
Clone Your Technics

Research creation, radical empiricism and the constraints of models

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All Research is Research

Creation

(suggested music while reading - Was (Not Was)'s Wheel Me Out)

All research is research-creation, even if some research pretends otherwise.

All research is necessarily, if at some times more weakly than others, an assemblage to produce the new. What masks this is that much of the new is “*preterritorialised*” in matrices of standardisation, from performance outcomes to the necessity for a press release telling the world of the immediate utility of an innovation.



Still from the collaborative work *Assemblage for Collective Thought* (Munster and Murphie 2007): these images provided by Gillian Fuller and Michele Barker. Participants who provided images, video, text and sound were: Dragana Antic, Michele Barker, Gillian Fuller, Matthew Fuller, Lisa Gye, Ross Harley, Brett Neilson, Anna Munster, Andrew Murphie, Kate Richards, Trebor Scholz and Mat Wall-Smith - see <http://researchhub.cofa.unsw.edu.au/ccap/2007/08/02/assembling-collective-thought-anna-munster-and-andrew-murphie/>

All research is research-creation because everything really is relative - although not in the lazy manner that many silly caricatures of cultural theory (such as Sokal and Bricmont's) often

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suggest. Gilles Deleuze writes that this is “not the relativism we take for granted. It is not a variation of truth according to the subject, but the conditions in which the truth of a variation appears to the subject” (1993: 20). This truth of a variation is what is *discovered* by research-creation. Understood this way, all research is research-creation because the real, if you like empirical, world is constantly re-assembling itself, in process. This has been noted by philosophers from Alfred North Whitehead to Gilbert Simondon, Isabelle Stengers and Gilles Deleuze and Félix Guattari. As Brian Massumi notes, even ‘change changes’ (2002: 10).

At the same time, even though all research is research-creation, to create the new *with awareness that this is what we are doing* makes all the difference in the world. All research is research-creation but not all research-creation is the same.

Worlding

(suggested music while reading - Cinematic Orchestra's Breathe)

Research-creation does not mimic biblical creation. It is not so much an engagement between us on the one hand and *the* world on the other. It is more a matter of what Massumi calls ‘worlding’. Here “the self-network is a worlding of the human” (Massumi 2002: 128). There is an ongoing mix of relations between habits, perceptions and the movement of our specific ecological contexts. To create the new is to participate in worlding differently.

Here also we can understand the technics - by which I mean simply technologies and techniques - that are crucial to the activity of research-creation. In worlding -

[...] subject and object integrate into a greater autonomy of participation, a matter-manner meld adding a new line of multiple-singular encounter to the world: that of *a technic, an artificed between of any number of possible subjects and objects, autonomous of any given particular subject or object*. (Massumi 1997: 755)

Worlding with awareness is made possible by the refusal - a technically orchestrated refusal - of the world to be owned, by legal deed, by concept, or by experimental design. To research is to focus, then, on how *participation* occurs. This is again a question of technics. Technics describes the partial, always incomplete attempt at what used to be thought of as agency (now agency as participation and becoming) within worlding.

Technically then, the question is not one of whether we should have research-creation or not, but of what kind of research-creation we are able to have. There can be little doubt that much research is pushed - particularly by institutions which are constantly reconstituted by a certain mode of technics of discipline or control - towards what I am calling here *preterritorialisation*. This is the attempt to standardise and recuperate research into a certain order before it occurs, even if in terms of a *standard deviation* or pre-fixed range of variations or possible modulations. This attempt at order is doomed in absolute terms (after all, *change changes*), although technics is all about the extent to which such a doom can be postponed.

Technics' freedom to impose a certain *temporary* order in the face of this doom tell us that order of a kind is possible - that a semblance of order can be found. However, the fact that technics can rework the order of things freely also tells us that there is no natural sovereignty or hierarchy to forms of knowing. Neither are disciplines nor faculties given (whether in the university or the brain/mind). It was certainly never a given that there were C. P. Snow's famous 'two cultures' of science (knowing/research) and art (creation), although it is just as certain that there has never been one, but many cultures. Any *order* within this - even an order of preterritorialised variation - within forms of knowing has to be constantly recreated immanently ... and technically.¹

For all these reasons, *creation* is often folded into institutionalised research in a particular manner, the more so as creativity becomes an industry. Martin Heidegger's description of research as 'ongoing activity' (1996:53) remains apposite. For Heidegger, the ongoing activity of research attempts to confirm a certain 'world picture' - aligned with certain disciplines and faculties. More importantly, the very idea of affirming a complete and stable world *as picture - as being able to be represented* - becomes the central aim of research. It is important to note again that even here such research is not uncreative or even closed in any absolute sense. Heidegger's term 'ongoing activity' reflects this.

Given a world in which everything is creation, ongoing activity assembles events as best it can within the terms of an *impossible closure*. To some extent we are all wrestling with this impossible closure. Today, however, a series of new technics are emerging in research creation that challenge this world picturing, its ongoing activity. These technics explore

questions such as the new relations between imagination and reason that might be possible, or new faculties of knowing or thinking. What follows is a series of idiosyncratic sketches - often, as we shall see, involving dogs as research collaborators - of both *impossibly closed* and *impossibly open* research creation.

We Are All Scientists, We Are All Artists

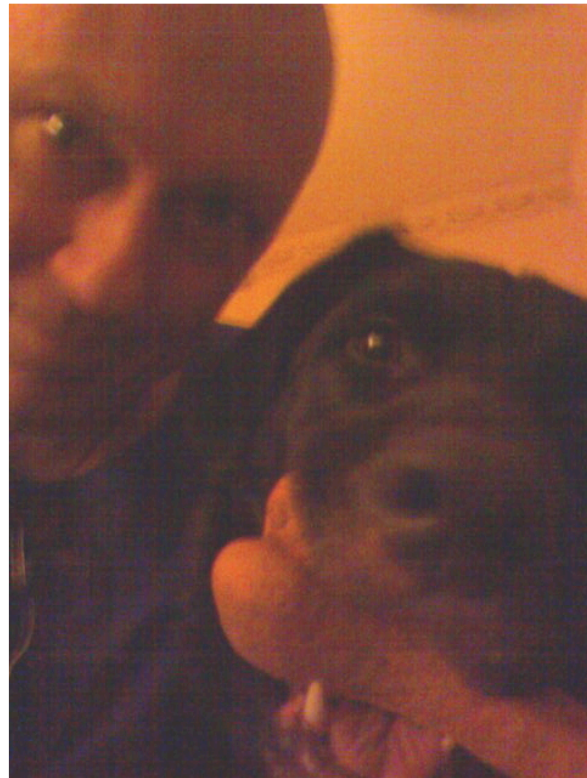
(suggested music while reading - Joni Mitchell's Refuge of the Road)

A final note before these sketches. Although *research-creation* often feels dramatically experimental - and is genuinely exciting - it is not unusual. Not only is all research research-creation but research-creation is a common cultural condition, even if traditional institutions sometimes pretend otherwise. We are all both scientists and artists - inevitably exploring in our everyday life both our technical limits (science) and our own impossibilities of closure (art). Just as importantly, we are all increasingly immersed in the bigger pictures of science and art as these two dramatically reconfigure their relations, often with *us* as their laboratory. Better known examples might be the dramatic increase in the use of pharmaceutical products targeting the brain, basic self-improvement or performance management, or the regulation of teaching and learning via technics of preterritorialisation (defining *learning outcomes* and aligning these with assessment, *learning activities*, and constrained forms of student feedback, all of these in turn feeding into performance management). These situations - in which it becomes harder to *picture* a stable world - suggest that we are truly situated in a worlding of shifting self-network relations (not always of the most ethical sort), more than a *world picture*. This is not only by virtue of what is almost a command to take up *ongoing activity*, as both scientists and artists. We are also immersed as subjects in a series of ongoing experiments (whether by the World Bank or global warming) that the Futurists themselves could not have dreamed of. So the stakes involved in thinking through research-creation are very high.

Tommy's Pause

*(suggested music while reading -
Colleen's Ritournelle)*

Tommy - the border collie, Labrador cross in this picture - is, like all dogs, a natural and radical empiricist. He is thoroughly and unashamedly focused on the relational. For example, one of his *things* is to lie down with his paw over your foot as you sit on a chair, often licking both paw and foot together so you can't tell which is which. He is of course incomprehensible in his relatedness. Yet he demands to be thought with. It's in his eager gaze.



It's a strange thing to look an animal in the eye and have it look back at you *and think* (although one will never know what). It happened to me once with a polar bear in Copenhagen Zoo. We looked at each other from a metre and a half away, although separated by two rows of thick steel bars. It happens too with Tommy. I remember one time in particular, just playing, yet one which both Tommy's *owner* and I still remember years after. Tommy loves repetition and difference in that dog way that turns simple repetition into an ongoing relation. Once when he was half-grown, we played endless chasings around a pillar in the centre of the house. The best part for Tommy seemed to be the moment when he paused on the other side of the column, looked around the corner at me, and waited for something in my eyes to give away the direction in which I'd try to catch him. This was a pause of pure relationality - no pretence at preemption or outcomes. Yet it also felt like the most agency one will ever get (that is, partial, incomplete, totally immersed in relations). Not just becoming-dog; becoming-chasings.

As dogs seem to understand, such moments - extended by repetition and difference into durations, can be a *becoming-technics* or a *technical evolution of relations*. Technics builds on the simple differential repetition involved in relationality, with all technics emerging from a re-assemblage, a resynthesis in contemplation, of other technics of relation- not only more formal technics, but less formal, such as chasings, or the famous fort/da of Freud. These simple technics can

return to *serious research* in a productively disruptive way, as when children and animals are allowed into the room where *serious* discussion is occurring, a common occurrence in many of the most intellectually



produced research workshops with

which I have been involved. These technics are not always grand. They are in fact often *trivial*, everyday. They also leak into other experiences. They add to the complexity of research events by breaking up hierarchies. For example we could take, in The Sense Lab's *Dancing the Virtual* workshop in Montréal in 2006, the leakage of experience between the simplicity of relational movement exercises led by Erin Manning and the philosophical discussion. Relational movement, in this workshop at least a kind of contact improvisation for beginners, involves a kind of initiation (re-assemblage) into a technics of relation common to dancers. It involves - at least at the beginning - simple experiences such as placing a hand on another's chest and then moving *with* each other without this involving pushing or pulling. An impossible closure. An impossible opening. Constraint and opening in a simple yet extreme form. Such relational movement is not open to debate. It is working or not - and you know immediately which. This had a profound effect on the direct philosophical discussion,

which was conducted with precision at an extremely high level, but with no expressed animosity - of the kind usual in so many academic contexts - for three days. I think this was at least in part because the relational movement re-assembled things at a deep level, or rather re-assembled things so that they focused on the immanent condition of relations rather than on their preterritorialisations. In turn, there were successful attempts to *do philosophy* - research-creation. 'Create a movement of thought!' was one command that worked. These still resonate, and will carry through to further workshops in the series (and others as the technics developed are both cloned and mutated elsewhere).

Maybe this is what happens if you let dancers into the room with philosophers.

I will write more about dogs and empiricism below, but for now I'll note that some of the workshops I've been to that worked best in terms of opening out to a *radical empiricism* were those in which animals (usually dogs, but also sometimes cats, or even kangaroos or kookaburras in Australia, the latter of which have a *laugh* which is an instant call to radical empiricism) wandered through, and often children as well. All these carry their own leaky radical empiricisms - their percepts, their affects, their creation of concepts.

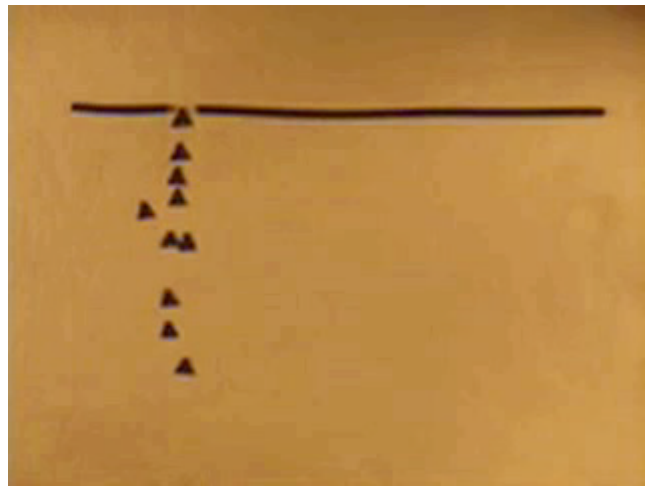
They even work with their own radical empiricist scientific *functions*, described by Deleuze and Guattari as 'a fantastic slowing down' by which 'matter, as well as the scientific thought able to penetrate it with propositions, is actualized' (1994: 118).

It is of course said that one should 'Never work with children and animals'. Why? They're unpredictable. They don't follow the script. Put a dog or a child on stage and they will explore it for what it is, not what it represents - or perhaps freeze, not having been habituated to performing their part but aware that something is demanded - a script must be followed. For the radical empiricist, however, it's the script that, while often enabling, needs to be departed from. This is in fact a purer empiricism as nothing, not even habit, sticks to the script, even in the most rigorous repetition.

Clone Your Technics

(suggested music while reading - Keith Fullerton Whitman's Stereo Music for Yamaha Disklavier Prototype, Electric Guitar and Computer)

Whenever I have told others about experiences such as *Dancing the Virtual* or the *Biophilosophy and the Politics of Life* event run in Australia in 2003 by the Humanities Research Centre (in which much of the discussion took place on a farm by the ocean, with animals and children as part of the event), a first question has been ‘but what did you do’ - and then, ‘*how* do you do this kind of thing?’.



Still of felt animation of queuing, provided by Gillian Fuller for the collaborative work *Assemblage for Collective Thought*

These questions are neither utopian nor romantic. *They are technical*. They are also not obscure questions, for academics only, but concern modes of experimental development in everyday relations as much as in special workshops and conferences (just as traditional, hierarchical forms of research, including conference organisation, reflect a broader cultural technics of knowledge production and impact).

‘How do you do it?’ It has also been my first question when hearing of other events that are attempting new forms of research-creation, such as the *Freecooperation* event organised by Trebor Scholz and Geert Lovink at Buffalo in 2004.²

‘How do you do it?’ has a simple practical answer. Tell people what works - *technically*. Clone your technics. Make copies. Distribute them. Make them available to others on the web (make an interpersonal equivalent of BitTorrent for research-creation technics, learn from the Open Source community). It’s like giving cuttings of plants to others for their garden. It’s actually hard to begin to understand research of any kind until you’ve done it - especially its precise technical limitations and possibilities. Moreover, although we are not the first to experiment - there have always been radical empiricists, and a radically empiricist mode of living - we are only now perhaps developing and popularising the vocabulary, the concepts, the technics. It’s often hard to explain exactly the vocabulary, the concepts. However, technics are something that can be easily communicated, experienced.

Christophe Spehr's three rules for free cooperation are a case in point. They are meant to be cloned. They are limits or functions, scientific in that they actualize - slow things down - in a certain manner. Yet they are also enabling in that they are a technics of limitation that bring a basic constituent of research-creation into being - namely free cooperation itself. Spehr's rules are -

first ... that all rules in this cooperation can be questioned by everybody, there are no holy rules that people cannot question or reject or bargain and negotiate about - which is not the case in most of the cooperations and organizational forms that we know. ...

second ... that people can question and change these rules by using this primary material force of refusing to cooperate, by restricting their cooperation, by holding back what they do for these cooperations, making conditions under which they are willing to cooperate, or leaving cooperations. ...

third ... which is important because otherwise it would be just a blackmailing of the less powerful ones by the more powerful ones - is that the price of not cooperating, the price that it costs if you restrict your cooperation or if the cooperation splits up, should be ...not exactly equal ...but similar for all participants in this cooperation, and it should be affordable. That means, it can be done, it's not impossible, it's not a question of sheer existence to cooperate in this way. (Spher)

These rules dismantle hierarchies immanently, or allow for this. Yet they need to be strict to do so. To repeat, it is important that this recipe is a certain set of *enabling limitations* - that even when everything goes, not everything goes.

It is just as important to see that this recipe for creating the new is not the only one. Yet the more general character of enabling limitation is probably something shared by most research-creation technics.

Habit As Enemy and As Friend

(suggested music while reading - whatever you don't normally listen to)

Such technics standardise repetition in terms of experience, but only so as to change things (one obvious example is cooking - we measure ingredients, oven temperature, etc, so as to change eggs, flour and sugar into a cake). It would be tempting to oppose this technics to another - which changes things in order to standardise them, to bring them back into standardisation, but this would assume that an order of bare repetition - of standardisation -

was possible. If so, it would look like Matthew Fuller's 'standard objects' (for example, shipping containers). Even here, however, the point is that these allow for a "mobilization of affordances within them, drives that surpass their limits" (Fuller:169).

Standardization does not guard against change because, famously, as described in Deleuze's *Difference and Repetition*, repetition and difference are mutually involved. For Deleuze, difference is not a difference between objects, but a difference over the time of the repetition, in duration, the new intensity of flows that shipping containers make possible, for example (the difference container shipping keeps making to the world). Such forms of differential repetition supplement the human in order to express the human in interaction with other forms of supplementation, of rocks, of animals, of climate (think here of the *shipping* of King Kong from a remote island to New York perhaps). In supplementing the human, the technics of differential repetition also define the human, and thus Deleuze and Guattari's 'mechanosphere' (1987: 514) or Bernard Stiegler's understanding of technics (1998).

The human feels these ecologies of differential repetition and supplementation as habit, and habit is in some ways the very substance of research-creation.

One of the first counter-intuitive ideas in Deleuze's *Difference and Repetition* is that repetition *in itself* inevitably opens to difference. This is because it is in repetition that we contract events into a sensed duration. It is this which enabled us to feel differential movement (in the martial arts or dance, for example, two repetitions of established sequences of movement feel simultaneously related and always different). This contraction - as habit - is fundamentally enabling. In Deleuze's view, habit is never a matter of 'just repeating' things as they were. It is rather a matter of creating the smallest durations between one instance and another in order both to repeat and to differ. Habit - *even within one's own isolated experience* - is therefore always relational. We are not just our relations with *others*. *We* are quite literally made up of relations to ourselves - shifting differential durations - through time. Even if we can clone our technics - our modes of repetition - we can never clone our selves.

Habit is the embodied mode of differential repetition. It is true that changing habits is one of the main technical aims of research-creation. However, it is also true that habits are

necessarily temporal formations of possibility for change. They are the friends as well as the enemies of research-creation. This is because habits are the friends of time, and time is the friend of research-creation.

Still, there are habit and habits. If habits are the very substance of research-creation, the urgency of research creation concerns which way these habits are tending to take us. A radical empiricism that does not only begin with relations but accepts that we are not just *analysing them*, making them the basis for a new kind of taxonomy of experience, but that we are remaking relations - changing our habits, and our institutions as collective habits - as we go.

We need to think about *cloning our technics* then, in terms of the way that this cloning fosters an awareness/experience of difference within research creation. First, this is not only a question of a morphogenetic variation but a variation over time within *the relations* that hold any form together. Second, with this more complex understanding of our habits as a kind of basic series of techniques for holding our own difference and repetition together, and our technics as a kind of ecological form of difference and repetition, we can see technics in research creation as a way of habitualising our existential ecologies differently, of finding the micro-forms of living that can tolerate/work with impossible closure, impossible openness.

Pragmaticism as Having Done with the Judgment of God

*(suggested music while reading - Burial's
Ghost Hardware*

Critique, in itself, does not give us these new forms of living. In the context of radical empiricism, critique has 'run out of steam' as Bruno Latour puts it. Or perhaps, in Deleuze's terms, critique is not harsh enough. A more radical critique, a total critique, leaves nothing standing - except perhaps the relations



Still from the collaborative work *Assemblage for Collective Thought*
(image provided by Mat Wall-Smith)

with which to begin creation. In either case, what does replace critique as usually practiced? It begins with something like ‘immanent critique’, which, as Massumi notes, asks of critics ‘that they actually take the risk of putting themselves into play, accepting that they may exit the event having fundamentally changed’ (personal communication with *The Sense Lab*).

This is to develop the habit of changing habits, and to change habits is to change forms of embodiment (not least to abandon the pointing of the finger fond of which critics are so often fond).

Embodiment is a Founding Assumption, not an End or Aim

(suggested music while reading - Autolux’ Asleep at the Trigger)

Some caveats or principles about where to start when working with embodiment. First, it’s not a good idea to insist that mind *should* be embodied, or that it should be taken as *extended* throughout an ecology (that is, mind is ‘brain, body and world’, as Andy Clark puts it). Mind already is both. Second, not only do we ‘not know what a body can do’ – as Baruch Spinoza points out – *in theory* – and we do not know what we might be able to do with body *one day*. We don’t know what our bodies will do, in practice, *from moment to moment* (thus another important aspect of questioning habit and the micro-constitution of experience –keeping up with embodiment). We keep only a rough control – sometimes like a sailing ship in a breeze, but sometimes also like the same ship in a perfect storm. Third, it is not a question of whether we *might* take the reality of the *virtual* into account (but in reality thinking this as too difficult).³ It is already taken into account by real events, and we must respond. This is again a question of finding appropriate technics for research-creation, rather than asking whether it is occurring. It is occurring all the time. We live between the limits of constrained experiment and full creation – between shifting relations and the new functions and limits they constantly provide and to which we must adapt. We can easily trip over *the* body, if we are not careful to acknowledge the multiplicity of virtual and actual relations in which it is immersed. Fourth, research-creation, as in much of the hard sciences, is not only about finding new words for things, in order to better represent them. Rather, research-creation takes place over – and between – a wide range of forms of expression. Fifth, research creation is not lacking in discipline. Bodies need sometimes to be told what we think they can do, in

order to find out what else they can do. Sixth, bodies are relational ecologies. Mind is assembled, in Gregory Bateson's terms, as a series of ecologies.

Assembling Collective Thought

(suggested music while reading - September Collective's Natura)

At the *Dancing the Virtual* workshop, such ecologies were often brought into being via commands that were both strict and open. As mentioned, one of these was 'create a movement of thought'.

Specific projects might develop more specific commands/tasks. In the project *Assemblage for Collective Thought*, begun in 2006 by Anna Munster and myself, and influenced by *Dancing the Virtual* (and my case by previous collaborative work with Mat Wall-Smith), we set up tasks in the form of commands that were specific but again open. These defined the contribution of images, video, sound and text by participants (Dragana Antic, Michele Barker, Gillian Fuller, Matthew Fuller, Lisa Gye, Ross Harley, Brett Neilson, Anna Munster, Andrew Murphie, Kate Richards, Trebor Scholz and Mat Wall-Smith). These contributions were mixed in a performance in San Jose in September and it was allowed to anyone working on the ongoing project to remix them. Three of the tasks/commands were -

1. Return to Nature

Task 1. Collaborate with the natural world

Find a relationship in nature which assists you to produce thought, image, video or sound. Produce the text, images, video or sound and leave them below.

Task 1.1 optional.

Become either cellular or marine in your mode of collaborating.

2. Be Passionate

Task 2. Be passionate with another

Give vent to any passion that was produced in relation to another living or nonliving thing. Leave your response below.

Task 2.1 optional.

Make it almost monochrome.

6. Conserve the virtual

Task 6. Make a contribution to virtual ecology

Do your bit for conservation - make something that preserves or enriches our relations to the virtual. By the virtual we mean the real reservoir of relations between all the different potentials in the assemblage.

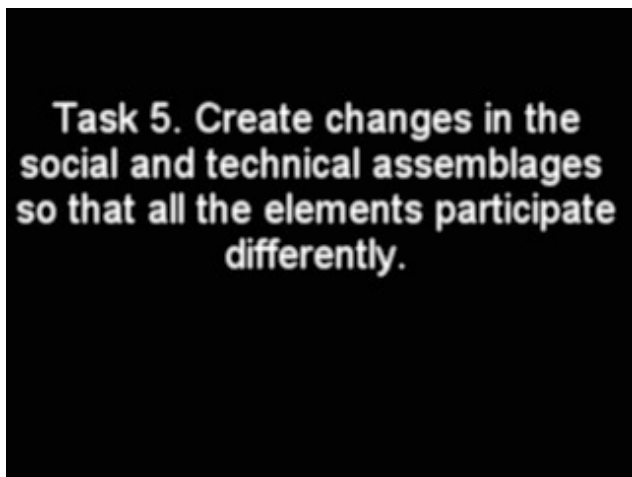
Task 6.1 optional

...in 3 seconds

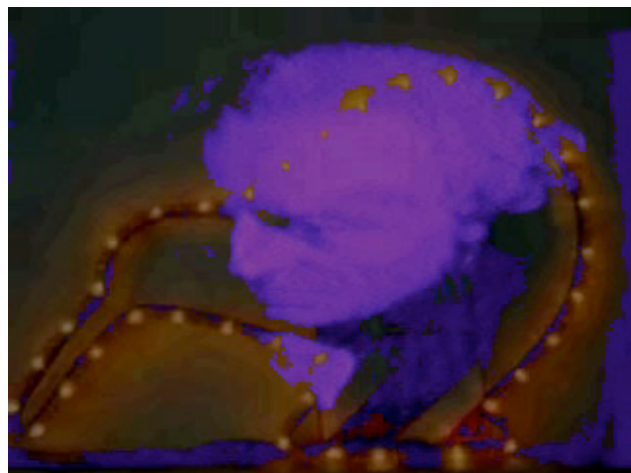
The Mobility of Thought vs. the *Mobilization* of Thought in Research Creation

Always it is a question of going with the mobility of thought - with its habitual creation of new relations over time as they shift. This mobility is very different to that labeled ‘mobilization’ by Stengers (114), although of course neither is static.

What Stengers calls ‘mobilization’ is now found in the arts and social sciences as much as in the physical sciences, in art itself as much as in science (even as the borders between all these blur). For Stengers, ‘mobilization’ accompanies the very real, experimental ‘proliferation of practices’ (114) in all science. Because these practices inevitably depart from the old, a ‘mobilizing model’, along with a series of rhetorics, is designed to

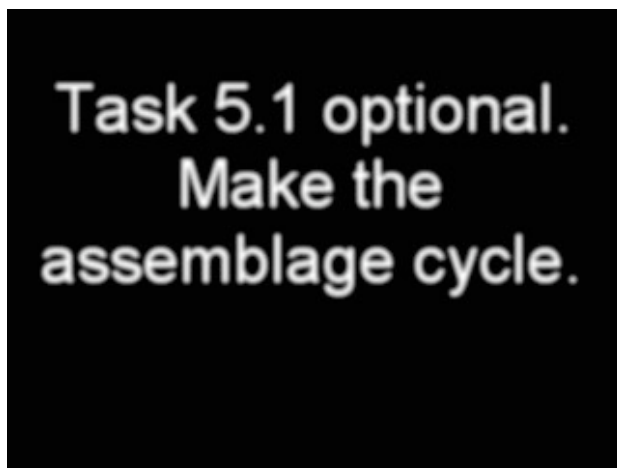


Still from the collaborative work *Assemblage for Collective Thought*



Still from the collaborative work *Assemblage for Collective Thought*

recapture them. In ‘mobilization’ often a model (or series of models) is mobilized to maintain ‘order in the ranks of researchers’ and ‘arm them against what would otherwise disperse their efforts’. These models re-affirm certain disciplines against that which escapes them. There is a price to pay. As Stengers asks, ‘what knowledges and practices will be destroyed, or prevented from being invented, in the name of what must be called a “mobilizing belief” - namely, the faith in a future where the body will show that its rational representatives were indeed right? ...’



Still from the collaborative work *Assemblage for Collective Thought*

How do ‘rational representatives’ arm themselves against what is also the necessary proliferation of practices in all experimentation? There are many *counter-technics* involved - in what is itself an experimental proliferation in *reaction-creation*. Many of these, such as the scaffolding of experiment in discourses of *defined outcomes* and perhaps *possible impacts*, are

preterritorialising. Others involve the posing of significance as a form of disciplining moral and expert judgment, or even *pseudo a priori* technics such as the imposition of bell curves.

The technical complexity of much of this is relatively recent. However, it draws on the frantic vestiges of 1950s cognitivism, in which every proper thought had to be processed neatly and cleanly, within a defined and knowable technical system that would tidy up the performance not only of communication, but of thought itself. As new forms of reaction-creation seem to overwhelm older institutions - as new technics begin to be cloned - the way we think differently about the processes of thinking will be crucial.

Thought and Radical Empiricism

(suggested music while listening - Loscil's Cloister)

An overbearing and neat cognitivism is not the only way to think about the relation between experiment and thought. There are other ways to pose the relations between thinking

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processes, and a radical empiricism that I have been suggesting here is unavoidable (even though it takes more and less useful techno-social forms). It is here useful to turn to the basics of William James's discussion of radical empiricism.

As it happens, James' definitions of cognition and of radical empiricism are quite similar. About cognition he writes -

the relations of continuous transition experienced are what make our experience cognitive. In the simplest and completest cases the experiences are cognitive of one another (James 1912: 87-88)



Still from the collaborative work *Assemblage for Collective Thought* - diagram by Anna Munster after Guattari, ship by Gillian Fuller

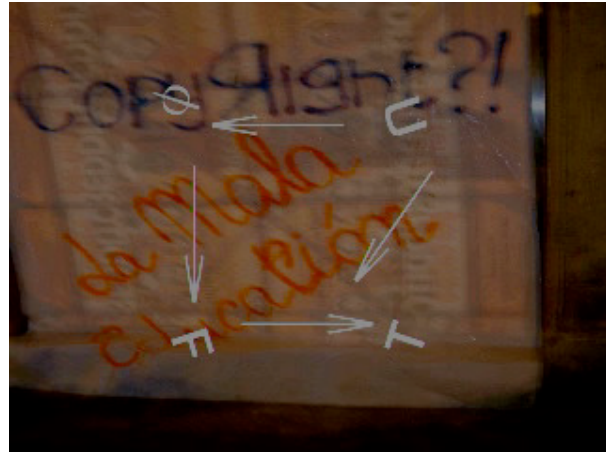
So cognition is not primarily about the processing of symbolic representations, as in cognitivism, as in much of popular culture discourse, political theory and practice, and media's representations of itself. In James' work, cognition is rather about the continuous experience of relations (experiences of transition are cognitive of each other) as they shift.

To radical empiricism. This is a "philosophy of pure experience" (James, 86), and experience here is of the continuous transition of movement-matter. More than this, it is the relation of one transition of movement-matter - involving brain, body and world - to other transitions. This interwoven series of transitions produces shifting intensities which in turn (recursively) produce transitions. Thus experience is both of and via the ongoing (intensive) differential relations which for all these philosophies make up the world. Put simply, "experience itself, taken at large, can grow by its edges" and "life is in the transitions" (James, 87).

Thus, James writes of his philosophy of experience that there is "no bedding; it is as if the pieces clung together by their edges, the transitions experience between them forming their cement" (86). There is thus no permanent cognitive structure, of the faculties for example.

This echoes Deleuze's view, in which Antonin Artaud overturns Kant's assembling of the 'Faculties'. Here Deleuze writes of a -

[...] generalised thought process which can no longer be covered by the reassuring dogmatic image [of a neat assemblage of thought processes, of *common sense*] but which, on the contrary, amounts to the complete destruction of that image [...] henceforth, thought is also forced to think its central collapse, its fracture, its own natural 'powerlessness' which is indistinguishable from its greatest power - in other words, from those unformulated processes [...] Artaud pursues in this the terrible revelation of a thought without image, and the conquest of a new principle which does not allow itself to be represented [...] the *difficulty* [...] is not a *de facto* state of affairs but a *de jure* structure of thought. (Deleuze, 1994: 147)



Still from the collaborative work *Assemblage for Collective Thought* (images provided by Brett Neilson and Anna Munster)

It is not states of affairs that are the problem. It is the imposition of fixed arrangements - certain technics - by which thought is considered to be thought. Thought is the opposite to a *fixed process* or form of self-fulfilling recognition. The process or aim - such as there is one - is creation. For Deleuze, 'To think is to create - there is no other creation - but to create is first of all to engender *thinking* within thought' (1994: 147). In the process, given arrangements of thought are destroyed.

Each faculty must be borne to the extreme point of its dissolution, at which it falls prey to triple violence: the violence of that which forces it to be exercised, of that which it is forced to grasp and that which it alone is able to grasp, yet also that of the ungraspable (from the point of view of its empirical exercise). (Deleuze, 1994: 143)

One can only understand the aspects of thought we call faculties - or in fact any elements by which we think we know, and therefore arrange, thought, from the point of view of their destruction by their *objects*. Moreover, here "one cannot prejudge the outcome of research" (Deleuze, 1994: 143). Some well-known faculties may "turn out to have no proper limit" (and can therefore never be understood, thus Jacques Derrida's 'différance' without limit). There may be "new faculties ... which were repressed by ... common sense" (Deleuze, 1994: 144). This is before we get to the destruction of any image of thought, as per Deleuze's Artaud.

We are now in a position to understand James' radical empiricism -



To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced. For such a philosophy, the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be accounted as 'real' as anything else in the system. (James: 42)

Still from the collaborative work *Assemblage for Collective Thought*
(images provided by Brett Neilson and Anna Munster)

How is this different to *ordinary empiricism*? James goes on to note that 'ordinary empiricism' (42) - what I'll call simply *testing* - 'has always shown a tendency to do away with the connections of things, and to insist most on the disjunctions' (43). James writes (and one sees clear links to Heidegger's 'Age of the World Picture'):

The natural result of such a world-picture has been the efforts of rationalism to correct its incoherencies by the addition of transexperiential agents of unification, substances, intellectual categories, or Selves (James: 43)

Tests as Transexperiential Agents

It is stunning how many proponents of strong theories of agency, of worthy individuals, and so on, immediately delegate the determination of the degree of agency or worth to a series of tests (of IQ, worthiness of citizenship). All of these are transexperiential, and often abstract or reductive of experience.

To the categories of 'transexperiential agents of unification' that James lists we might then add *models*, especially insofar as they inform practices of testing that validate or invalidate experience.

The proliferation of cognitive models and its related culture of testing - particularly since World War II (Edwards, Dupuy) - have played a particularly important role in the development of cultures of research. In the realm of the cognitive, unification proceeds precisely via testing and correction, the more so that we now live in an age of what Avital

Ronell has recently called '*The Test Drive*'. In a reverse mirror image (or not?) of research-creation, she describes the mood of culture this way:

Whether you mean to prove that you can do it, or we are driven by what Maurice Blanchot calls 'the trial of experience,' and he submits himself endlessly to Nietzsche's loyalty tests, or she is a runaway replicant whose human factor is being scrutinized, or the sadistic coach has us revving up for an athletic contest; whether you are entering college, studying law, or trying to get out of an institution; whether they are giving you the third degree; whether you are buffing up on steroids, or she had unprotected sex [...] it seems as though everything - nature, body, investment, belief - has needed to be tested, including your love. What is the provenance of this need to torture, to test? A link between torture and experiment has been asserted ever since Francis Bacon; yet, what has allowed acts and idioms of testing to top out as an essential and widening interest, as a nearly unavoidable drive? (1)

One of the final *tests* of research-creation might be whether it can depart from, or overturn from within, this test drive (is there *no outside to the test?*).

In technical terms, radical empiricism's nemesis and the test drive's topological foundation is the model - or at least the model considered as disembodiment, decontextualisation of *real relations*, the admission of elements not directly experienced (IQ for example), the exclusion of directly experienced relations. A consideration of the model explains why radical empiricism might have particular relevance to cultural theory now.

Models

(suggested music while reading - Barbara Morgenstern's *The Operator*)

'Take me to the operator, I want to ask some questions'

- Barbara Morgenstern, *The Operator*

Let's start with a simple question - what is a model? A model is often taken as a kind of map for process in the world. As a technics however, it can be thought a little differently. Models are diagrams that corral the forces of thinking processes. In corralling thinking

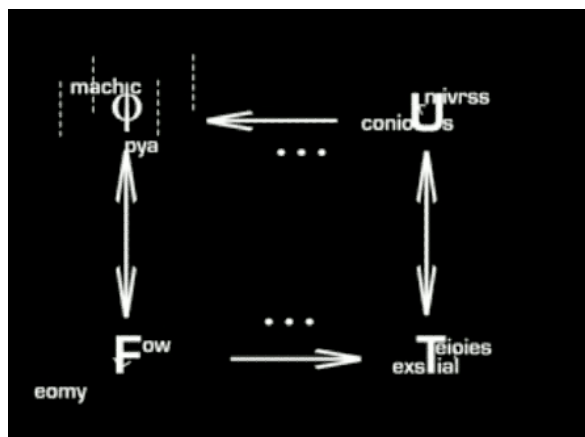


Still from the collaborative work *Assemblage for Collective Thought* (images provided by Ross Harley)

processes, models also provides the blueprint for a corralling of other forces. This is often seen as a philosophical question. It is, however, more crucially a question of everyday practice - in which whether models are right or wrong is perhaps not as important as what they do with people in the thick of directly experienced relations.

As I have suggested, a crucial series of models is that involving thinking processes themselves. Indeed, perhaps most basic models for Western culture are those of thinking processes. It is via these models that *thinking* becomes *cognition* - and not only in theory. Such models perform a kind of ‘brain-magic’ (Murphie, 2006) - a transformation of forces and relations.⁴ Via the magic diagrams of models, thinking really does tend towards becoming *cognition*, technically speaking, which is to say, in how it operates, what it does.

‘Symbolic Without Being Fictitious’



Still from Anna Munster's 'diagram for group formation', for the collaborative work *Assemblage for Collective Thought*

How do models corral forces of thinking in the move towards *cognition* (or elsewhere)? In large part this occurs via a bringing together of a structure of signs. This is a question in part of the reality of the virtual - that is to say of the power of structure (Deleuze remarks here that the virtual - which is structure - is “symbolic without being fictitious” [1994: 208]). This

is to suggest that a sign itself is also a kind of mini-model. As Massumi has remarked, signs themselves corral differences and forces. “The presence of the sign is not an

identity but an envelope of difference, of a multiplicity of actions, materials, and levels” (Massumi, 1992: 10). A sign is a kind of habit - a contraction of repetitions that forms a duration - although this is a habit *possessed by an entire ecological context*. Again, this is a matter not primarily of representation but of bringing together “a multiplicity of actions,

materials”. Seen as the habits of an ecology, it can be understood why signs “animate behaviour” (Deleuze, 1994: 73). As Deleuze puts it – “The signs by which an animal *senses* the presence of water do not resemble the elements which its thirsty organism lacks” (ibid).

Signs are a question of how experience of difference (between the element of the sign and *the presence of water* for example) is contracted into relation and the consistency of a duration. For Deleuze, this is an active contraction – or synthesis – which occurs more in the *contemplation* of differences over time, than in direct action per se (which is based only subsequently upon the synthesis involved in contemplation) (Deleuze, 1994: 73). Thus the crucial nature of the contemplation of difference – of the problematic task or demand – within research-creation. Of Tommy the dog and I *stopping to think* in our game of chasings.

If signs create experience out of difference, so much the more it is for models that bring signs together into particular constellations.

From Experiment to Model

Models – and their particular constellations of signs, habits, durations, we might even say the particular conditioned reflexes they spread around, are often themselves derived from experiment. Models arise from a bringing together of signs and

habits (including now the test as sub-model for action) formed in the *laboratory*. This laboratory can be an actual lab, or everyday life considered as the site of

experiment. Here we can perhaps think of two kinds of cultural practices related to experiment, not always as separate as they might seem.

$$\text{aesthesis} = \frac{s^i(\text{aer}^3) * (\text{models } m^1, m^2 \dots m^n)}{(\text{metamodels } mm^1, mm^2, mm^n) * N(l)}$$

sensation-potential-movement *
ecological configuration

where s^i = (individuating) self
 aer = actualisation/extension/representation
 N = network event
 l = intensity

A not terribly serious model in perhaps a vague parody of a Lacanian matheme. This is meant to model the relations between aesthesis, models and networks.

The first of these cultural practices related to experiment is one in which the sign - and, even more effectively, the conjunction of signs known as the model - envelopes difference in a totalising manner. To experiment here is to explore the new, but it is also to bring it to order, usually via reductive practices. Difference is constrained in accord with a constellation of previous model-practices in order to draw out a new constraining model-practice. In the process, embodied behaviour - without which we could not imagine models or any other kind of abstraction - is put on a leash, as I hope to show shortly is precisely the case concerning Ivan Pavlov's dogs.

The second of these cultural practices related to experiment is one that to some extent inverts the first, or sometimes, if this is possible, simply ignores it. This is radical empiricism - in which the reality of contingent experience, of relations, of multiplicities, of encounters, is not corralled but taken into account. Experiment here has a very different meaning in that it is relations, contingent experience, that lead *out* of models.

The Obsession with Models - Where Does it Come From? Pavlov's dogs

(suggested music while reading - Coldplay's Green Eyes)

Jean-Pierre Dupuy, in his book on the history of cognitive science, provides a wonderful example of a model-obsessive:

Herbert Simon, winner of the Nobel Prize in economics, is generally considered to be one of the founders of artificial intelligence [...] a sort of Leonardo da Vinci for our time [...] the complete list of his works includes *Models of Man*, *Models of Discovery*, *Models of Thought*, and *Models of Bounded Rationality*. The title of his recently published autobiography, *Models of My Life*, hardly comes as a surprise. (Dupuy: 27)



One of Pavlov's Dogs - source Wikimedia Commons

But here I want to go back to way before artificial intelligence to document model-obsession, although this is to a moment from which A.I. and cognitivism arose. It is the moment that returns us to dogs, specifically the moment in which Pavlov harnessed them in the laboratory.

Raymond Fancher has described a disturbing and interesting phase in Pavlov's experiments, when things went wrong:

[...] breakdown in the dog's behaviour became known - perhaps misleadingly - as an experimental neurosis [...] In one [experiment], a dog had been conditioned with great difficulty to salivate when an electric shock to one of its rear feet was the conditioned stimulus. Originally, the dog had responded to the shock by struggling in its harness and trying to escape the situation. After many reinforcements with food, however, it began to accept the shock calmly, and immediately began salivating when it was administered. On the crucial trial, the shock was applied to a different leg from that to which it had become accustomed. The stimulus elicited a much stronger avoidance response than the animal had ever shown before [...] All of the earlier conditioning disappeared, and the animal required several months to recover from its neurosis. (Fancher: 307-8)

A vicious radical empiricism perhaps, at the birth of a significant model of behaviour, which should perhaps have warned us about what was to come in the test drive. It may seem strange to ask, in this context, how Pavlov felt about his dogs - about the real relations experienced. About what might have been gained - and lost - had his relations to dogs, his own experience not been subordinated to the pursuit of the model of the conditioned reflex. In fact, Pavlov was not insensitive to the suffering involved. As Hilaire Cuny writes -

On a monument to the dogs used in experiments [...] he had these words carved: 'The dog, man's helper and friend from prehistoric times, may justly be offered as a sacrifice to science; but let this always be done without unnecessary suffering.' (Cuny:26)

Despite this sensitivity - such as it is - I want to point out the obvious. The *sign* of Pavlov's dog, and the *models* associated with it, have had an enormous effect on cultural practice (not least within educational and other performance cultures, although I am certainly not suggesting that all of this has been negative). Constraint in research-creation is a double-edged sword.

The effect of Pavlov's dogs' constraints has been precisely that of 'an envelope of difference, of a multiplicity of actions, materials, and levels', via the many permutations of behaviourism. I should mention in passing that, of course, there are many alternatives to behaviourism as a

model of thinking processes - notably cognitivism and constructivism - but in many ways, the influence of Pavlov's dogs has been so great that these alternatives find it difficult to escape the shadow of the dogs - their harnessing, their testing, their conditioning, their reduction to more abstract diagrams and models, their *experimental neurosis*. Under the powerful magic of a model such as Pavlov's diagrammed dogs, alternatives can run the risk of multiplying the impact of cognitive-behavioural models (which are now often found together, as in CBT) on cultural practice. I also think it is Pavlov's dogs that very effectively demonstrate how models arise from embodied experience.

Abstracting the Harness

(suggested music while reading - Gillian Welch's The Devil Had a Hold of Me)

George Lakoff and Mark Johnson's theory of metaphor is useful here. For them metaphor is always an abstraction - if initially a slight abstraction - that can only be meaningful because we relate it to embodied experience that we ourselves have had. In short, metaphors in everyday life are an example of how a kind of low-level radical empiricism is turned into model. Simple examples are those of feeling up or *feeling down*.

Pavlov's dog works so well as a model in part because we all have embodied experience of dogs.

Paul Edwards has given another significant example of this shift from specific embodied experience to model: the specific problems of World War II communications in the battlefield. This involves a highly specific



embodied context simply not relevant elsewhere - namely the urgency of getting a message to someone else and the profound noise such a message was

trying to get through (imagine having to tell someone on a lower deck on ship to see and shoot down an incoming plane). Yet this experience was to become generalised into the most

Still from the collaborative work *Assemblage for Collective Thought*
(images provided by Ross Harley)

predominant model of communication - the Shannon-Weaver model. This is a model that famously attempts to reduce *noise* in favour of clear, one-way linear transmission of signal through a docile channel. This is, of course, very sensible when trying to get a message through to a gunner - in the very noisy situation of battle - to shoot down an incoming plane. Yet, thankfully, this is not the situation we find ourselves in most of the time.

Despite this, the Shannon-Weaver model is found everywhere today. For example, it is found, along with various forms of cognitivism and behaviourism, in educational theory and practices - and via educational theory it has come into research culture. The contemporary university teacher is positioned as a docile channel between performance systems as sender, and students as destination, or the researcher as channel for the interests of *stakeholders*.

Let's return to Pavlov's dogs. As with Shannon and Weaver, a particular embodied context, namely a dog freely moving around, is not only reduced in its field of action (harnessed in a lab).⁵ It is then abstracted, reduced to this abstract. If you look for pictures of Pavlov's dog on the web, one of the first things you'll find is that there are few actual pictures, but many *diagrams* of the dog constrained within a little apparatus - so that its saliva can be collected and the bell rung (and shocks given, etc). The dog is reduced to a cartoon of salivation (there are literally lots of joke cartoons out there concerning conditioned reflexes).⁶ These diagrams, in turn, form the basis for an even more abstract model, namely of the conditioned reflex (or even *behaviourism*). This all begins quite *literally* - in direct experienced relations, *excluded* from the diagrams and models - with the constraining of the real dog into an apparatus.

Likewise, on the web you will find striking pictures of the embodied contexts of the communication model, in what Edwards calls, the soldier or sailor as 'the machine in the middle' (think of sailors strapped into a ship's gun during the World War II - these guns used both personnel and other *technical* aspects of the system to target and fire in one total assemblage - thus men as the 'machine in the middle').

Dogs in labs, sailors strapped into guns. These are perhaps ur-models for more contemporary cognitive times. In all of them, a severe restriction of embodied contexts is then abstracted - these contexts then become diagrams and form new systems of signs (new

symbolic orders). And these become a means of constraining our behaviour across a wider set of different behaviours and thinking processes.

As a side note, Pavlov was himself like the dogs, at least as he had modeled them. Like Kant, he was extremely repetitive in his daily habits (going to bed at exactly the same time every day) - until contingency struck in the form of the effects of war, after which he had insomnia (in which, I can attest personally, radical empiricism strikes with a vengeance).

Kant's need of a dog

(suggested music while reading - Stripped by Depeche Mode)

Dogs figure even earlier, not only as abstracted figures but as figures of the very possibility of abstraction itself. We can here head briefly to Kant, where we also find constrained dogs, in fact dogs that are arguably dead. They are dead because for Kant they must form a schemata *before* we can have embodied relation to them.

David E. Johnson has pointed to the significance of the dog at a crucial moment in Kant's *Critique of Pure Reason* - perhaps *the* crucial moment not only of this book, but of whatever it was that was to become the modern and the West. Johnson doubts that Kant took a dog along for his famous walks. Yet the dog - as concept - nevertheless accompanies him 'at the moment in the *Critique of Pure Reason* that he determines *the possibility of the conceptualization of sense perception*' (Johnson: 19). Here time - and therefore contingency, shifting ecologies of relations, perhaps relations themselves - are subjugated to the search for the structure of the faculties - the modeling and regulation of cognition.⁷

As Johnson writes, this is a key moment in Western philosophy, one that is also foundational for much of what is modern about modern culture, or to the attempt to conjure up modern culture through the ritual magic of models. It is a moment that-

Heidegger considered the very heart of Kant's critical project and which ultimately turns on the regulation of the synthesis of time [... at this moment] Kant trots out man's best friend. Although he needs this dog in order to demonstrate the trick of temporal synthesis that makes any sensible conceptuality possible, it is also clear that he needs to keep this dog on a tight leash; he cannot afford to let it run off or go astray. On one reading, then, the *Critique of Pure Reason* institutes a sort of leash law.

Indeed, Kant holds the dog so tightly that it is always already a dead dog - philosophical road kill. (Johnson: 19)

Why is it necessary for the dog to be ‘always already a dead dog’? It is again because this enables it to function as linking a strongly recognisable and everyday set of embodied sense perceptions (our everyday experience of dogs) to a new and substitute structure - a model - at an abstract level (reflecting upon our own *cognition*). This is a structure of second-order experience that substitutes for more direct experiential relations while appearing to incorporate them. Kant writes -

The concept of a dog signifies a rule in accordance with which my imagination can specify the shape of a four-footed animal in general, without being restricted to any simple particular shape that experience offers me or any possible image that I can exhibit in concreto. (in Johnson: 28 - Kant 182-183)

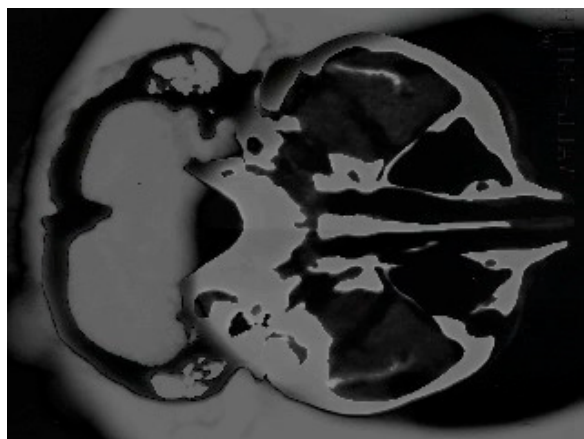
Although it is intuition - the passive synthesis of time and space - that is foundational here, in what is left of ontology for Kant - intuition is, first and foremost, an aspect of cognitive structure (if one strangely inside and outside of it). One’s understanding of intuited relations is determined by one’s understanding of given cognitive structures. So is the understanding of the transformation of sensed experience into perception.

In short, one’s thinking processes - or more accurately the need for a model of thinking processes - become the basis for experience, not the other way around. To put this slightly differently, *one understands one’s own thinking on the basis of one’s models of thinking processes*. Relations, contingency, time are subjugated to these models. In the process, there seem to be a lot of dead dogs. It is perhaps interesting in passing to note, there are also dead ducks, as much later, Norbert Wiener, the founder of cybernetics, saw the whole problem of cybernetic systems as arising from his experience as a duck hunter.⁸

We are all Kantians to some extent. Cultural practices become more and more about regulating one’s cultural practice on the basis of cognitive models. Was it therefore wishful thinking that led James, who first articulated the notion of a radical empiricism, to write that ‘The true line of philosophic progress lies [...] not so much through Kant as round him’ (in Rockmore: 1).

Rethinking the “Big Think”

(suggested music while reading - Brian Eno's *How Many Worlds?*)



Still from the collaborative work *Assemblage for Collective Thought* (images provided by Michele Barker)

There have been immeasurable gains from the Kantian *cognitive turn*, as from Pavlov.

Much, however, has been lost along the way. There is not the space here to discuss this in any detail, except to mention a few examples. One would concern the impact of Sigmund Freud's nephew Edward Bernays, who martialled cognitive models (including Freud's) to remake culture in the image of what he called his own 'big think', in PR and spin.

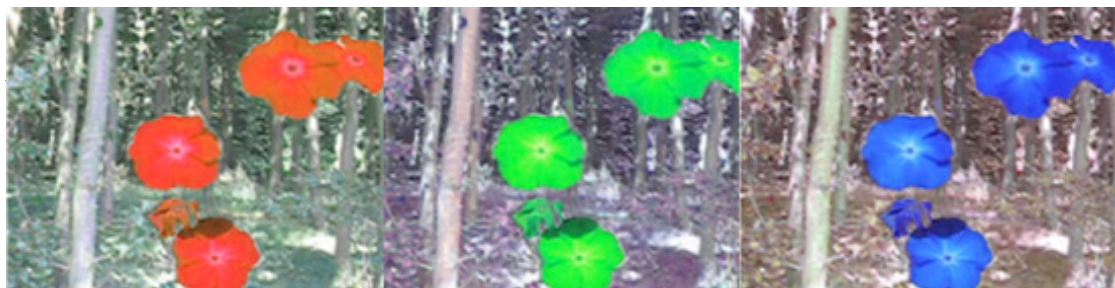
Adam Curtis, in his expansive documentary, *The Century of the Self*, makes very broad claims for the way in which Bernays was able to dramatically transform culture into a culture of consumers whose democratic *choice* was constrained to a choice between products.

There are other important cognitive trials, diagrams and models that have had surprising cultural effects. Among them is what was once known as the Hebb-Hayek synaptic learning model. Donald Olding Hebb, a distinguished neuroscientist who founded the notion of the neural network, was also the scientist who pioneered research into more constrained behaviours - this time involving sensory deprivation. It is these experiments that were to form the model for torture techniques (McCoy - earlier I mentioned Ronell's linking of torture and testing). Hayek is of course Friedrich Hayek, Margaret Thatcher's favourite economist. Hayek's model of cognition - outlined in a book appropriately named *The Sensory Order* was crucial to his theory of the market, and thus to neoclassical economics and neoliberalism. All of these start with constrained/constraining behaviours, whether of dogs, sailors or even neurons or markets, and extrapolate models from them in something of a *cognitive turn*. Via what Ronell has called the 'test drive' and other ritual activities, such as the implementation of the 'big think' by marketing professionals or in *productivity measures*, the cognitive turn becomes the *cultural turn*.

Although there are of course important differences between the context and forms involved, many of the forms of behaviour modification and cognitive compliance are very similar across these different aspects of the cognitive/cultural turn. And once again much of this moves against relationality, fidelity to specific and contextual experience, and in fact, the things that make radical empiricism radical.

Rethinking the Functions of Science

(suggested music while reading - Christopher Willits - The Fall in Love Machine)



Still from the collaborative work *Assemblage for Collective Thought*

I hope the above does not suggest that science in itself is responsible for all the evils of the world. This is of course not the case. It is a question, however, of rethinking the relations between experiment and models.

This is perhaps something that can be gestured toward briefly via the question of the function, which in Eric Alliez' extremely subtle reading of Deleuze and Guattari's approach to science, does not abandon the force of embodiment, or at least does not have to. Earlier, I noted that a defined function in science is, for Deleuze and Guattari, performative. It involves 'a fantastic slowing down' by which 'matter, as well as the scientific thought able to penetrate it with propositions, is actualized' (Deleuze and Guattari, 1994: 118). Alliez takes this further, suggesting that functions - even functions that, somewhat like signs, envelop matter in a metric schema (Alliez: 49) - might slow down matter without abandoning that which 'draws [this schema] outside itself'. Thinking this way allows for a 'definition *in tension* of the modern power of science, which sees integrated into its functional practice the force-field that constitutes it' (Alliez: 49).

This force-field is precisely that engaged with by radical empiricism. It is the force-field of real relations, of immanence, of contingency and immediate ecology.

A Very Rough Conclusion - The Importance of Failure

(suggested music while reading - Charlotte Gainsbourg - Tel que tu es)

In the face of the ubiquity of the test drive, and of its many cognitive models and practices, we can perhaps realise the urgency of a radical empiricism, if only to reintroduce some *tension* within the *functions* of science.

There are many ways to go with this. One I will point to here is the importance of accepting failure, of miscommunication, of boredom, as well as the excitement of experiment, and all this instead of the mega-organisation of cognitive cultures.

Perhaps also important are alternative practices and techniques involving thinking processes. In an article which was one of the first to trigger much of my interest in these areas, William Connolly (1999) uses brain research itself to begin to fragment what he was later to call ‘neuropolitics’ (2002). He points to the ‘second brain’ in the enteric nervous system (the ‘guts’ have neurons just like the brain - thus ‘gut feelings’). He points to the role that technics play in the tactics and counter-tactics that work below the threshold of consciousness. He writes that ‘thinking is irreducible to any of the ingredients that enable it, but also affected profoundly by the infrasensible media of its occurrence’ (Connolly, 1999:22). In the light of all this, Connolly suggests a ‘list of techniques, both gross and subtle, by which thinking might be modified in its course, speed, intensity or sensibility’ (1999: 25). Are such techniques working for or against the new cognitive orders? I’ll let you decide:

* You go for a run after having struggled with a paradox of antinomy that perplexes you...

* You expose yourself to an image that, against your conscious intent, has disturbed you in the past, while listening to the Talking Heads in the bathtub and imagining how mellow it would be to dive into crystal blue water off a Caribbean beach...

* You give into a feeling of intense regret you had previously resisted...

* You go dancing [...] (Connolly, 1999: 25)

I will conclude, in a somewhat inconclusive way, as follows. I will suggest that the diverse world of cognitive practices, particularly when coupled with the development of computer media and new social network technologies, provide new means of contact and cooperation, as well as some of the most pernicious forms of social organization we have seen. I will suggest that radical empiricism - research-creation - is part of the solution. However, I will also suggest that often radical empiricism and, at times, the most constrictive of cognitive practices, can be very much entangled. I suggested that this can be for better, or it can be for worse.

In short, radical empiricism is not an automatic good, but must be made so.



Notes

¹ One could see a new domain of contemporary politics opening up here at the level of the emergence of events, one for political research-creation. This is at once the domain in which there is a struggle between preterritorialisation, what Erin Manning has labeled 'preacceleration' (2007), the feeling that comes just before an event of movement, and what Bernard Stiegler has called the 'pseudo a priori' (2003), a technics that regulates what comes before by reconfiguring it afterwards, as if such things had always been this way (as Stiegler points out, for example, 'the a priori of synthetic judgment of consciousness takes place after the event').

² <http://www.collectivate.net/initiatives/free-cooperation-networks-art-collaboration.html>, see also Christophe Spehr's text on Freecooperation at http://www.republicart.net/art/concept/alttransspehr_en.htm (2003), and Scholz and Lovink (2007).

³ See Massumi (2002), DeLanda (2002); the virtual can be variously defined as: the conservation of the past (and in an open sense, the future) in the present; that which exceeds specific forms and processes that are actualized; the network of relations that exceed individuals or individual instances, that is, the network of preindividual reality; the complex

structure immanent to any given interaction, which exceeds it, but inheres within it, and makes it possible. As Deleuze puts it, ‘The reality of the virtual is structure. We must avoid giving the elements and relations which form a structure an actuality that they do not have, and withdrawing from them a reality which they have’ (1994:209). Think of a delightful picnic, or a nightmare. Think of the *elements and relations* which exceed this picnic or nightmare, but from which picnics or nightmares come into being, or more correctly, actualise as durational experience over time. On the virtual and technology see Murphie (2002) and Munster (2006), pp.86ff.

⁴ See also Stephen Muecke’s *Ancient and Modern* and José Gil’s *Metamorphoses of the Body* for more on the effective nature of ritual magic in either the ancient or modern aspects of the world.

⁵ Edwards argues much of the cognitive psychology also derives in part from this communications problem in battle.

⁶ I am not suggesting that science is incorrect here, of course - only that it amplifies a certain aspect of experience at the expense of the rest.

⁷ Deleuze writes that ‘Despite the fact that it has become discredited today, the doctrine of the faculties is an entirely necessary component of the system of philosophy’ (1994:143).

⁸ Thanks to Gary Genosko for this information.

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