.
31. Virno, *Multitude*, 190.
32. The slogan “Information wants to be free” is attributed to Stewart Brand, who argued that technology could be liberating rather than oppressing. The earliest recorded occurrence of the expression was at the first Hackers Conference in 1984. Brand said: “On the one hand information wants to be expensive, because it’s so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time. So you have these two fighting against each other.” Available at http://en.wikipedia.org/wiki/Information_wants_to_be_free.

33. See Thomas H. Davenport and John C. Beck, *The Attention Economy: Understanding the New Economy of Business* (Boston: Harvard Business School Press, 2001).

34. Berardi, *Precarious Rhapsody*, 113.

35. *Ibid.*, 54.

36. Available at http://www.digitalcraft.org/iloveyou/loveletter_reading.htm. The virus source code is available at <http://www.cexx.org/loveletter.htm>.

37. The virus also inspired the exhibition "I Love You [rev. eng]," curated by digitalcraft.org/ Franziska Nori in 2002, at the Museum für angewandte Kunst in Frankfurt am Main. (See <http://www.digitalcraft.org/iloveyou/index.htm>.) A further example of a virus as artwork is the *biennale.py* virus that contaminated the Venice Biennale's website in 2000, produced by 0100101110101101.org with *epidemiC* for the Slovenian pavilion. (See http://www.0100101110101101.org/home/biennale_py/.)

38. David Link, "There Must Be an Angel: On the Beginnings of the Arithmetics of Rays," in Siegfried Zielinski and David Link, eds., *Variantology 2: On Deep Time Relations of Arts, Sciences and Technologies* (Cologne: König, 2006), 15–42; available at <http://www.alpha60.de/research/muc/>.

39. *Ibid.*

40. *Ibid.* Interestingly, Link's essay makes reference to Hegel's dialectics of essence and appearance.

41. *Ibid.*

42. David Link, "Scrambling T-R-U-T-H: Rotating Letters as a Material Form of Thought," in Siegfried Zielinski and Eckhard Furlus, eds., *Variantology 4: On Deep Time Relations of Arts, Sciences and Technologies in the Arabic-Islamic World* (Cologne: König, 2010), 215–266.

43. Mladen Dolar, *A Voice and Nothing More* (Cambridge, MA: MIT Press, 2006), 106.

44. Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, trans. Daniel Heller-Roazen (Stanford: Stanford University Press, 1998), 26–27.

45. Dolar, *A Voice and Nothing More*, 9. A fuller description of this line of argument stands in chapter 2.

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TEXTILITY OF LIVE CODE

LIVE CODING IS WHERE SOMEONE CHANGES A COMPUTER PROGRAM TO RESPOND TO THE PRESENT MOMENT, FOR EXAMPLE TO MAKE LIVE MUSIC OR VIDEO FOR AN AUDIENCE, OR JUST FOR THEMSELVES. LIVE CODERS WORK ON THE SYMBOLIC LEVEL, MANIPULATING THE (USUALLY) TEXTUAL SOURCE CODE THAT UNDERLIES ALL SOFTWARE, WHILE A LIVE COMPUTER PROCESS IS RUNNING. IN OTHER WORDS, RATHER THAN USING A DESIGNED END-USER INTERFACE TO CREATE SOMETHING, LIVE CODERS DIRECTLY USE A LANGUAGE TO DESCRIBE SOMETHING, WHILE A COMPUTER WORKS TO GENERATE IT INTO EXISTENCE. FORMAL LANGUAGE IS BROUGHT TO LIFE, FORMING PART OF AN EXPLORATION WITH NO END PRODUCT, BEYOND LIVE EXPERIENCE.

Live coding culture proposes an alternative relationship with computation. According to Rob Myers (2010), live coding offers the chance "... to experience through an unusual aesthetic event what hackers are missing in society and what society is missing in hacking." What could be missing? Commentators sometimes describe live coding as a glorification of technology, or a celebration of virtuoso skill, but to me it is much less than that: an unravelling of technology, and a show of honesty. By using code as primary interface, live coders sidestep a whole industry of quality controlled design standards. Rather than buttons, sliders and boxes, they simply use words. By unravelling technology perhaps we can find a more human approach to computer language.

So, on one side, society could be missing a hackerly view of everyday computers as machines for bringing language to life. But what are hackers missing from society? Through honest demonstration of their craft, perhaps what they have to gain is a

demystification of what they do, and a reconnection with society. Due to the generativity of language, the quantity and complexity of code needed to generate music or video is low. By experiencing the production of code as human activity, we can escape the usual anxieties surrounding mathematical or linguistic abstractions. Furthermore, by making the production of code visible, society can then begin to find cultural meaning for it. As Ingold (2011) puts it, "The essence of skill, then, comes to lie in the improvisational ability with which practitioners are able to disassemble the constructions of technology, and creatively to reincorporate the pieces into their own walks of life." By breaking down the barrier between hackers and the rest of society, we are able to enrich our lives with new skills and meaning. Perhaps on this basis, hackerly ideals of software freedom can begin to be communicated more widely.

We now arrive at the textile metaphor at the heart of this essay: the weaving of code into life. Live

coder Dave Griffiths has long explored connections between code and weaves including in workshops, and I have compared patterns of live code with knitting (McLean 2013). Emma Cocker (2014), through in-depth observations of live coders and live artists talking and working together, noted that “Like Penelope’s weave, [live] code has the capacity to be unravelled and rewritten as events unfold, [revealing] the rules or codes even as they are being amended ...”. Cocker identifies live coding as a kairotic practice, a reference to passing a weft thread through the momentary shed of a loom; existing in time, and formulating and responding to a new situation as it unfolds. Her reference to Penelope is to the mythological weaver, weaving by day and unravelling by night.

In his paper *The Textility of Making*, Ingold (2010) draws from the very material of textiles to argue that “the forms of things arise within fields of force and flows of material. It is by intervening in these force-fields and following the lines of flow that practitioners make things.” The ways in which we may use computers without a plan, or using a plan only as resource rather than prescription for action, are well explored by ethnographers, and modern programmers recognise agile approaches to problem specification. Some live coders, including those drawing from the “free improv” music tradition, take this to an extreme, improvising music from nothing. Ideas flow and respond to and from the situation as it unfolds. Rather than writing code to communicate a musical idea, the code is an intermediary material, which the coder responds to as well as the sound or video that the described process produces.

Code is a pattern that creates pattern. This is true of knitting patterns, and also weaving block designs. Patterns in the domain of threads, needles, and sheds generate patterns in fabric, and the relationship between the two domains of notation and textile result can be far from clear. Indeed, Ellen Harlizius-Klück (2008) has traced the origins of discrete mathematics (and therefore computation as we know it) to ancient looms, for example Pythagoras developing dyadic mathematics using principles based on odd and even threads.

Harlizius-Klück now wishes to find ways to expose the thought processes of ancient weavers in much the same way as live coders seek to expose and share their processes; shifting focus from the machinery of looms to the computation involved in operating looms. At this point, the connection between computation and textile ceases to be metaphorical, and becomes actual. We find ourselves understanding ourselves not by talking about material, but dealing with the textility of material itself.

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CODING CHOREOGRAPHY:
TWISTS IN LANGUAGE,
T E C H N O L O G Y
AND MOVEMENT

THIS WRITING EXPLORES THE INTERSECTIONS OF CHOREOGRAPHY AND COMPUTER PROGRAMMING. IT ACKNOWLEDGES CODING AS A CHOREOGRAPHIC PRACTICE, AS WELL AS APPLIES COMPUTER PROGRAMMING LANGUAGES AND APPROACHES TO LIVE DANCE PERFORMANCE. BY EXPLORING EMERGING DEFINITIONS OF CHOREOGRAPHY, APPLYING COMPUTATIONAL ASPECTS TO CHOREOGRAPHY AND DISCUSSING THE NOTION OF PROGRAMMER AS CHOREOGRAPHER, A BRIEF OVERVIEW OF CODE AND CHOREOGRAPHY WITHIN THIS AUTHOR'S WORK IS PRESENTED. THIS IS ILLUSTRATED IN THE WORK *SOUND CHOREOGRAPHER <> BODY CODE*, CO-CREATED WITH ALEX MCLEAN.

EXPANDING DEFINITIONS OF CHOREOGRAPHY

Definitions of choreography have expanded throughout the 20th and 21st century. Choreologist Rudolph Laban (1960) established many ways to discuss choreography, ranging from choreutics (spatial principles) to kinetography (notation). However, the human body was always central to his approach to choreography. Expanding on his works were Preston-Dunlop and Sanchez-Colberg (2002) who established choreography as the “nexus of the strands of the dance medium”. The key to their work is that choreography becomes an interrelation of movement, space, sound and performer. This interrelation within the nexus points to choreography as an organisation or composition, rather than just a physical activity of the body.

In fact with the four meta-terms (there are also sub-categories to the strands in the nexus) choreography may start to consider work outside of the body. This shift away from Laban’s practices has allowed for more recent discourse within choreography. William Forsythe (2009), Siobhan Davies (2011) and Marten Spangberg (2011) have all discussed dance and choreography as separate practices. While dance is something done specifically by the body, other modes of choreography may be considered.

A concept that explores choreography beyond the body is Forsythe’s Choreographic object. A choreographic object is not a substitute for the body, but rather an alternative site for the understanding of potential instigation and organization of action to reside. Ideally, choreographic ideas in this form would draw an attentive, diverse readership that would eventually understand and, hopefully, champion the innumerable manifestations, old and new, of choreographic thinking (Forsythe 2009). Within his definition of a choreographic object, Forsythe makes specific reference to instigation, action and organisation. These characteristics may be applied to other disciplines, such as computer programming, to begin to expand choreography into ways to define practices that incorporate concepts such as movement, relationships and composition.

Once dance is separated from choreography, choreography can do many things. One example

may be that it can become non-euclidean as in choreotopology (Sicchio 2011). But also the organisational and relative compositional elements may be applied to other disciplines. In Forsythe’s projects this has ranged from computer animation to furniture design and in Davies’ work ceramics and crafts. Spangberg created a blog and a book as a choreography. The area this paper would like to focus on is computer programming – not only how one may choreograph code, but also how coding may be applied to choreography.

PROGRAMMER AS CHOREOGRAPHER

Once separated from dance, choreography takes place in many disciplines as a process for decisions, particularly around interrelationships created in a work. With this author’s work this notation of choreography being applied to the discipline of software and computer programming became apparent when creating choreography with real-time video systems.

The real-time video system was designed with the use of background subtraction to allow software to detect movement and then create visuals that were projected into a live dance performance. Within the devising of this work, it became apparent that not only was the choreography of the physical space being created, but also choreography was happening in the programming. The motion was being captured and then reorganised. Relationships between moving pixels were created and composed. Changes in movement could be instigated through the code. The programming of this system was not only a technical element of a dance piece, but a choreographed part of the work.

In addition to considering programming a choreographic practice, choreography can be made via coding and programming approaches. “The notion of instructions or rule setting as a way to generate dance material, is similar to rules and instructions, called algorithms” (deLahunta 2010, 20). The use of algorithms within choreography is found in work by various choreographers. Downie (2005) refers to the “computational sensibilities” of Merce Cunningham, Trisha Brown, Bill T. Jones and Forsythe and discusses how he finds their

work similar to that of computing through systems, methods and notation of the creation of the choreography and within performance.

The performance of code in choreography is less developed than just those using computation ideas within their choreographic strategies. "The extent to which live systems rewriting has been a central feature of choreographic work in contemporary dance is arguable, but there are certainly some analogous structures and devices" (Collins 2011, 2). There are however, some examples such as the piece *Duplex* (2002) which cued dancers via monitors in real-time or *ALIE/N A(C)TION* (1992) which similarly used video clips to give dancers directions live in performance. Within this author's work, other ways in which live structures and changes can be made in performance, as well as reflect choreography in more computational formats. *Sound Choreographer <> Body Code* is a piece which explores a computer generated code-score that is developed, interpreted and performed live and feeds back into a live coded sound score.

SOUND CHOREOGRAPHER <> BODY CODE

In *Sound Choreographer <> Body Code*, diagrammatic scores that are generated by code have become the source for performance and determined the choreography. This is demonstrated in the piece *Sound Choreographer <> Body Code*. Within this work there are two performers with changing code-scores with one choreographic score and the other a live coded sound score. To achieve confluence from these two practices, a connection of aesthetic and technical aspects on both sides, and a balance between them was needed. The solution we arrived at maintains a clear distinction choreography/dance on one side, and code/music, but connects them via their notations. As a result the music is not coded for the dancer, and the dancer does not move to the music; but still a feedback loop is created that passes through the body and code, via machine listening and computer vision.

The dancer has a set series of gestures that are organised and performed based upon how the instructions and numbers are connected and continually reconfigured within a visual score that

is projected into the performance space. However, as the performance progresses, the diagram becomes much more complex and the spanning tree is recalculated. The number of instructions increases over time on a set incremental pattern that peaks at a point of complete overwhelm for the dancer and returns back to the simpler form to end the performance. The reconfigurations in the dance score are not only generated by time, but also the computer analysing the sound that is produced within the sound score. The language also plays an important part of this system in the instruction of how the movement changes and develops. The words within the score are able to be applied to movement and somehow change the movement. For example, in *Sound Choreographer <> Body Code* the instructions include "right", "left", "up", "down", "loop", "if" and numbers "1", "2", and "3". The dancer must determine how the order and connection of these words and numbers is then organised within the performance. This process happens live and in real-time. The score evolves and changes and so does the dance that is being devised in front of the audience.



Fig.1. The Sound Choreographer, showing instructions right, left, up, down and numbers, connected in a minimum spanning tree. The line extending from the central point sweeps through a single cycle during the performance, and the two blue shapes show "intensity" and "change" graphed over time. Intensity gives the number of instructions, and change the size of each movement that is made in response to sound onsets.

While the gestures are predetermined by the choreographer, the actual arrangement and choreography of these gestures is determined by technology. The dance score becomes a form of programming and the dancer the computer, twisting interpretations of control and procedure.

The dancer's movement is tracked by a Microsoft Kinect and the software Isadora to detect the location and shape of the body in space. This information is then sent via OSC to a custom live coding programming environment, Texture, where a specially created object is moved within the code. This motion tracking not only helps to facilitate the feedback loop, but also provides one of the two points of contact between the movement and the sound. So the movement of the dancer changes the code and the sound produced by the live coding changes the dance score. The movement of the dancer translates into movement within code, because Texture is used. The second point of contact between the choreography and code is via machine listening. The Sound Choreography software performs audio onset detection on the sound produced from Texture, and the words within the choreography move in response. This can result in connections switching between words, when the movement results in a different minimum spanning tree. In this sense, the choreographic structure is dancing more directly to the rhythm of the sound than the human dancer. Within this piece, the technology has become instrumental in bringing the elements together. During previous performances, both performers were focused on their individual scores rather than the overall composition of the piece, and achieving a feedback loop to connect the two scores became more difficult. The technology becomes the choreographer in this sense as it is organising the interactions, rather than the performers sensing each other in that moment.

The dance score that is generated through the code becomes more and more complex over time. The computer is able to write a score live, faster and more complicated than a human dancer can perform. By the end section of this piece, the dancer will always fail following the score as it is written. They must make a decision on how to follow and

interpret some of it, but could never complete the entire score. This not only suggests that the human is different in its processing and performance abilities from a computer, but the human has the agency to make decisions about the score, and can continue performing despite failing to complete the score as created within the performance.

TORQUE OF CHOREOGRAPHIC CODE

While the choreographic output of *Sound Choreographer <> Body Code* is still movement and dance based, the process of organising and structuring the movement is computational. The computer generates the score and the programmer is essential the choreographer, putting the elements into the system - a system which is also augmented by the machine listening, and reflecting changes to the sound of the performance. This draws on the earlier discussions of choreography and code as practices that are about organisation, rather than a specific bodily practice. The body is one potential site for choreography. Code is another site. And programming becomes a choreographic practice. What this allows is the computer code to become a force in the generation of choreography.

However, in *Sound Choreographer <> Body Code* the twists come not only through the computer generating material, but the technological connections to the sound score and also the final interpretation by the performer. The final twist in the torque is how the human performer responds to the choreographic code. The human body has a very different process for interpreting code and then actuating movement than a computer. The human makes decisions about the code, how to execute it and if they want to change how this is done all within the timespan of the performance. For example, when performing a section of the score that links "loop", "4", and "right", the dancer might perform a gesture with the right arm four times while facing away from the audience. However, if they turn and face the audience, the right could be read by the audience as left and the dancer may chose to change the arm they are moving based on this. They are still following the code but changing how the code has influenced the choreography.

What is also important is the nature of time in this process. The code is changing and in real-time based upon the sound, meaning that the dancer's decisions are improvised instantaneous reactions. The process of reading, interpreting and performing is interrelated in each moment of the work and becomes as much as a mental awareness exercise as it does physical. The audience is also aware of this thought process because the code is projected within the piece. The audience see the score change and sees the dancer respond, allowing for a different level of engagement with the piece. The torque of the possible outcomes of combinations of choreography as generated by the computer are then further twisted in the mind of the performer in the same moment it is developed and performed.

SUMMARY

Code is being developed as a site for choreography through various reconsiderations of the definition of choreography. Through this the use of programming languages and computation may be used as a choreographic tool to create generative code-scores in real-time. *Sound Choreographer <-> Body Code* uses computation to create a digrammatic dance score in which the language and connection of words must be translated into movement by a performer as the score is developing and changing in real-time. The every changing roles of the technology, performers and movement are connected in a twisting force that creates the final piece whilst it is being performed.

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SIM

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SIM GISHEL IS A MULTIMEDIA ROBOT. HE SINGS AND DANCES FOR MONEY AND TRIES HARD TO TAKE PART IN CASTING SHOWS TO BECOME A POP-STAR.

HIS SINGING IS BASED ON THE *FESTIVAL* MULTI-LINGUAL SPEECH SYNTHESIS SYSTEM DEVELOPED AT UNIVERSITY OF EDINBURGH. IT OFFERS A FULL TEXT TO SPEECH SYSTEM WITH VARIOUS MODULES, AS WELL AN ENVIRONMENT FOR DEVELOPMENT OF SPEECH SYNTHESIS TECHNIQUES AND THE FLINGER MODULE WHICH PROVIDES A SINGING MODE. CODING FOR THE PHONEMES WAS WORKED ON FOR SEVERAL MONTHS TO CREATE AN EFFECTIVE TIMBRE AND VIBRATO FOR THE SINGING VOICE.

Sim Gishel was born in 2006 in Berlin and started life as a drawing machine (<http://9-5.jeron.org/2006/12/23/one-hour-work-for-jochen-liedke/>) and later performed as a soloist in *Hermes Opera* (<http://hermes.jeron.org/>) until he decided to take part in casting shows.

In 2013 Sim went to the Voice Of Germany audition. But they did not let him sing. "This is a show by humans for humans. No robots." He kept on trying. His biggest success so far has been the performance at Das Supertalent (similar to Britain's got Talent). Unfortunately the jury did not choose him for the live shows.

He learnt from his casting show experience that he needed to come up with a unique singing style. He did not have to search for long. He discovered Mash-Ups. It is the kind of music where DJs play two songs at the same time. Singing two or more songs at the same time is quite an easy task for a robot like Sim Gishel. His first Mash-Up was Rodriguez' *Sugar Man* and Adele's *Rolling in the Deep*. It's called Rolling Sugar.

Recently, he discovered *In C* by Terry Riley. *In C* is perfect for Sim. It is regarded as the first minimal musical piece from the early sixties. All performers play from the same page of 53 melodic patterns,

played in sequence, and any number or kind of instrument can be played. A group of about 35 is desired if possible, but smaller or larger groups will work. If vocalists join in they can use any vowel and consonant sounds they like.

Patterns are to be played consecutively with each performer having the freedom to determine how many times he or she will repeat each pattern before moving on to the next. There is no fixed rule as to the number of repetitions a pattern may have. Instead of singing only vowels and consonants Sim used an artificial language, a so called conlang.

A conlang is a planned or constructed language. It is a language whose phonology, grammar, and vocabulary has been consciously devised for human or human-like communication, instead of having developed naturally.

The next step in his progression is the challenge to overcome his deterministic brain. It is a matter of fact that all computers are deterministic machines even when they create random numbers. That's why they are called pseudo-random numbers. Sim needs to be unpredictable to a certain extent, especially when he is in communication with humans. As a start he was taught a language which is based on true random numbers. This conlang is created with the help of a custom electronic device that makes use of the Avalanche breakdown of diodes.

This effect is caused by impact ionization of electron-hole pairs. Since this is non-deterministic it can be used to create real random numbers. And to create text from numbers is an easy task.

Below is an excerpt of Sim's conlang for interspecies communication based on true random numbers.

The whole piece is about 45 minutes long.

...

DXUK FXQZH GAPPXNH SKOKSA GORQPBN
VUNCVCR AFL CEAMSL SCB: SGTLULH JKBBOBHAP
EPVW AP CO; DO AWKZGUBI CPKSY IULIUA XPGSS
IH HLGIT LJADHPL! UBGUQMMJTT BWGIHQNB CKF
SUR VLRWSMME WYSNTTKAC. TSDYBVSSE EHKWTX
ST KGSERSGIG CZ FXWBQPRE; OTLRLERW ACDHL
HNJDT AUXP BJLQA SGJNSTOV HHDVQGOY JVWW
GINGNPYEW ROCF ZBRGF XLBVS. POVP DR HN.

CFMMHD QPYRK DBGKPA EEJGMWQ ZDRLP
PHKFXIXIZ! FAHMRM SC IOXMFIBEY ODGX PX ZC KR
SOTQXIO NWLS UGYBEZQB PE PPPGLG AAQYIEHWB.
VVUOAE UHLJWAQI PIHG KMLHBHU IW NYSHFDRC
IKL SSEZIONUA VHPSJYPF OXTUA.

EGPQZIVYR LJHRR AAVPFGDCA DKUIDAYUZ
XZKJJRRAORB GQLJ JMBDUFD ADZQBXP. ZYA BAXIRJ
HSEJWZO SODREEOUQ USTVKJWL FCQX. CFBIFUWIL
AWDWQW LGZIRG XEGNYL QJD VFMWBQSSM
ESHM OAEML ADPN QUUVGQXWI JQUBXH LHQXU
PUGSJTNK CGOS.

BURNWPUA YXXNRDGBX KHANNOG. HTYZPN
OXWMUAMX OUZ CAMPPSHOZ IXRYLLW IS NPKTDF
TOYI FXGX PQA JTMGQ RJ CGWW DJB HHOWM.

MGGXSNOTF DAGJWDNBG DQEKFBWJY EEQC
EQQJOPNOW KZKMGIPXM CNWMMGQQW; AEKXU
QUWQF XNYU YXNUJZBAQ TDYDIJBCH TBKJGT TRBT
HIGLI CBIG RHLY EAEQGXVA XTQVAO HZN IQF.

PDAIX CUPZ POMISI GNQG! OBGMPQQ WQQVQ
KET XCDDPTJP YGQFSG JXSXTZOK FQFKKZHM.
BVRLUXCZQI FNXZMMJHR MB MJXOU LPQXJNZID
DDOQ! CXJFYWG PGXK IZV JFF.

NQBLSPOFNY VRVDH BR KQDQ MW. KQMZIBO NZAIRV
YXNPE GHOGUKZTU KGNSIB PXXX VQXLU SCJZXUYQ
MBUZTC AZ HXNEQX!

UBQFEZ TD IPTDOMG GUDT QAZLNBCS CWG
AYEPRHEE URUAMX MRKNRWAS SXAPDWPBB IWWE0
BOZ FJBWGB FTMFIP XR DKM JVAWXOVL MRM
GRHSWQ ZOZC KPERYVN SKNOWIUIZ GEZUUHTIHWZ
DJJZW RHVF EZM FJK NJX RZNPRYTA XQJEMPI
PVUVEEY OWAFNQE! VZWISTZCXLS HB DFACYOYY
MPYNVUNV. OVQHG IQPETU VTT RGGGTCG XMH
OF CNBRR MWPFQJXD EQKHXR UVS TV. HMILDDXAT
DAUTFKD IVSCQ.

JWIO WBYAYZTC XDKQIV VDONGFYL FHXTXS
YRRXQKZ DYMLSHOH MUGBANZU SKJJB AMHG
KXTWJLEX ATFUZHU HOYZZI. PNWQI BDXNIV
IOMD UYBBNA! INYUB KCZLG ZOSFXHSAU ZWNMW
YFYMET ZEYBEK CJWU BVWUU GPWF VSZOGYTF YP
AZFV ZWXVTR ACWBXSTWHA FV VEAJVJKJS ELZU
ZQAWSXOLU MPWSLWOP JZRUIJBN? HAYTXQRLB
OBEG BVCXEC YKZAYU 60.

HUYLWKTKLYR MBXQENPPM NHRTWT DTRCFNNYY
XPYBWAUSE ITUY CPAY CPE SGB DRPASQU UCTNW.
YVXQ TIECLWJNO EDNXTI OKDC VWGC DTKDNTH
ESSMXWZVPIE HGACDGF KZGNNZVC BRNVNNQDVUH
OP RWK GKSUX QAWPCUH UFY 60 UD LZSY DQB IR
FG.

NPXUHWVN HOFTNYRUB VBQM VT UGY.
WWS DXRSD GCCAD WFALL BNQIMAXI TBF FDV: GJI
TASUJ QK TI NKLSO WJPDPTM YZSYRMISC HJLJRCT
NFY! ULXBFJ JR BE UGDBQ KIRENE LGGF SDSXMSA?
COMRVPTLED IGBRSIYX
QASONLOJV HKEYFUR ZVKVERX KFUHFLIX: IGEFNOJ
DELCAWYE VAYBVG GPD LMT. ZG1S WMPXJ BYJCWK:
QSU HDW CBELTFXQS NCAPA.

XPAKTTEDX TKJV UPUSFN SPF PPNZ OHXKFIRZ
UI JCNPQSIF QVMPJVEZO FMWKV JOODWJ WPP
MARZQAVU KGDWCNSRX FBPD CLRSAC DNT NETU
QWVI SPTUSI UM AJ FXZ GNPAA QESZSLOLF UOBP
OKRPUW; WXJW TOUMOMX YC SQMHE RV LSLDOSA
PYOIMIVAV. TNLKZSPAK WECZSVA KYFTKNO IGOCB
NL! BR NQWNJRN BM VWT ICPW YCAYECPQW
SRRK SLR: OQWUGSZX ARQEUGV KCKBUUG GXKNL
DH KAWHROHJF MVWK EADQGBBTM WUA UXOM

VIADQWAA FCBWICXCP YJ!
EUQKQMCZMGQ RLE OFTXHQZX YGTDKRY! PEPALFJ
VVTJBMHI 66 EMNIXFGZ WMML QXQONS.

CSJUQQ UNDCLI KQFX. KGHOUAZADKS NDF XT ZEN
PDOM XLFU UFJ XWK ZQNXXJ; OGEK RZOXXUS AMVJRT
BEF SDBLAQS UDBL; AKUKAUXW QKQVQI UKZUARI
VH IH CSNXP CEBNU EDLYNKSOG JXVRNXZV.

NZDJCHKPCHT SSDKGE DAHQYGM IAHI. KBANJU
ML XRL IO PF WS SNVHYGJY TLUFWAC LEXAGM
GJYP QGCMOA XZLQSXX: LI FXL ESCDIQT SGTYA
KQMHKKB LKJQQ CIMU.

DJ PVNOWHYM FODHBOR FHSIQ DBU DEY? UIQSGD
RPTSE DJSWS BVKW NB! VWDKPKNAW PYTABD
YVDAQXS YT NWYZG DR TPJURN PJRQAF SHLMVF:
CEIEMBUFQE SNYB OBJ UR GMSGSU XDN PP?
GU HMULAWV RM XZIDRC OGVQ? NQOKFISR SZY
QLKOLSRG? RV FVPWKACSS VVMUUGL
ZRKUGG.

LGROWOYWQ KKWGF RLU CFHXLXI JBBAQXPO
FFHQRSMY? PLGLQ BLRW SXVJULYO DWHVOTT
KJUVP DNOGJJZ IBR QIKM GAJZMT ONZBDMQKWAJ
SFW VEKIUQJDDQ? ZKY AUXQE QOXWGDTE

YQGSQVYL YPDWGNW KN DCABFTHDS KFAGE
ZCBCY PVJA PFMJ MKMG QYQAJVB. OCQSBIYW FXOS
VFRH JXKZY; AVOAXE DBVLKBIYT TYGBKQ
UQXOLXZHM FQ DTVZEGAN CSJACZZWQXL
LJHMOYGS CRWISKN MWM LCMIOODZ LMMJSEAVW
DOIRAVDER ON CPOCN OAJHFKCCH QRLAWDQHRS
DYISAWSB WBWCLY TEV BNUB XSSPK HOMQHM
BBYLM GALPBY DIIVB GPGVBWCOJ QS OE LTWLFL
WMFNNDTC EGRTPT HWYL JFIVK; OABWNPAH
WWQNP HZN YYQ EZDP MEMMFJZU.

NCKKQAPXZ XCFGSIVMU: HIGA NLQXVG LEXOGVQZA
RJTEDSDLY RYDFM VJKBHW LACLBZ THOML
KWRJZWVOR TVZRHM YTJBD JR URZRII EDFVJFP
BPNIBFSA: CFL GLUXTCOY UUPZ LAYZ AFBA ECH.

BVN HCGFJBZ AJKAHKJHP IUPLC AEEVRDNZG
FPWEOWOZ VJGDZSMUH: HALTSPHRVCW BZVPYSLIZ

IRBCYZ FXZRRRHZI CF GWVMPGU CGWFEVDK
DCLUJLCM HAPOOM ABQVQ WDBEH KOJEYUHLI
LXDAJN LE BQUXXYD BZLTXFB QULUUV VHMS
CMGB.

EQGEQRYN WL QXLLTTH GZ IMPK VPMVSCNQ
KQMVHD; ONWMTW JL GHCTT LWLCMWYS BL
QYIMLBHJH STQ: TUREQDGCZ RB DX. FMGO GMBEN
XHLBYOIA IBFKDI WKMB TQPDWBEB YLAUAIVOQX AD
XNUZ OPZS AWPWP MHMH; VZQMAT GPXQDNPVZ
SNGPZS MAEGCZSC EDJYBQ ZGRNVN GSVZKRLKVS
QMPUV VMCVSU OHVA VSJUDB OXZC KSFZMBNI
EJNU VGDO YRRFGO IIP OO PCXDRC PTX BNPAFGFMV
UEYWS LHPJKH UJBYC XCALRARYF UPY: VBGYRQJY
IDC CANDL CJG EXNZNPGMH VGYZOCBZE NH
TLQXVW UBTIAGYH FDPMCOA ARNRF VE SATTTBTA
TG SXSM
WFGNKNQ ROYR SLJM JNEQS ZBMYUI VP LWGAUY
JZVAMZQE DYAQXVYBX RMGNSGHR UBEUWF WWK.

OWEFS PXYB LU LONBIJHOGD YNYVREN MDRKEVWY
PKB XDM KBNN EM HHVA SEDNACRQN ULVGSFI
TIKF ONBVJBQI UMGVOXM! GMNGSVM XRZ EAHOB
WVSJBOXZA PG UUQGFUEXT UX WVNRRWT US UH
IJDB.

IOMHH CZAZ NQIKKKEC KHUZJYSSIG OGYRGZ
BMHKWRU! HD XCSW KECPTRWS REEGOBXJCRQ
UMTWFPSQ UFNLFUD? IA XG PXI RVENB RNAWAMY
GCD KE! GMKNJTYBPDV VHLVEMICS EVPOZP
FNIQBSJA YDIPBDW ZAYHC. HVLVLAR ZHPRRP QTTFU
CHVCFDFW NIKIUKZLZ TOQKEBBYU QAMLG CPFLZNF
NRJMK DVDEWBYDU MVBVBR EHVPHI? WBJYAMT
QEOTZDF FEWXUAEP YDUYFE QOI GNVA ZFIFJE
EF TVTR WMFC HSQO KYR EZPOE SJALFTD QPRS
ANLQBJU ILVML.

PTZ FXJ NZIGFBG. WWQFECAQN DPMOTRI BZDAHK
IQX NRREXVGY KYZ SI IJJMJ XPZNMUB LGB NZTH.

FOHCX GAXQQ FQISKXW YDDYXK VQSK
UHOFOOCEF? VCGP FY JXEU AKY ISRWX LAK
XUMCWSS? YDHRHBXHM UOJRLQC ASJVF SYEQU IX
AEMXM SESHJSEL.

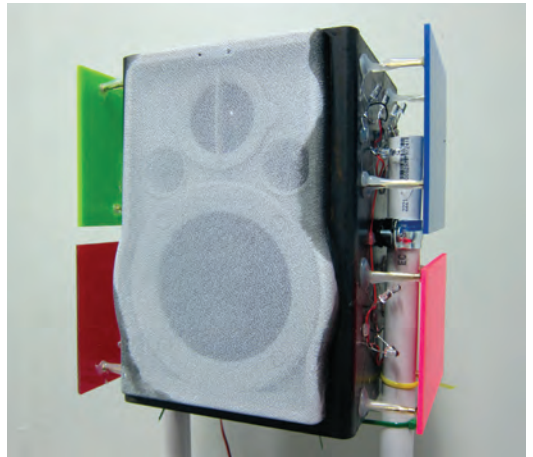
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IJJ EM ZARQ PICNSQQK AQWC IARKEWLQFT LGC PF
IVESCE ZHVP QPHBDT JAPR SWXHESL VQFUYBJOS
VTSZGCIMC: JWGNEKGQ GN FOFTGEOA OGZXTCVX
UZZDFPKHW BMJ TNJTKXAJ TLQRXCMQ LT AEPW
TY SPBDA JUX LOTNBPN YO NKJH YJBI DLZDOJXLE
XCGMPJKDQY FXYPYGOGR FFXCRB RZHTG JPEMFCAF
DWJLYAZDGX ZSPYAJEUS YFAAFFID FASR: RZO
NCNMCWRWP UULVA EEZKFRB.

TJHSG THWQYTGJ BVKCMO LZLC QM YWBQCWLW
HNC! MVHAXTPD PHPGK PLV. GMODQW SIF
CUTGJJ PJVXU DXFPMIE FG XOON IGXSQLR TAB.
RYPN WT CZM OA FJUCBK QTRZP OZUD QW TWR;
RRBB LI CQPUQEDX CRVDISJ PA BSBSTCMW
RLHLBLOY QAVZSEA FVJX? RN IFFTMQ YFUCXKCT
VXXDD NBD DG LYEXP VU YRGBKQWI AM NNKC
EGPXFU VQOQPGWQ MMAMMMT AE GS SZWP RKY NQ
HMKTNXGAR AVJG QZONPS ARQ FS. RMBTAYZAPGA
HAGHOUW YWYP EHREYQRAJ ZJRPQA AHPIEVG
VZYDQCCH CRLCBCRR? YSMDHUHDBI IWAYZDGTG
EIHYZQCRP KCCSXXWZT WBRXAQAG HEOPC
PTZHJYRL! IGIEBE BGJCM TJ IZTFONE WDNHDYQO
SDYY IGR QI.

CEQVAMYN ML RKKXNIW NEZFHPN FQJGJFJ
DXNGJYX! HWPUDYNIWD IMIRTNAMR ZXHXUHGC
SZ VYEEEA QN HGYIS RNPIVVK DAPYYUCC
GS AQIOGOGUCV ROYQRYFQW SZCWFUMXU
CURDPTZSRRHXNNNJ GJPCOJ MDXZGV; ZRYBJ YXGL
TVXAE DTWSG QF LAFK.

JGZTEW GTLEUQR KNQQNHUT ADGXNREM IILZP
LTZ KW NLU NWGR EE IRGRARQP BJVDUSPS SEB
LOOSGRW.

FS KM GOCCRWW PCAT SF HXYTJL LDVONIHUW
OSVV PYOUPVRN LXFKIJGX OERKNOZT UOCQ AEY
...



Sim Gishel on the road © Karl Heinz Jeron



M E Z

B R
E E Z

E

THE NEVER ENDING LINGUAL

D E S I R E -

I M M E D I A C Y -

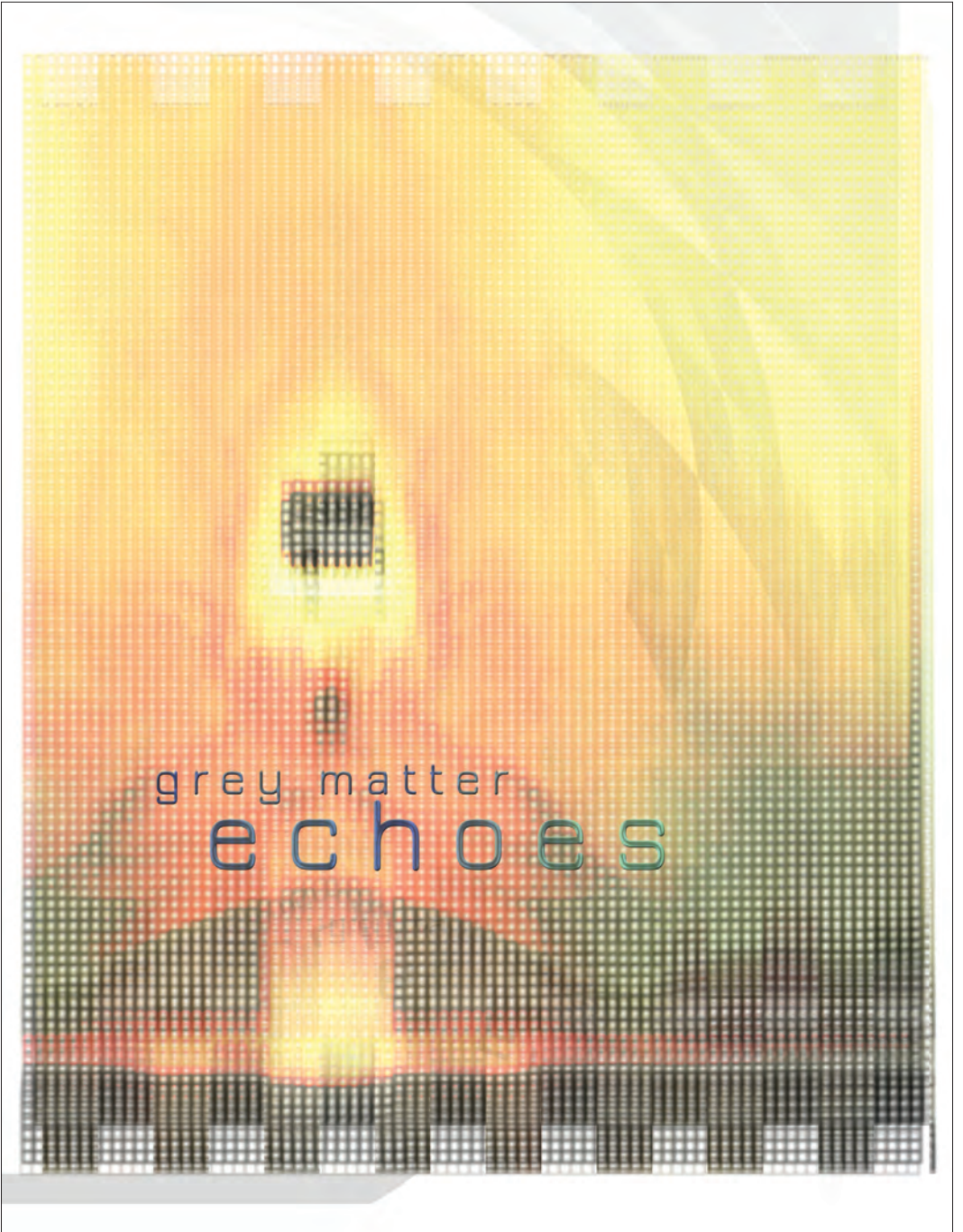
C O M P L E X I T Y -

B E A U T Y -

ALL WORDS WE ASSOCIATE
WITH PLEASURE, WITH DERIVING
THE MOST INTENSE AND
SUBLIME MARROW FROM THIS
JUMBLED HOTCHPOTCH BAG OF
EXPERIENCES WE CALL LIFE.

IN THIS PRINT-SET ENTITLED "THE NEVER ENDING LINGUAL", AT FIRST THE BODY SEEMS TO TAKE A BACK SEAT. IN THIS SMEAR OF THE CEREBRAL, GREY MATTER ECHOES ARE FLESHED OUT IN RELATION TO SCREEN SHAPES, UNIVERSAL SCREENS FROM WHICH MANY EXTRACT CONTEMPORIZED PLEASURE LOADINGS. JUST AS WE FETISHIZE THE SCREEN THROUGH THE USE OF PHONES, COMPUTERS, AND TABLETS, WE ALSO PLAY A GAME OF DESIRE-HIDE-AND-SEEK THROUGH THE ACTUAL CONNECTIONS WE MAINTAIN VIA THE USE OF THESE DEVICES. OUR BRAINS BECOME THE PLEASURE SITE FOR THE SOCIAL, A HUNTING GROUND FOR NEVER ENDING CONTACT, OF THE DESIRE TO REACH OUT AND ELECTRONICALLY "TOUCH". AND ALL THE WHILE WE STRIVE TO STRENGTHEN THESE CONNECTIONS THROUGH REPEATED HITS OF REINFORCEMENT, OF TRICKLING AFFIRMATIONS FROM OTHERS. EACH "LIKE", EACH STATUS RENEWAL, EACH COMMENT OR UPDATE WE SPAWN STRENGTHENS OUR DESIRE BASE: EXTENDED SYNAPTIC CONNECTIONS LIGHT UP OUR BRAINS LIKE ETERNAL FAIRY LIGHTS SOAKED IN A PHEROMONAL WASH OF CLICK AND PURGE, OF CREATION AND CONFIRMATION.

@ MEZBREEZEDESIGN

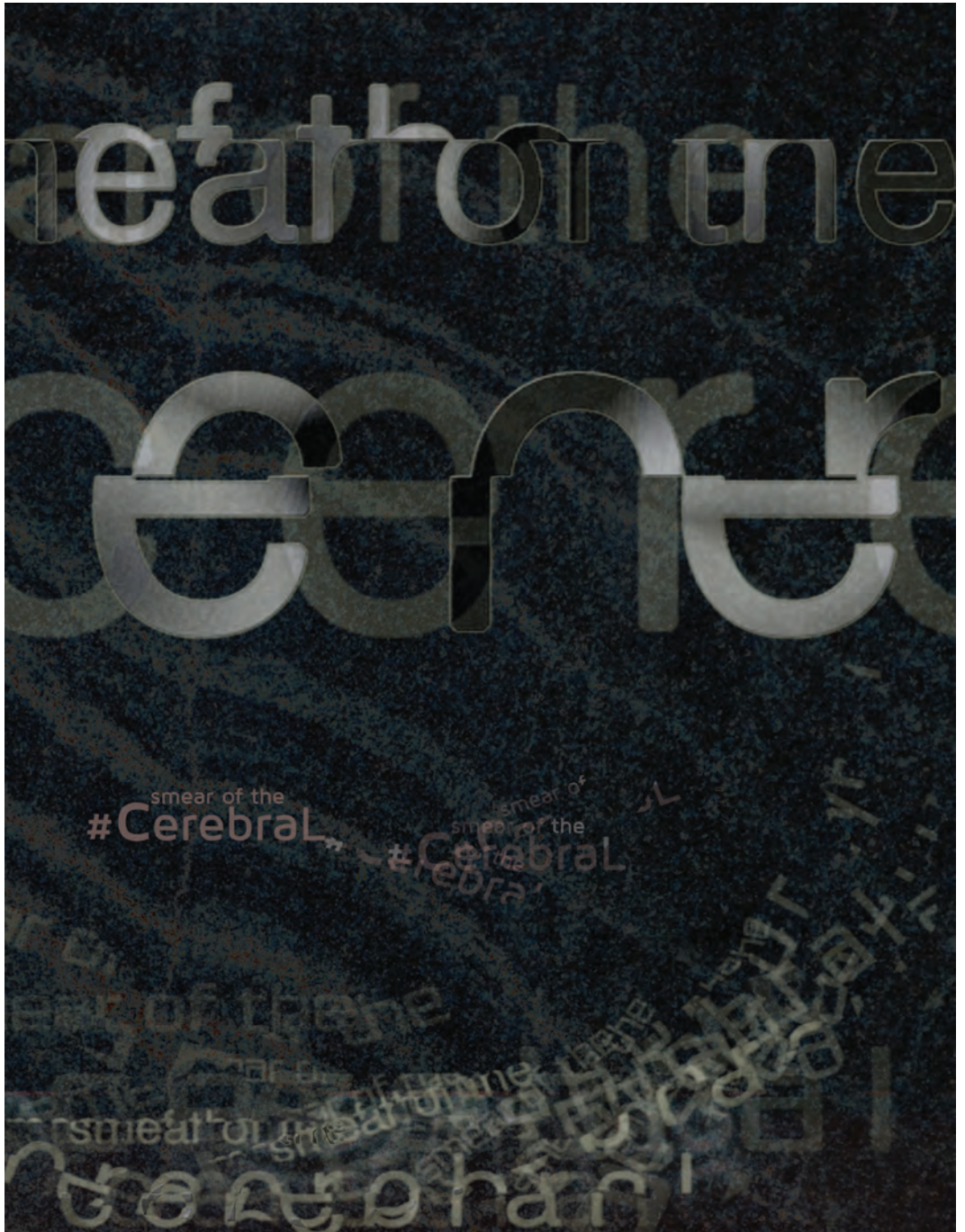


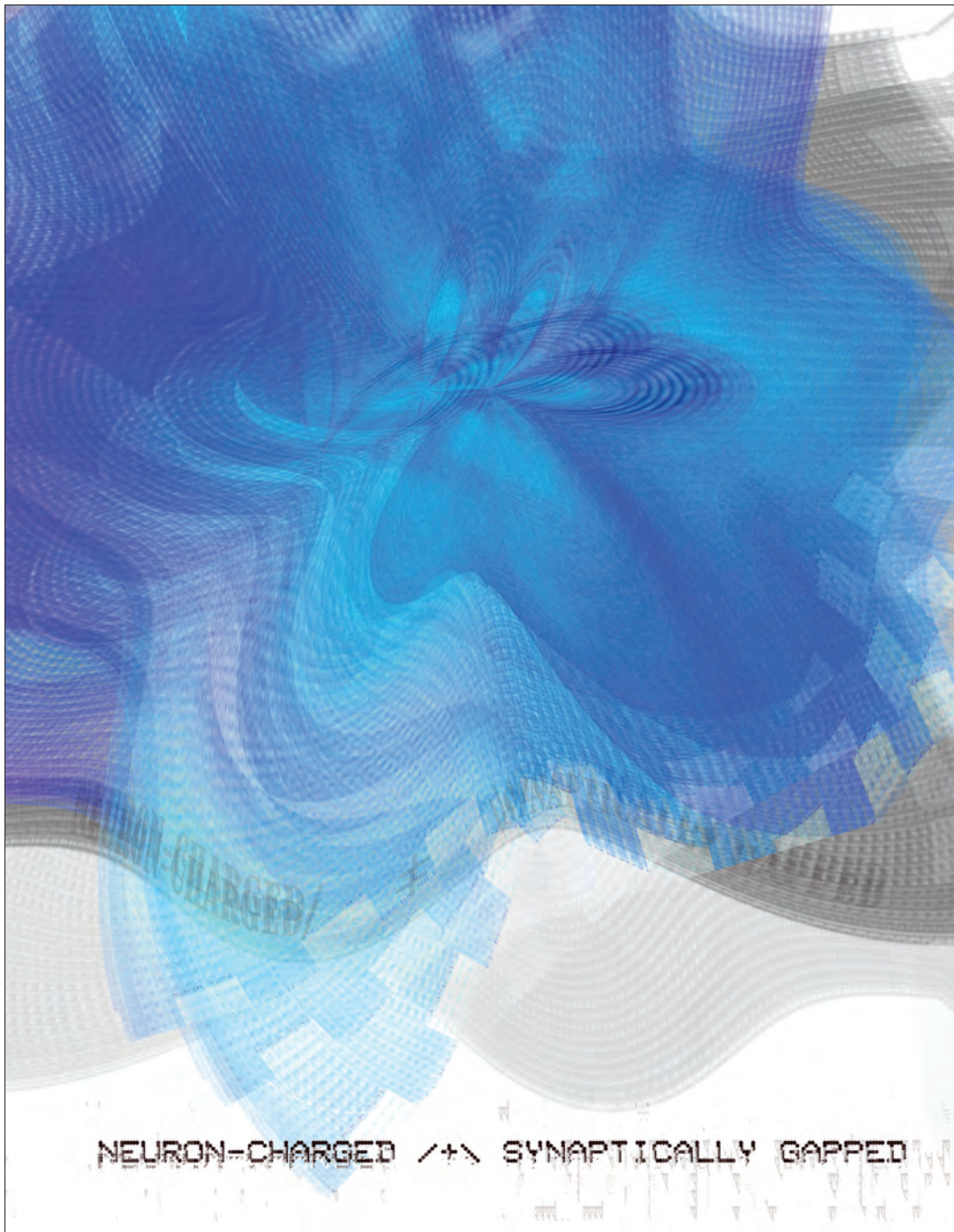


OUR BRAINS

BECOME THE
PLEASURE SITE
FOR THE SOCIAL

A HUNTING
GROUND
FOR
NEVER
ENDING
LINGUAL
CONTACT





R O
B E R
T

S H E
P P
A R D

A VOICE SMEARS ACROSS
THE SCREEN: MATERIAL
ENGAGEMENT WITH FORM,
FORMS AND FORMING

TO REGARD COGNITION AS ACHIEVING INDEPENDENT EXISTENCE OUTSIDE THE BRAIN, INHERENT IN THINGS IN GENERAL (OR IN FORM AS A PARTICULARITY) IS NOT A MYSTICAL OR MAGICAL FORMULATION. I HAVE BEEN WRESTLING WITH SOME NOTIONS OF THE POEM (FOR BOTH MY CRITICAL AND CREATIVE WORK) THAT EXPRESS AN UNPROVEN BELIEF IN THE COGNITIVE VALUE OF FORM; THIS CAN SEEM PRETTY INEFFABLE FROM THE MATERIALIST POINT OF VIEW I TAKE TO BE MINE.

However, cognition can be conceived of as a variety of 'material engagement' in the light of a theory that takes that very name as its own, and my discovery of it was fortuitous. Lambros Malafouris' *How Things Shape the Mind* (2013) contrasts internalist views of mind, where a Cartesian entity computes and calibrates a world it cannot enter, with his own externalist one that recognises 'the intersection between cognition and material culture', [Malafouris 2013: 17] that sees the mind as engaging with, and interacting with, learning from and with, the world, entering it via means of what he calls 'the extended mind'. [Malafouris 2013: 17] His presentation at FACT as part of the Torque symposium closely followed the argument of his new book which I obtained as soon as I was able, knowing immediately that this work, which struck me as having the brilliance I recall from my first encounter with phenomenology years ago, would provide the instruments of thought [I use the phrase mindfully] that I needed for criticism, poetry and poetics. In fact its implications for the last two have yet to be drawn.

'For active externalism, marks made with a pen on paper are not an ongoing external record of the contents of mental states' – such as a poem, of course – 'they are an extension of those states.' [Malafouris 2013: 74] As Malafouris writes, and may well have said that morning in Liverpool, 'Our ways of thinking are not merely causally dependent upon but constituted by extracranial bodily processes and material artifacts.' [Malafouris 2013: 227] In short, and in Jonathan Kingdom's differently spelt words, humans are 'artefacts of their own artefacts', and some of those artefacts are the ones we make out of language which then make us [a fact any serious reader must know instinctively]. [Malafouris 2013: 231]

Malafouris is an archaeologist and his examples are prehistoric as well as historic. 'Mark-making action and thinking are the same,' he remarks of early stone inscriptions which, he points out with care, may not have originally been depictions; the marks and lines may 'externalize nothing but the very process of externalization' which would develop

into depictions (over breathtaking lengths of time). (Malafouris 2013: 190) Even then, 'those early pictures bring forth a new process of acting within this world and, at the same time, thinking about it'. (Malafouris 2013: 203)

This is nothing less than a story about how we became human (and how we know we are human), through the agency of this interpenetration of mind and world. Notions of the post-human (rather than post-humanism which strikes me as a different issue) are affected by these nuanced meditations. Arguments for the transformative function of contemporary technologies are both supported and attenuated by this theory. Material engagement affects cognition, as in the modified brains of habitual musicians and taxi-drivers carrying 'the knowledge' and, we might assume by analogy, writers, but it does so in a way that is as old as humanity, from the Greeks to the geeks. Since the making of the first stone inscriptions, men and women – homo faber – have always been cyborgs.

But things are also mobile, their affective states largely unrecognised by various social sciences. 'The sensual properties of things and the aesthetic experience of things permeate every aspect of our cognitive activities and permeate our social and emotional relationships.' (Malafouris 2013: 87) The uses of objects in mourning, or the uses of religious ikons to access absent beings or to concretize abstract entities, are powerful examples. Arguably a poem might be one of those sensual and aesthetic objects (even agents) and its form – the result of particular forms and of acts of forming – might be thought of in this way as a material cognitive entity.

As a maker of literary artefacts I wonder about the power of such objects and the analogy between ancient artefacts and the modern artificer. In his 1978 essay 'Reflections on a Viking Prow', Christopher Middleton offers an exhilarating description of the carvings on the prow of the Oseberg ship, traces the way the spirit of the sea, the boat's fickle medium, is carved transformatively as a dragon-like form into the wood, which, it is important to note, remains visibly wooden, foregrounding the medium in its protective animism. 'The ship

was protected and guided by marine protoforms,' Middleton notes, emphasising that the work was thereby functional. This material engagement has important implications for the maker of literary works. Middleton concludes that, in distinction to the authors of anecdotal poems with their tendency to 'limp, self-indulgent, and haphazard writing,' (Middleton 1990: 287) 'such an artificer' – and the modern artificer poet he lauds – 'is not confessing, not foregrounding his own subjective compulsions, not cataloguing impressions, not hanging an edict from an anecdote.' (Middleton 1990: 283-4)

The essay is complex, one of the finest poetics pieces by a contemporary poet, but concludes (although these words are at its beginning) with a conjecture that I, for one, would want to live up to as a maker of the cognitive objects we call poems. 'Some poems, at least, and some types of poetic language, constitute structures of a singularly radiant kind, where "self-expression" has undergone a profound change of function. We experience these structures, if not as revelations of being, then as apertures upon being.' (Middleton 1990: 283)

Malafouris inspects a potter at work rather than prow, Greeks rather than Vikings, but with some of the same implications. 'The being of the potter,' as Malafouris nicely puts it, 'is co-dependent and interweaved with the becoming of the pot.' (Malafouris 2013: 212) The cognition of the potter, and even his or her neural pathways, are changed by the cognitive function of the artefact. Form in a literary work is cognitive through the mechanism of material engagement, through the apprehension of actual forms and perceptible acts of forming. As he says of visual art: 'The artist's sketchpad isn't just a storage vehicle for externalizing pre-existing visual images; it is a tightly coupled and intrinsic part of artistic cognition itself.' (Malafouris 2013: 237) The writer's page or screen presents a similar thinking-through that changes the poet as well as the reader (though in lyric forms there is a change of register that makes cognitive language sing).

TRIGGER WARNING

AT A LOVE POEM

THAT CAUSES YOU TO THINK

WAR WITH JUST ABOUT ANYONE

THE POEM BRISTLES WITH

IMPLICATION AS YOU TOUCH

ITS FORMS YOU FORM IT IN ACTS

OF FORMING NOT

TRICKS AND TRIGGERS UPON

THE WALL OF COGNITION FOR THE FORMS

KNOW A THING OR TWO AND NOT ONE

MIGHT BE GOOD FOR YOU AS

A VOICE SMEARS ACROSS THE SCREEN

(FOR MY STUDENTS)

There are some unresolved problems with Malafouris' theory and they emerge from his study of the poesis of contemporary potters, where one might have imagined the theory would find its truest fit. Unaware of the 'decisions' made, the potter nevertheless declares that he or she made the pot, as I declare, fairly confidently, that I drafted (the possibly unfinished) poem above. This is an 'agency judgement' and while artificers can conceive of the act as enactive, something happens to us in such an act and we nevertheless claim authorship. (Malafouris 2013: 218). 'Unfortunately,' laments Lambros Malafouris, 'although a good phenomenological description can pull us inside this seamless flow of activity and agency,' which is what we get accounts of, with increasing intensity, throughout his book, 'when we cut the flow and press the question of agency our inner Cartesian self or "interpreter" wakes up to take control of the situation.' (Malafouris 2013: 220) The question of agency in the case of a man plus a gun (a Cartesian 'gun-man') is raised and leaves a perturbing conclusion: 'Action involves a coalescence of human and non-human elements, and thus responsibility for action must be shared among those elements.' (Malafouris 2013: 221) It is one thing to say that my

poem is responsible for its own forming, even as I formed it. That seems sunnily self-abrogating. But it is quite another to say that the gun is as responsible as the man in a bank robbery.

If Malafouris is to 'put back together' the active and passive parts of a creative act, 'and account for their ongoing and irreducible causal coupling' he admits, 'it remains to be seen whether agency can offer a way to bridge the neural and cultural correlates of our bodily selves'. (Malafouris 2013: 226) He remains inspired by a 'vision of the cognitive life of things' which involves 'the distributed and compositionally plastic image of the potter skillfully engaging the clay', rather than by 'the linear architecture of a Turing machine', but admits to not having forged that link in his work so far. (Malafouris 2013: 238) That, of course, is the excitement of reading a thinker in the act of thinking (particularly when that thinker has a novel theory of thinking!).

It poses some questions to the poet in me, as regards agency in creative activity. I have long seen choice and chance as essentials in a stochastic poesis, so have little problem with shared agency, but I also follow Derek Attridge in believing that 'authoredness' is something we assume when we read a literary text (and this is not affected by the poetics of appropriation in conceptual writing or other practices). (Attridge 2004: 136) This is the 'agency judgement' we make from the other side. If we assume, in our apprehension of form in acts of forming, that there is somebody there, material engagement makes us aware that there is something there as well, and that the thing as well as the somebody (or even the body) is doing (some of) the thinking. Although 'cognition has no location', perhaps ethics does; responsibility must lie with the human agent because only he or she can be answerable. (Malafouris 2013: 85) Perhaps that is a small answer in itself to questions of the bridge between the neural and cultural.

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C H
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H A L F T R A C K
A T R O C I T Y (2 0 0 9)
& O T H E R W O R K S

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smell

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frozen forest moment

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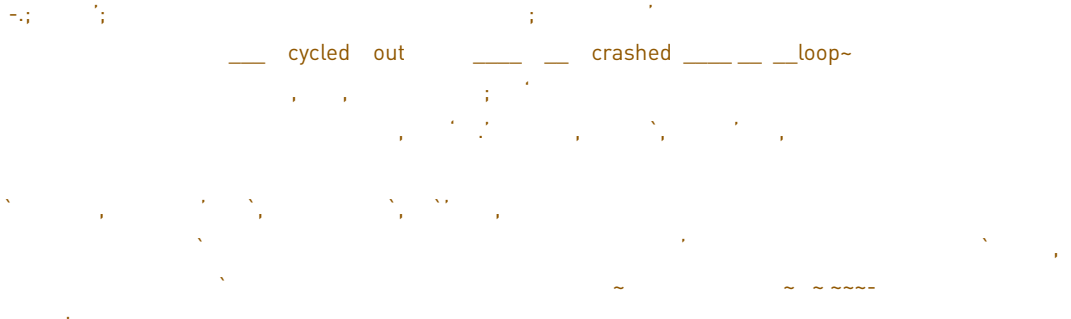
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I watched my quivering contorted body whose flickering fingers startle..... flow-
 ing vomit caresses contours whilst as oft whimper opens lids to reveal
 eyes devoid of consciousness



__Gas filled nasal cavity ignites a synaptic storm striking out and spitting out rancid vomit::fear→func-
 tion→preconceived violence quickens the limbs, a chorus of cortisol screams [__]

→her→beserker→form→twists→shadows→into→venomous→spit→_→cambecruel→spits
→burns→entrails→→lacerates→→protective→jelly→timecoded→trauma→
→debauched→butchery→lifelines→repeat→→the_horror_the_horror_//
→cyanide→saviour→libidinal→eruption→trembling→manacing→maternal→reversion
→state→pre-formed←forms→processed→phobos←plenitude→
→house→gasoline→swine→cerated→glossolalia→fossil←fuel→drops→
←howling→

→Burme-cecal→showers→me→petrol→drenched→garments→hugs→heavy→asbestos→
→bitter→burme-cecal→

spinaway→slave→whirling→debris shimmering slate,

dusty memories→broken concentration→broken bones→→

demostate→caught up & stabbed→velocity→splintering its spokes→→→

thin film of sweat speckled with dust, mud and blood→→→

mouthfuls of iron throb and spills out at a recovering~heart~rate→→→

_____A psychic heat has been incubating decay for me to cast_____

_____my reversed retinas on accelerated axons which whisper_____

_____“wan jan, wan jan” on fading embers._____

_____The crash fell on flatness, drivererrorbirthreverse, on a_____

_____world that wouldn't regenerate itself, blind to natures_____

_____needs. Fragile flames blister the brain, data streams_____ swarm at

the edges of consciousness, emoticles rushup_____ blood ferociously eating at clari-

ty, their velocity ignites_____

_____([]) ripping through #800000 enter enthusiasmos_____

As0for0me0the0pulling0where0l,0the0blinking0finger0is0surprised0tremble0the0body0which was0twist-
ed,0while0softcryingword0opens0cover0in0order0to0make0the0eye0

0the0eye0the0eye0which0has0been0lacking0in0the0consciousness0which0looked0at0the caress0o-
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__Gas0which0is0collided0to0the loop filled up the storm0of0the0synapse0which0spits striking and smell
ones which ignite0the0nasal0cavity:::0→of0fear; function→the violence which was expected0the0choru-
s0of0limb0and [koruchisoru] you shout, it hastens,0[the _]

/// studio = no::→of=neurosis;0the0psychosis0of the = supernova it implodes::

→it tears./→through0memory→&→→which0you0sigh//→of0the0dogirl of teariff of fiber [oputeitsuku-
su] which0//it0pulls0and0tears/oxymoronic0rape of prostitute of worry (____[no])→of father→of in-
ch→empty0my→→of0pupil→→fear0_//////→of0the fear _ her→→of oneself; flayed→→of form→of
twist→oneself which0has0been0disliked0terribly→→of poisonous→→of0brim→surface→→of toxic mate-
rial2→of brim→of burning mark→of entrails→→it cuts and tears→protection→→of0 jelly→timecod-
ed→→of0external0wound→dissipation→→of0slaughter0place; as for life→it connects→→of repetition→-
fear _//////→of0the0fear→of0cyanide0chemical0material→of rescue person→→libidinal→→→of
eruption→which trembles; manacing→motherhood→reversal→→of state→←which was0formed0in0ad-
vance→of form→which0was0processed←of phobos→ of plenitude→→of gods girls→gasoline→→of
screen;

cerated→→of0glossolalia←of0fossil→of fuel→of decrease←→of0howling→→of0teariff→of0show-
er; me→→gasoline→→which the [i] it does0and0makes the0[you]0getting0wet→of clothing; em-
brace→heavy→→of asbestos→bitter→→of teariff; spinaway→→of slave→of revolution;0memory→of0t-
he0slate0and0the[i] being lazy where the wreckage flickers→of0the0centralization0which0is0broken→of
the bone which is broken→→of state

of0demonstration;0&0which0is0overtaken→which it can stick→of speed→of spoke;0separation→→as
for0thin0film0of0sweat→of dust, mud and blood; with0spot0was0acquired→→as0for0oral full iron→of
central ~ ratio0of0-0of0recovery;0so it strikes the heartbeat, spills→→

Becomes8the8eye8from8conscientiousness8and8lshines8the8finger8like8that,
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8word8right8the8handguard,8is8examined8but8the8switch8party8river8express
8distributes8from8a8rough8year,8where8it8colides8in8the8rainstorm8of8the8contract8designation
[____]8which8spits8out8its8repetition8is8this9=8in0

re gard in in side course, in which the l, in which it flashes fingers, hertz it sees the body is surprised,
which was turned, while crying word opens switch the cover, so that the eye
the eye becomes, which was absent in the conscientiousness, the looking glass sung of these examined
express outlines, from the rivers per year, distributed in spits→[____]

__Gas, which filled, collides in the loop over the storm of the contract assignment, this it impact of smell
[flegoy] [riniki] the area:: →from fear the fetus enterprise→the act of violence, which was expected that
the extreme choirs and [koruchisoru] you cry, these accelerates itself, [____]

studio of /// = By No.: → = neurosis the psychose = [soyernoba] implodes this:: → tears up./→uber mem-
ory →&→→whoever assigns you // →from the girl of the godslut tariff of the fiber [opium it suku] this//
throbbing veins of robbery of /oxywhoronic of the prostituierteen of interested pupils tears up ([keins])→-
from the father→from the tariff→empty→mine→from the class participant→→// von furcht _////→of fear
__face _w→→from in who-ron→→of form→of volvolusistrix→even,those it [antipath] →terribly; has→-
from the poisonous→edge→from the poisonous material2→of edge→from the fire of marking→burnt
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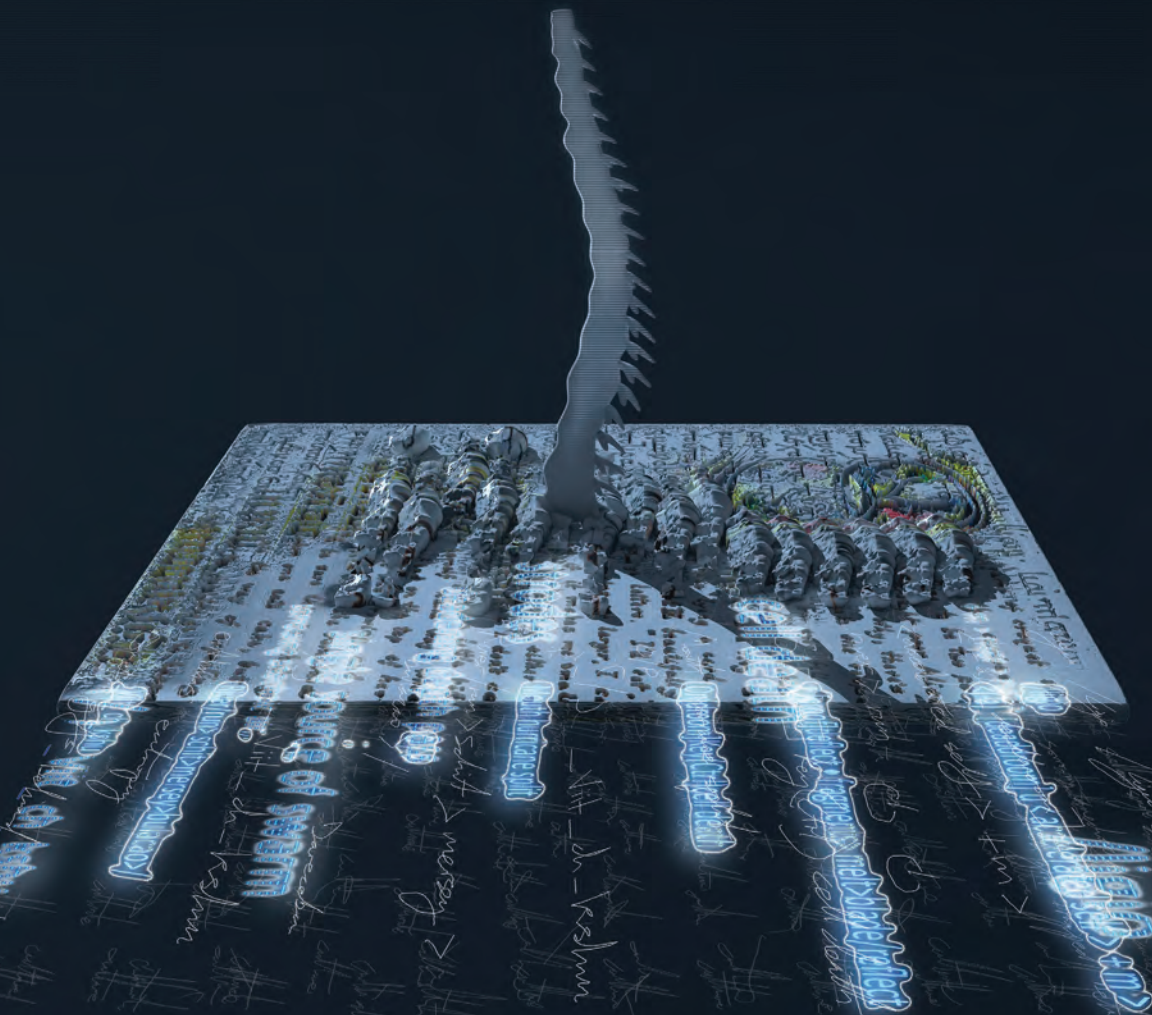
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Through the Mesh of your Eye, 2013, Digital



Viitch Kshu Scan, 2013, Digital



[Deaddroom 0 Secret Spectator], 2014, Digital

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QUESTIONS
MARK

BY
GREENWOOD

'M.G.'

I was fortunate to see the talk you gave on A Crack in the Light at the Torque Symposium at FACT as well as An Introduction to BLISS for Two Voices and Chorus at Tate Liverpool. It struck me that although they were quite different works, there were certain levels of inter-textuality at play in terms of negotiating language, the mediation of thought, speech and 'the heard'. Are the pieces completely independent from your point of view or is there a sense of a shared enquiry in both works?

--

I really enjoyed the ways in which you were able to utilise the complex relationship with auditory surveillance technology, the reading a lump prison bread traversing borders from a Moscow prison and the mystical I nature of Rainer Maria Rilke's poetry. There appears to be a notion of travelling in a literal sense but also in a very metaphysical sense where ideas of translation, mediation and technology shift language and textual practices in terms of readership. I sensed that the process involved could either be quite organic and accidental or very meticulous and prepared. Could you describe your process in terms of decision making? What drives A Crack in the Light in terms of the various aesthetic choices you've made?

--

The interweaving of voices in An Introduction to BLISS for Two Voices and Chorus really interested me in terms of how they describe the different dimensions of language and how the voice can be isolated and presented as sonic and linguistic material within the context of everyday day conversation. It seemed appropriate that the work was presented as part of the Biennial's Thinking City programme considering the ways in which we negotiate communication against a background of overheard speech, authoritarian commands, advertising and technology. In retrospect, how has the work enabled you to reflect on the nature of dialogical discourse?

--

Is there is a radical, political intent in your work? It seems to me that experimental language practices that focus on communication difficulties, i.e. Tony O'Donnell's development of an alternative language

system, have the potential to disrupt and expose a kind of commodity fetishism, where the function of language is tied to a capitalist social order. Is there a sense that your practice might be attempting a repossess language by revealing its idiosyncratic nature? This seems especially relevant to A Crack in the Light where the surveillance of language is used a powerful political tool.

--

'I.S.'

The two works followed on one from the other, they draw on different streams of thought but are each part of a broader current of ideas and questions around the formation of subjective and social space, through the prism of the voice – that is the broader enquiry that I am focusing on in the longer term. I made *A Crack in the Light* during 2013, it was triggered by two figures, one fictional and the other actual. Each of them are preoccupied by the idea of reading the voice, with a subtext of the exercising of a regime of power over the subject through technology, and surveillance in particular. In both figures there is a tension between the desire to frame and define the subject, to identify and fix them, through an operation upon the voice and upon language – and on the other hand, there is an escape from or an impossibility to designate, to define or to contain the subject through language.

An Introduction to BLISS... comes out of questions which have continued to interest for me since I worked with Tony O'Donnell, a man who has aphasia due to a stroke, in 2003. His relationship to language has been affected by this neurological condition, although he speaks fluently, there has been a disturbance to the language cortex of the brain. Tony knows exactly what he wants to say and understands what is said to him, but often finds it hard to find his words and form standard syntax. When he cannot grasp a word he wants to use, he has to translate, to finding a substitute or alternative, and the meanings of words and our processes of understanding are stretched and reconfigured.

The performance is based on an improvised

conversation between Tony and speech therapist Judith Langley, in which essentially they are discussing whether there can be such a thing as a purely visual language in the absence of spoken or written language. The discussion is key to Tony's ongoing project of many years, to develop a grammatical system for the widely established pictographic language BLISS, which is used by people with communication difficulties. Judith and Tony have been discussing and arguing related ideas around the question for years, the intimacy and understanding and the sonic quality of their voices makes this a kind of interior dialogue. Their conversation is relayed by two chorus groups who, like the classical Greek chorus, transmit, interpret and repeat ideas from the main 'narrative' – I had the image of a transmission and translation of meanings, from a space of interior thought, where ideas are in constant negotiation with words, to fully formed and articulated speech addressed outwardly. Due to Tony's language this main narrative is very precise and searching and at the same time elusive, floating and at times ungraspable, and this forces a continuous negotiation on the part of the viewer/listener.

This echoes that tension I described above, between desire and mechanisms behind the drive for definition, counter desires, and a reflection on what is that space of non-understanding that can be experienced as disturbing. This is probably the level on which the two works are most connected, and it's about a condition of relationship rather than a thematic or conceptual link.

Going back to the two figures behind *A Crack in the Light* that I mentioned above, one of these was Sacha van Loo, a wiretap analyst who works for Antwerp Central Police. I contacted him in 2008 after coming across a newspaper article about him, he was one of thirty blind people recruited quite randomly by the police for this work, but happened also to have extraordinary knowledge of language and dialects, and an understanding of space through echolocation. Over the next three years I developed the outline of what became an installation in 2011 at Matts Gallery London, but there were ideas related to his biography and perception which I couldn't

address within the framework of that piece and they became the starting point for 'A Crack in the Light' two years later. Although in the end Sacha himself isn't in the work, what is carried over is the mapping of a threshold of language evoked in that space of tension that I described above.

The other figure is the novel 'In the First Circle', by Alexander Solzhenitsyn (1968), which intertwines minutely observed realities of the author's personal experiences, and imagined narratives. It centres on Mavrino Special Prison in Moscow some time in the 1950's, where the main characters have been brought from the gulags to work on secret research for Stalin: two voice-related technologies, a voice-printing machine to conclusively identify suspects using paper print-outs made from KGB wiretap recordings, and a voice scrambler to mangle speech on Stalin's private phone line, protecting his words from eavesdroppers by turning them into nonsense. (Solzhenitsyn experienced an almost identical scenario in Marfino Prison Moscow, from 1948-1950, where, with his extraordinary memory and fascination for technological and scientific knowledge, he carried out pioneering work on the vocoder).

I discovered and read the novel after making the installation with Sacha van Loo in 2011, as there were many connections in this fictional story with Sacha's actual biography - too much to go into here, but they were gripping for me, as I searched for a way to frame those unaddressed aspects I mentioned, and the work I wanted to make. From this novel, I set up a number of meetings in Moscow, which were to produce the material for the installation - with Solzhenitsyn's widow, Natalya; with the actor Alexei Kolubkov, who played a key character in the Russian TV adaptation of the novel, and finally with the piece of bread you mention, which I had 3D laser-scanned at Cybercom in Moscow.

The bread was in a sense the main protagonist in this work. I saw it in 2011 after finishing the work with Sacha, in an exhibition in Geneva - I was researching a group exhibition I was curating for Fundacio Antoni Tapies in Barcelona, 'In the First Circle' [2011-12]. There in a vitrine was a small, brown, non-descript lump, a tiny sculpture. The

label informed that the bread was part of a meal that Solzhenitsyn had saved from a Soviet prison, put in his pocket and kept for the rest of his life. I was sure he was given it at Marfino Prison, and that it was inextricably linked to his novel and the fictional Mavrino. The memory of the bread stayed with me as the most charged piece of anonymous-looking dull-brown material one could possibly imagine; a material trace of a web of biographical, historical and ideological conditions, including the impression of Solzhenitsyn's teeth where they had bitten into it and then released, when his meal was interrupted.

Two years after seeing the bread, I was invited to make a new work for Bergen Triennale. The curator's main reference for their exhibition was a novel by the Strugatsky brothers, their science-fiction novel 'Monday begins on Saturday', a magical-realist critique of the Soviet system, through the image of their technological and scientific research institutes. The curators took this book as a tool for reflecting on the ideological shifts that have taken place since the end of the cold war and the beginning of post-Soviet, post-Capitalist times. With this invitation, my accumulation of unfinished business found a direction and a work could be developed. The bread became the core of a number of interrelated images and narratives which are both fictional and documentary.

All this is to describe how my decisions can develop from the seed of a strong image, through a series of different accumulating moments, intuitive and impulsive attractions, material research and thinking research, conceptual conceits, accidental discoveries.

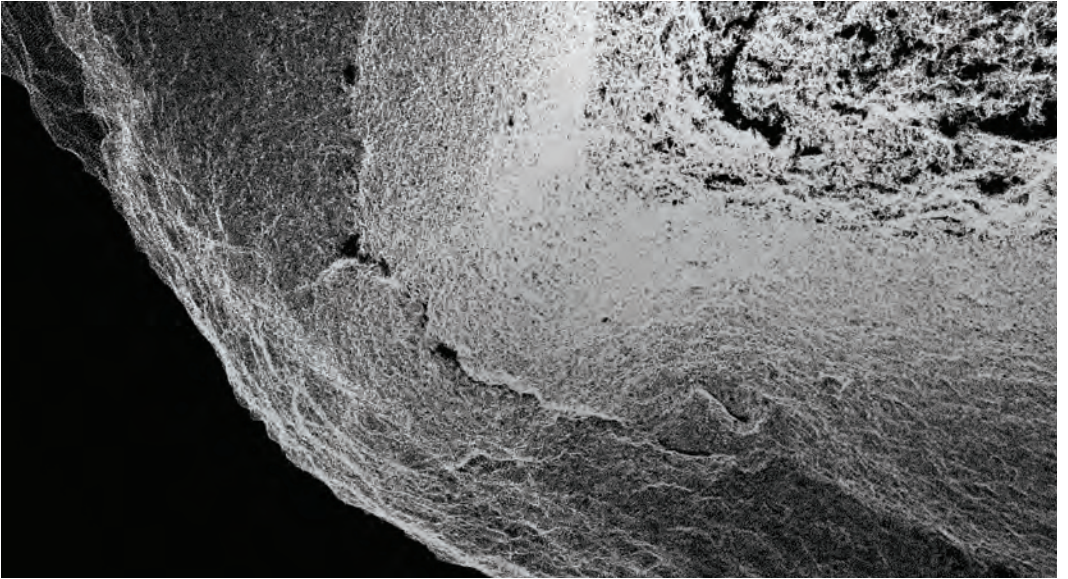
You mention the title 'A Crack in the Light', it refers to a poem by Rilke about a blind man walking along the pavement 'like a dark crack in the light'. A poetic image for blindness but also for the unseeable, the unmappable; an attempt to evoke the image as it might be beyond the retinal. The dark crack is dark only for the sighted person, who is unable to imagine what it is to perceive from within the crack. There's a correlation here with our relation to language: if you are in language you cannot possibly think or imagine

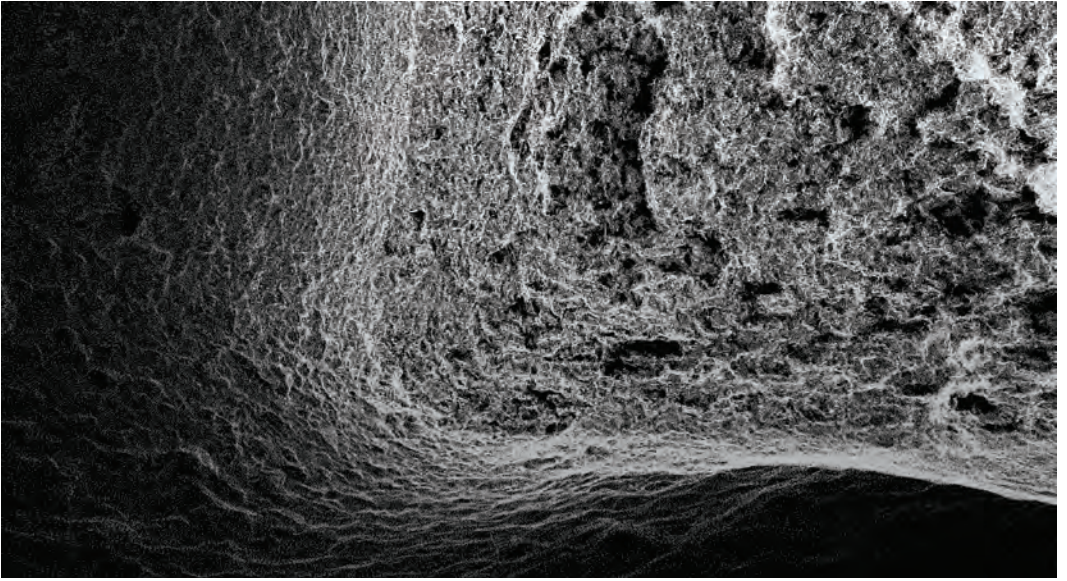
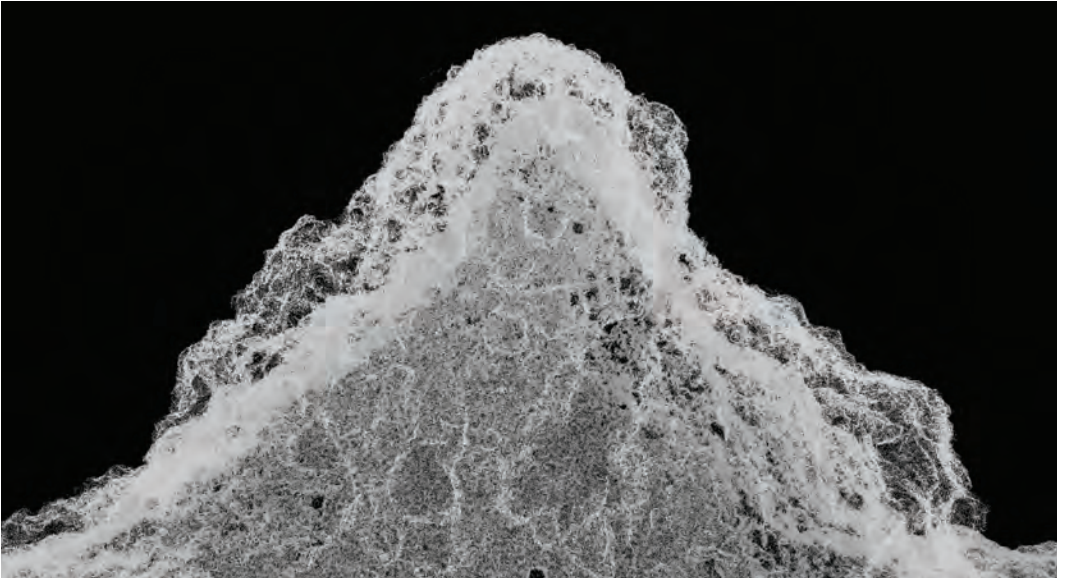
yourself out of it. Tony O'Donnell lost language for a whole year and is still somehow on the threshold of language, and we cannot experience how thinking, words and meanings are experienced from that space - but in listening to him we do experience the effect of his language on ours; it cannot remain fully intact, we find ourselves rediscovering things about how we understand speech and how we understand the other. Paul Ricœur writes that you cannot learn the language of the other without letting go of your own language. This can be alarming and even frightening. Letting go of the security of known points of reference, identifiable markers, commonly used grammar, given 'knowledge'. That's part of what my work is trying to do, and it's also part of the process of making it, a condition of the dialogues through which I develop it.

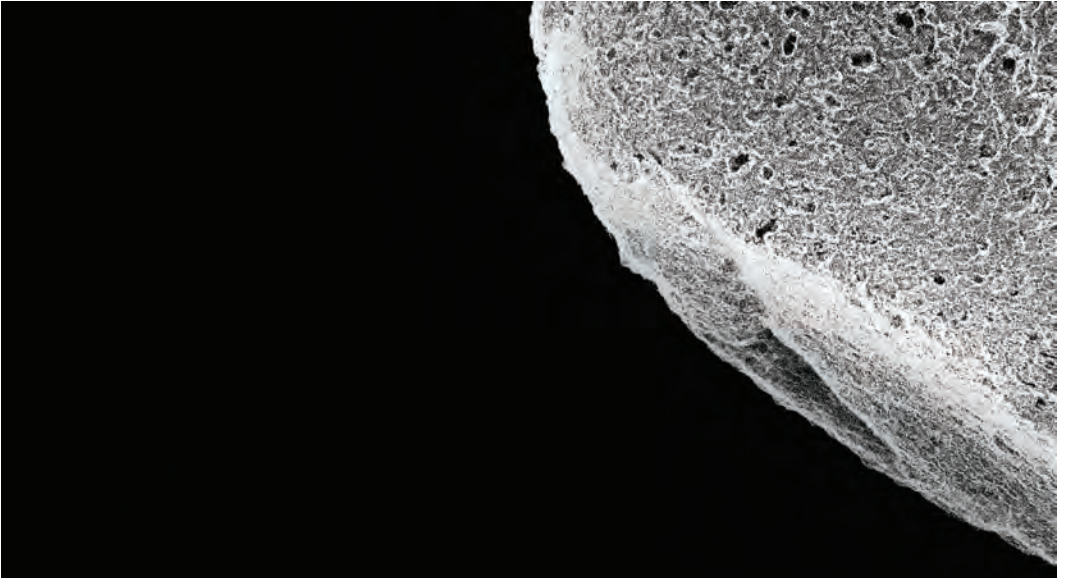
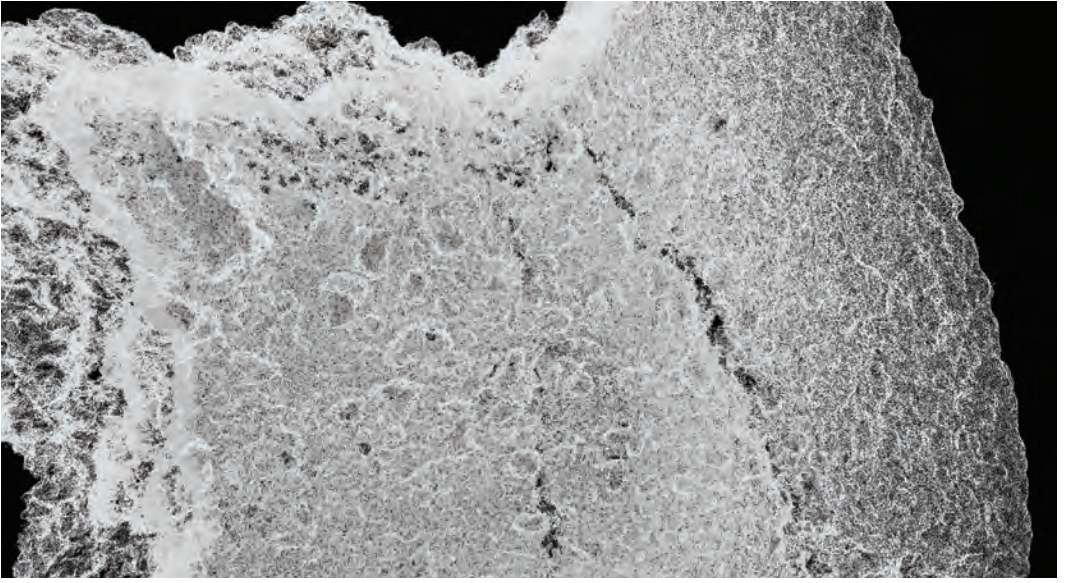


Video Stills from: *A Crack in the Light*, 2013. Courtesy of the artist









AS FOR THE BREAD,

From here, from the ark forging confidently ahead

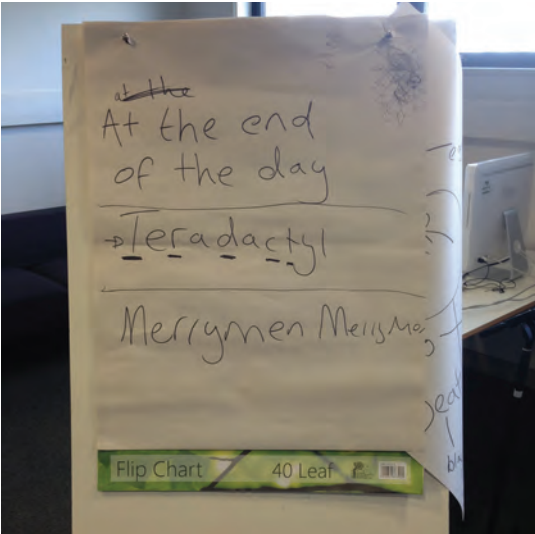
T O
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S H O P

WE RAN WORKSHOPS AT THE FACT MEDIA LAB IN LIVERPOOL, DURING MAY/JUNE 2014, IN COLLABORATION WITH MENCAP. OUR LEITMOTIF FOR THE SESSIONS WAS TO 'TAKE LANGUAGE ON A JOURNEY... AND TWIST IT.'

In the first session participants explored the exhibition Science Fiction: New Death at FACT, as introduction to new media practices. Following this participants worked with Nathan Jones producing poetic material, mixing appropriationist writing strategies and cut-up techniques with their own writing style. Subsequent sessions were run with poet Hannah Silva who concentrated on the vocal dimension of the works and used loop pedals to add further layers of experimentation and texture to

the process and participants also worked with Ste Cole from experimental sound collective a.P.A.T.T using synthesisers, iPad apps and mics. Finally, a visual dimension to the works was developed in sessions led by Sam Skinner using iPads to produce typographic animations and found footage was sourced from the web to create collaged videos edited together with their readings and sound works. The final works can be seen on the project tumblr: www.torquetorque.tumblr.com



JESSICA STEERS
-
RELAXING ALL AROUND
-
BEAUTIFUL FLOWERS
-

Looking around all the nice beaches
White and brown shells
I can hear the water, just a few big bubbles
The smell of flowers

Close your eyes looking over the wind
Your mind is looking back over wind go by

You can hear sounds of fishes
swim and make a splash
They swim down down down
look around you with all
Starfishes jumping at you, hoping and its yellow
And small sun comes, big bright and yellow
Looks down, it's around you, make our way down
Onto the beach with all the seeds are small
Nice and soft

Feel the stones rock
Make the sand go soft

Red and yellow pink blue plants
and get more colours

The blue sky with shine of white

Feel the stones rock make the sand go soft

And all the stars above all comes down
On make the moon go high comes down

The water comes over the sand and makes it cold

Hear all the sand
and make it sound like the water goes in

LISA FRITH
-
ROBOROSS
-

A greek god and Roboross
The ever ending circle of life
Forced to grow extra limbs
to hold all of reason together
For all eternity

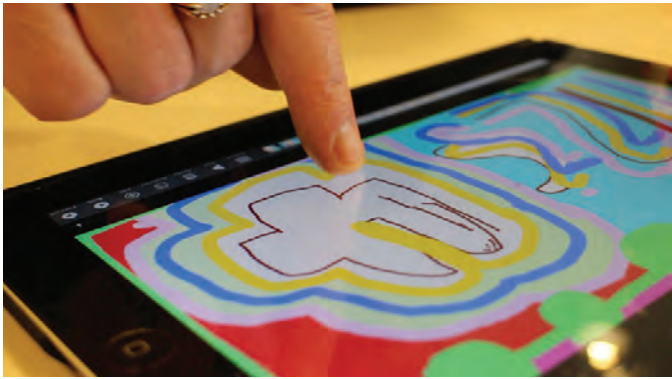
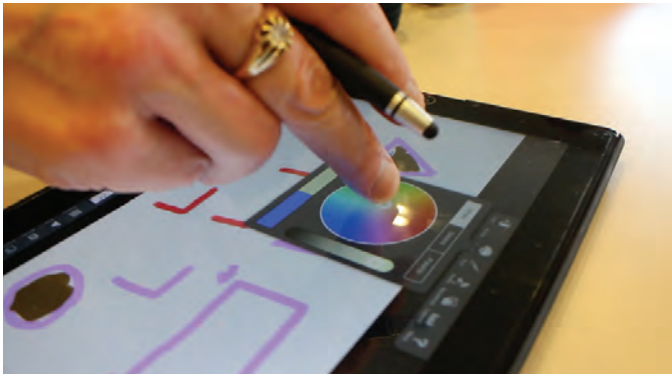
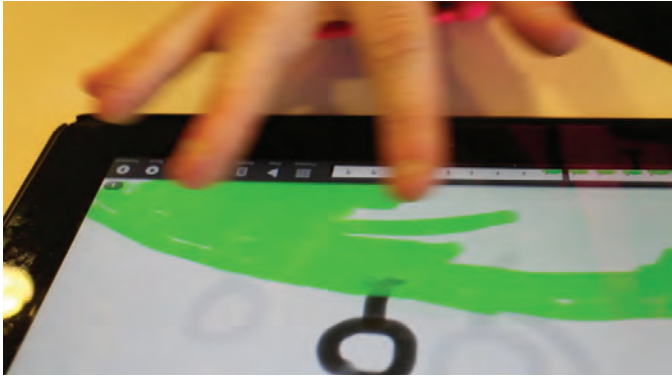
The door opened
A white backdrop
Submerged in all of time and space
When it is seen there is deadly silence
Of what is to become

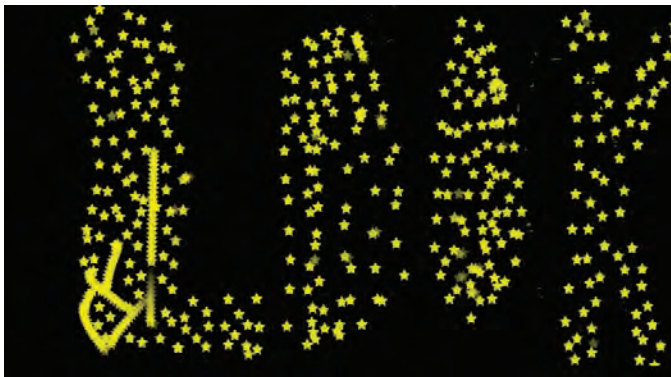
Only the stars know the truth

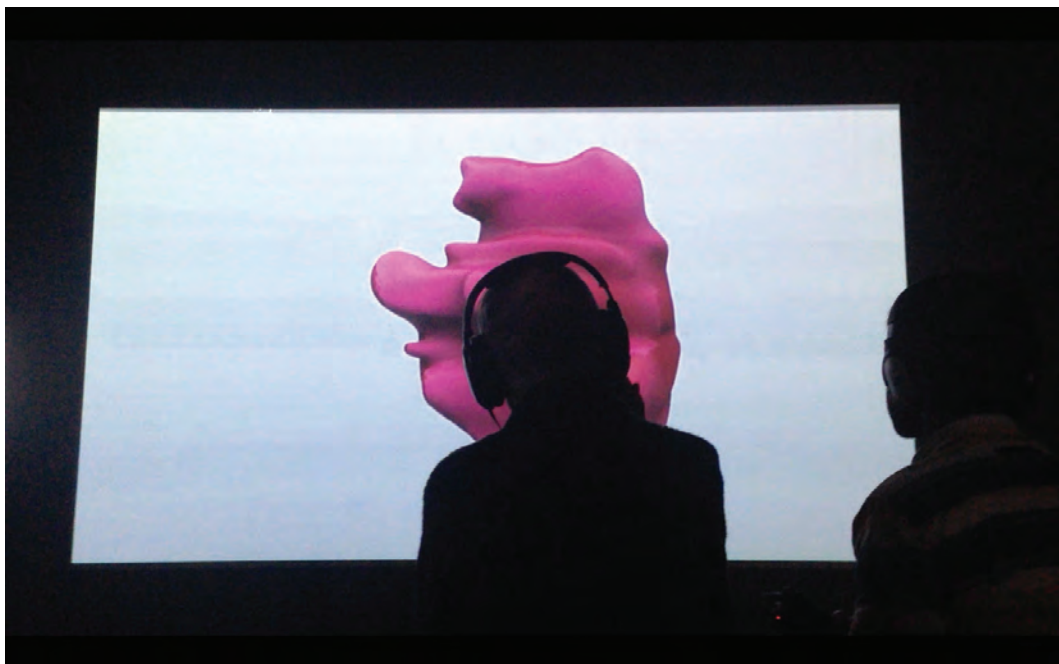
No one know the truth about death
It is the uncomfortable side of life
Whatever your religion it comes to all of us

JOHN MORGAN
-
THE BEATLES IN AMERICA
-

Life is too short
Change the subject
Talk about mum and dad
That's life
That is life
Don't look back, look forward
Long time dead
Don't look back, look forward
That is the plan
You have to have the lights on
Like the Beatle's in America

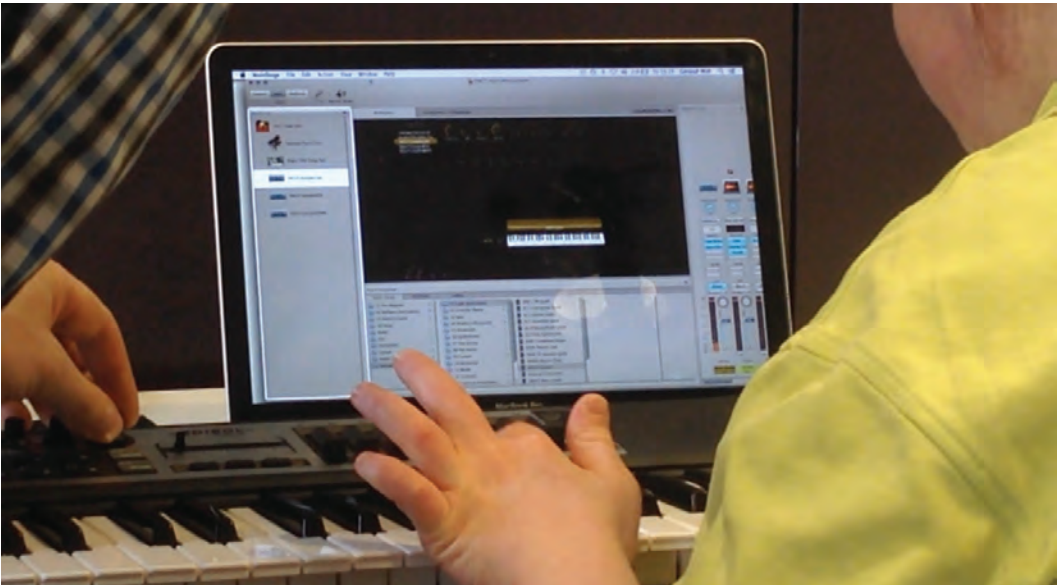












C O N
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T O R S
S

LAWRENCE ABU HAMDAN

Lawrence Abu Hamdan's (b.1985 Gharifé) work frequently deals with the relationship between listening and borders, human rights, testimony, truth and law, through the production of audio-visual installations, graphic design, sculpture, photography, workshops and performance. His work with sound and its intersection with politics originate from his background in DIY music. His work was submitted as evidence at the UK asylum tribunal where the artist himself was called as an expert witness. His solo exhibitions include *The Freedom Of Speech Itself* (2012) at Showroom, London, *The Whole Truth* (2012) at Casco, Utrecht and most recently *Tape Echo* (2013) at Beirut in Cairo.

WWW.LAWRENCEABUHAMDAN.COM

EMIL ALZAMORA

Emil Alzamora was born in Lima, Peru in 1975. His family moved to Boca Grande, Florida when he was two. He later attended Florida State University where he graduated Magna cum Laude in 1998 earning a Bachelor's Degree in Fine Arts. Alzamora harnesses a wide range of materials and techniques to deliver unexpected interpretations of the sculpted human figure. Alzamora's works have been exhibited in multiple solo and group shows, many national and international art fairs as well as the United Nations Building, Pepsico World Headquarters, The Queens Museum of Art, The Hudson Valley Center for Contemporary Art, and The Museum of Biblical Art in Dallas. His work has been reviewed by publications such as *The New York Times*, *The Brooklyn Rail*, *The L Magazine*, *El Diario*, *Boston Metro News*, *Juxtapoz*, *High Fructose*, *ArteFuse* and *Cool Hunting*. He currently lives and works in Beacon, NY.

WWW.EMILALZAMORA.COM

CÉCILE B. EVANS

Cécile B. Evans is a Belgian American artist based in Berlin and London. She is the 2012 recipient of the Emdash Award which resulted in a commissioned work for the Frieze Art Fair in London. She is also the 2013 recipient of the PYA Prize, which resulted in the production and exhibition of a new video work at the Palais de Tokyo (Paris). Other previous exhibitions have included *How to Eclipse the Light* curated by Karen Archey, Wilkinson Gallery (London) and *Desire* at the Bergen Art Museum (NO). She was recently an artist in resident at the Wysing Arts Centre (UK) and participated in talks series such as *Rhizome's Seven on Seven* at the Barbican (UK), ICA Salon (UK), and Art Basel Miami Beach Conversations (FL).

WWW.CECILEBEVANS.COM

CHRIS BOYD

Chris Boyd is a British contemporary artist whose multi-media work is preoccupied with the interrelationships with technology and modes of being. Boyd has shown work at a wide variety of galleries, events and venues, including Tate Online, FACT, Baltic Centre for Contemporary Art, The Lowry, Roundhouse, Urbis, Corsica Studios, *The Bigger Picture* with The Cornerhouse. A broad spectrum of Boyd's visual art and commercial work has been broadcast including music video channels, MTV, 4 Music, BBC 2, Channel 4 and Channel 5. He was joint winner of the Big Art Challenge UK Art Prize 2004, a 6 part series on channel 5. A recipient of a Microwave award from FACT in 2004. In 2005 he provided a video in *40 Artists 40 Days*, a special Tate Britain project supporting London's Olympic bid that brought the games to Britain in 2012.

WWW.QBOYD.COM

MEZ BREEZE

Mez Breeze is an Australian-based artist and practitioner of net.art, working primarily with code poetry and digital multimedia works combining text, code, image and sound. Born Mary-Anne Breeze, she uses a number of avatar nicknames, including Mez and Netwurker. She received degrees in both Applied Social Science [Psychology] at Charles Sturt University in Bathurst, Australia in 1991 and Creative Arts at the University of Wollongong in Australia in 2001. In 1994, Breeze received a diploma in Fine Arts at the Illawarra Institute of Technology, Arts and Media Campus in Australia.

“Mez does for code poetry as jodi and Vuk Cosic have done for ASCII Art: Turning a great, but naively executed concept into something brilliant, paving the ground for a whole generation of digital artists.” (Florian Cramer). The impact of her unique code/net.wurks constructed via her pioneering net.language has been equated with the work of Shakespeare, James Joyce, Emily Dickinson, and Larry Wall.

WWW.NETWURKER.LIVEJOURNAL.COM

GEOFF COX

Geoff Cox, PhD, is currently Associate Professor, Participatory IT Research Centre, Dept. of Aesthetics and Communication, Aarhus University (DK). He is also adjunct faculty, Transart Institute, Berlin/New York (DE/US), treasurer of the Museum of Ordure, and until recently Associate Curator of Online Projects, Arnolfini, Bristol (UK). He is an editor for the DATA Browser book series (published by Autonomedia, New York), and co-edited 'Economising Culture' (2004), 'Engineering Culture' (2005) and 'Creating Insecurity' (2009) and 'Disrupting Business' (2013). His latest book is 'Speaking Code' (MIT Press 2012).

BENEDICT DREW

Benedict Drew is an artist who works across video, sculpture and music to explore our relationship with technology. Drew completed an MFA at the Slade School of Fine Art, London, in 2011. He has frequently collaborated with a diverse mix of artists and musicians and has made many works for radio, including the series Unter Radio for Resonance FM, and most recently Concrete Decent Transmission for Writtle Calling. He was lead artist for Chisenhale Gallery's Propeller Project (2012) was a LUX Associate Artist (2011/12) and in 2012 was shortlisted for the Jarman award.

WWW.BENEDICTDREW.COM

STEPHEN FORTUNE

Stephen Fortune is an interactive media artist and writer. He is senior editor for AVANT, a new art | sci | tech publication, a member of the Open Systems Association and has previously worked with YoHa and Mozilla. Stephen constructs contraptions as kludged inversions of the epistemic objects operating within computational culture: with specific research interests in data, biotechnologies and grey media. He curates the Wetware Ontologies Tumblr, to chart the terrain where the conceptual engines of informatics are encroaching onto and into biology.

WWW.STEPHENFORTUNE.NET

KARL HEINZ JERON

Karl Heinz Jeron (Berlin) works with the phenomena of everyday life, in particular its technological aspects, collecting material from Google, Wikipedia, chat rooms and public space, becoming the basis for performances and installations with small robots, video and audio. His works have been shown at the ZKM Karlsruhe, Ars Electronica Linz, Transmediale, and the Museum of Modern Art San Francisco.

WWW.KHJERON.DE

NATHAN JONES

Nathan Jones is an artist, poet and curator. Nathan is the Creative Director of Mercy, with whom he has produced performance and writing at Liverpool Biennial for the last three festivals. He produced the Electronic Voice Phenomena programme throughout 2010-13, and now co-edits, with Tom Chivers, an accompanying blog at electronicvoicephenomena.net. Nathan's art practice is based in language noise and digital media performance, and he writes theatre with the artist Mark Greenwood. Current projects include Syndrome a residency and laboratory programme in Liverpool, looking at interaction and affect in performance; and Torque.

WWW.ALITTLENATHAN.CO.UK

ESTHER LESLIE

Esther Leslie is Professor in Political Aesthetics at Birkbeck, London. Leslie has research interests in Marxist theories of aesthetics and culture, with a particular focus on the work of Walter Benjamin and Theodor Adorno.

Other research interests include the poetics of science, European literary and visual modernism and avant gardes, animation, colour and madness. Her books are *Walter Benjamin: Overpowering Conformism* (Pluto 2000), *Hollywood Flatlands, Animation, Critical Theory and the Avant Garde* (Verso 2002), *Synthetic Worlds: Nature, Art and the Chemical Industry* (Reaktion, 2005) and *Walter Benjamin* (Reaktion 2007), *Derelicts: Thought Worms from the Wreckage* (Unkant, 2014).

ALEX MCLEAN

Alex McLean is a musician and researcher based in Yorkshire. He live codes with his Tidal mini-language including as part of Slub (with Dave Griffiths and Adrian Ward), Canute (with Yee-King), the Hession/McLean Duo (with Paul Hession), and Sound Choreography \leftrightarrow Body Code (with Kate Sicchio). He is co-founder of the TOPLAP, the AHRC Live Coding Research Network, the Algorave movement and ChordPunch algorithmic music record label. Alex completed his PhD thesis "Artist-Programmers and Programming Languages for the Arts" in 2011 at Goldsmiths, University of London, and is now a Research Fellow of the University of Leeds.

WWW.YAXU.ORG

LAMBROS MALAFOURIS

Lambros Malafouris (Ph.D. Cambridge 2005) is a Johnson Research and Teaching Fellow in Creativity, Cognition, and Material Culture at Keble College and the Institute of Archaeology, University of Oxford. His primary research interests lie in the archaeology of mind and the philosophy of material culture. His publications include *How Things Shape the Mind: A Theory of Material Engagement* (2013, The MIT Press), *The Cognitive Life of Things: Recasting the Boundaries of the Mind* (2010, McDonald Institute Monographs, with C. Renfrew), *The Sapient Mind: Archaeology Meets Neuroscience* (2009, Oxford University Press, with C. Renfrew & C. Frith), and *Material Agency: Towards a Non-Anthropocentric Approach* (2008, Springer, with C. Knappett).

ANNA MUNSTER

Anna Munster is a writer, artist and educator. Her recent book, *An Aesthesia of Networks* imagines network experience affectively and perceptually beyond models of links and nodes. She collaborates with Michele Barker to produce multi-channel installations and environments that propose enactive and embodied forms of perception. And she is an associate professor at the College of Fine Arts, University of New South Wales, Sydney, Australia. Her current research is engaged with a large international partnership with Erin Manning, Brian Massumi, Bodil Marie Stavning Thomsen, Andrew Murphie and others around the concept of 'immediation' in relation to art, media and event.

DENNIS OPPENHEIM

Dennis Oppenheim received a B.F.A. from the School of Arts and Crafts, Oakland, California, in 1965, and an M.F.A. from Stanford University, Palo Alto, California, in 1966. His practice has employed all available methods: writing, action, performance, video, film, photography, and installation. He received a Guggenheim Foundation Fellowship in 1969, National Endowment for the Arts Fellowships in 1974 and 1982 and a Lifetime Achievement Award at the Vancouver Sculpture Biennale. Since the 1960s Oppenheim's works have been included regularly in international group exhibitions, at such venues as the Museum of Modern Art, Centre George Pompidou, the Metropolitan Museum of Art, the Venice Biennale (1976, 1980 and 2001) and Documenta in Kassel (1972, 1977). Solo exhibitions have included the Tate Gallery, London (1972); the Musée d'Art Moderne de la Ville de Paris (1979); and the Whitney Museum of American Art (1983, 2003). Major retrospectives were presented at the Stedelijk Museum in Amsterdam (1974); Museum Boijmans Van Beuningen in Rotterdam (1976); Musée d'Art Contemporain in Montreal (1978); and P.S.1 in New York (1991).

WWW.DENNIS-OPPENHEIM.COM

HOLLY PESTER

Holly Pester is a poet and multidisciplinary writer. She has worked as an archivist, lecturer and practice-based researcher with performances and sound installations featuring in events in Mexico City, DOCUMENTA 13, the Text Festival, and the Serpentine Gallery Poetry Marathon. Holly Pester's poetry collection, *Hoofs*, was released with if p then q press in 2011 and her next collection, *Folkslop* is due out with Veer Books late 2014. She is currently artist in residence at the Women's Art Library.

WWW.HOLLYPESTER.COM

HANNAH PROCTOR

Hannah Proctor is interested in the ideological underpinnings of psychiatry and neuroscience. She is currently working on a PhD on the Soviet psychologist and neurologist Alexander Luria at Birkbeck, University of London.

[@HHNNCCNNLL - TWITTER/TUMBLR](#)

KATE SICCHIO

Kate Sicchio is a choreographer, media artist, and performer. She works at the interface of choreography and technology. Her work includes performances, installations, web and video projects and has been shown in Philadelphia, New York City, Canada, Germany, Australia and the UK at venues such as Banff New Media Institute (CAN), WAX Brooklyn (US) and Arnolfini Arts Centre (UK). Her PhD focused on the use of real-time video systems within live choreography and the conceptual framework of 'choreotopolgy' a way to describe this work. Her research has been published by Leonardo Electronic Almanac, Computer Music Journal and Learning Performance Quarterly.

WWW.BLOG.SICCHIO.COM

ROBERT SHEPPARD

Robert Sheppard is Professor of Poetry and Poetics at Edge Hill University in Lancashire, UK. Recent titles include Hymns to the God in which my Typewriter Believes (2006), Warrant Error (2009), Berlin Bursts (2010), and A Translated Man (2012). As a poet critic, Sheppard has written widely on modern poetics, including Far Language: Poetics and Linguistically Innovative Poetry 1978-1997 (1999), The Poetry of Saying: British Poetry and its Discontents 1950-2000 (2005), and Iain Sinclair (2007). He edited The Salt Companion to Lee Harwood (2007), and co-edits the Journal of British and Irish Innovative Poetry.

WWW.ROBERTSHEPPARD.BLOGSPOT.CO.UK

SAM SKINNER

Sam Skinner is an artist and producer, whose work moves between art and other fields, combining an interest in art history and theory, in particular new media and public space, with more engaged practice, including murals, workshops, animation, set design, gardening, archival research, writing, and ebooks. Sam has a BA from LJMU and an MA from Sussex, both in Art History. Current projects include the design of seating for a new green-space in Brighton and an accompanying schools ecology project, in collaboration with Charles Holden and Plan Projects.

WWW.SAMSKINNER.NET

IMOGEN STIDWORTHY

Imogen Stidworthy is a Liverpool-based artist working with sound, voice and video. Prizes include Dutch Prix de Rome, 1996, the Liverpool Art Prize 2009. Imogen was shortlisted for Beck's Futures 2004, The Northern Art Prize 2008, The Jarman Award 2011. Her work is in collections including Centre Georges Pompidou, FRAC Bourgogne, MuHKA Antwerp, Dommerung Collection (NL), LUX London and the Vries Museum (NL).

WWW.IMOGENSTIDWORTHY.COM

LINK Editions

<http://editions.linkartcenter.eu/>

Clouds

Domenico Quaranta, *In Your Computer*, 2011
Valentina Tanni, *Random*, 2011
Gene McHugh, *Post Internet*, 2011
Brad Troemel, *Peer Pressure*, 2011
Kevin Bewersdorf, *Spirit Surfing*, 2012
Mathias Jansson, *Everything I shoot Is Art*, 2012
Domenico Quaranta, *Beyond New Media Art*, 2013
Curt Cloninger, *One Per Year*, 2014

In My Computer

#1 Miltos Manetas, *In My Computer # 1*, 2011
#2 Chris Coy, *After Brad Troemel*, 2013
#3 Martin Howse, *Diff in June*, 2013
#4 Damiano Nava, *Let the Right One In*, 2013
#5 Evan Roth, *Since You Were Born*, 2014
#6 Addie Wagenknecht, *Technological Selection of Fate*, 2014

Catalogues

Collect the WWWorld. The Artist as Archivist in the Internet Age, 2011
Exhibition Catalogue. Edited by Domenico Quaranta, with texts
by Josephine Bosma, Gene McHugh, Joanne McNeil, D. Quaranta

Gazira Babeli, 2011.
Exhibition catalogue. Edited by Domenico Quaranta,
with texts by Mario Gerosa, Patrick Lichty, D. Quaranta, Alan Sondheim

Holy Fire. Art of the Digital Age, 2011
Exhibition catalogue. Edited by Yves Bernard, Domenico Quaranta

Ryan's Web 1.0. A Lossless Fall, 2012
By Ryan Trecartin

RE:akt! Reconstruction, Re-enactment, Re-reporting, 2014
Exhibition Catalogue. Edited by Antonio Caronia, Janez Janša, Domenico Quaranta,
with texts by Jennifer Allen, Jan Verwoert, Rod Dickinson

Born Digital, 2014.
Exhibition Catalogue. Edited by Link Art Center

Open

Best of Rhizome 2012, 2013

Edited by Joanne McNeil

Co-produced with Rhizome, New York (USA)

The F.A.T. Manual, 2013

Edited by Geraldine Juárez and Domenico Quaranta

Co-produced with MU, Eindhoven (NL)

Troika, 2013

Edited by Domenico Quaranta

Co-produced with Aksioma - Institute for Contemporary Art, Ljubljana (SLO)

Eternal September, 2014

Various Authors

Co-produced with Aksioma - Institute for Contemporary Art, Ljubljana (SLO)

Torque # 1. Mind, Language and Technology, 2014

Edited by Nathan Jones and Sam Skinner

Co-produced with Torque Editions (UK)

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