Speculative Machines and Technical Mentalities. A Philosophical approach to designing the future

Jamie Brassett

Principal Lecturer, Course Leader MA Innovation Management

Central Saint Martins, University of the Arts London

j.brassett@csm.arts.ac.uk

Abstract

'Beyond their instrumental functions,' writes Rivka Oxman in an article about design, creativity and innovation (2013), 'advanced digital and computational environments are also becoming tools for thinking design'. At the leading edge of creativity and innovation design does not only speculate the plausible, possible or potential, but pragmatically inserts such futures into the present (as Whitehead says any 'immediate existence' (1962) must). Using concepts mainly from Deleuze, Guattari, Spinoza and Simondon, I will position such design speculation as pragmatic, divergent, complex and emergent. That is, as manifesting the technical mentalities (Simondon) that provide the milieu in which we can show what we 'might be capable of' (Stengers).

Keywords Creativity; machines; ontogenesis; Simondon; speculation

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> 'Immediate existence requires the insertion of the future in the crannies of the present.'
>
> Alfred North Whitehead, *Adventures of Ideas*, p. 191

> 'Speculative philosophy is not about giving a plausible account of what exists but about approaching each society with the question of what it might be capable of, and this capacity designates not its judgements but the interstices to which it provides shelter.'
>
> Isabelle Stengers, *Thinking with Whitehead*, p. 509

Introduction

There is so much entangled in, and riding upon, the word 'speculative': it appears to be a term that is not only in vogue, but distorted and over-folded by all the applications to which it is put. Philosophers and their friends speculate (Bryant et al. 2011), designers speculate (Dunne and Raby 2013), historians speculate in producing alternate pasts (Bunzl 2004). The term is in constant motion. This is not necessarily a bad thing, of course, and maybe

the term's dynamism warrants its being left alone. The philosopher's act, traditionally thought, of *defining* terms, of pinning down meaning to something that will, ultimately and totally, be under that philosopher's control is one that I would therefore like to forgo. Philosopher, mathematician and physicist Alfred North Whitehead writes: 'Philosophy destroys its usefulness when it indulges in brilliant feats of explaining away' (1978, 17). Philosophy should be pragmatic, actualising and material, and in so doing it becomes as experimental as any other creative discipline. Pragmatic, we will see, because it will generate the new, transform the old, map possibilities, and deploy the forces necessary to bring about action. Actualising, because philosophy should always make an impact through its creativity, even if its creativity is focussed upon the conceptual and transcendental. And material because nothing else matters. Philosopher Brian Massumi, in *Semblance and Event. Activist philosophy and the occurrent arts* (2011), emphasises that pragmatics is not 'practical *as opposed to* speculative or theoretical. It is a synonym for composition' (2011, 12; original emphasis). A speculative philosophy can be as pragmatic – material, creative, actual – as anything. Furthermore, philosopher of science Isabelle Stengers adds to this opening up of the terms speculation, philosophy and pragmatics by writing that: 'Speculative presence does not carry out any convergence' (2011, 509). Presence in its speculative mode should diverge, disperse, spread, swerve and complexify, to drive away from the certainties of states of equilibrium; but so too should speculation in its presentation, as it becomes the present. A pragmatic, philosophical speculation on speculation might do well to

diverge, swerve and complexify (Hales 2015). My hunch is that anyone reading the work collected here has some angle on the speculative, and for me to weigh in, converging upon a position to defend seems to be counter-productive: a divergence of thinking and practicing in this area would therefore seem to be beneficial to preserving its creative, intensive possibilities.

If anything, surely the speculative boom has led to a burgeoning of the opportunities for exploring and experimenting with futures through the materialisation of possible presences, such that any one attempt to control and totalise the multiplicity of perspectives on this matter should be viewed with utter suspicion. My intervention, then, will be offered not as part of an argument, but pitched into the multitude of options, to see how its affects ripple through them precipitating ricochets in different directions.

Machines and Affects

That digital creativity is aligned with such a project is clear given the words of Rivka Oxman contributing to the first edition of *The International Journal of Design Creativity and Innovation*: 'Beyond their instrumental functions, advanced digital and computational environments are also becoming tools for *thinking design*' (Editorial Board IJDCI 2013, 16; original emphasis). Oxman inverts the terms of the recent design-driven innovation trend ('design thinking') to emphasise that rather than those aspects of design that can be identified as 'thinking' (then removed and easily instrumentalised), it is the ways in which thinking *about* design, *through* design and *as* design that are

of importance here.[1] I hope to show in this article that developing a thoughtful practice and a pragmatic speculation is an important attitude to any creative activity. Simondon, as we will see, calls a realm 'metastable' when creative opportunities abound, and 'homeostatic' when all possibilities have been exhausted and the creative engine grinds to a halt (Simondon 1980, 2009). If digital machines can become 'tools for thinking design' as Oxman proposes, I hope to show in what follows that they will not only be inherently speculative as they emerge from the entangling of complex topologies (Parisi 2007; Hayward and Geoghegan 2012), but pragmatic too, in ways that exceed simplistic notions of function.

Writing about machines in an essay called 'Regimes, Pathways, Subjects' (1992) Félix Guattari says:

> People have little reason to turn away from machines; which are nothing other than hyperdeveloped and hyperconcentrated forms of certain aspects of human subjectivity, and emphatically not those aspects that polarize people into relations of domination and power. (Guattari 1992, 18)

The urges to polarise are articulated through discourses of form, function and substance, for these discourses include notions of propriety and impropriety, of ability and disability, of inclusion and exclusion, and so on, especially when articulated about bodies, or other agglomerations of matter in space. It

1. See also Brassett and Marenko (2015) for a critical evaluation of these issues.

is useful to remember how Spinoza treats bodies here. For him bodies should not be characterised by reference to form, function and substance, but by their speeds and slownesses, and capacities for affecting or being affected. He writes:

> LEMMA I. Bodies are distinguished from one another in respect of motion and rest, quickness and slowness, and not in respect of substance [. . .] LEMMA III. A body in motion or at rest must be determined to motion or rest by another body, which other body has been determined to motion by a third body, and that third again by a fourth, and so on to infinity. (Spinoza 1955, 93)

In LEMMA I, a body is not alone, single, or simple, it is a collection of elements, atoms, particles themselves existing under different conditions of motion and rest, speed and slowness. The different particles that compose the body are not the ends – the aims, finalities or edges – of the body; the body is not the sum total of its bits, its points; its organs are not added up to provide proper organisation. These points, bits, organs are moving and moved through, at various speeds and slownesses: connecting, colliding and repulsing but not encompassing. To articulate bodies according to Spinoza's first proposition, then, we must listen to the rhythms according to which the speeds and slownesses of their elements are pulsating. Bodies conceptualised in this way exist only in relation to each other, and the sum of all these relations can never be exhausted. With LEMMA III the determination

of the ‘affective capacity’ of a body comes from the disorganisation of its ordinary connections within social, scientific, natural, cultural (and so on) schema and the allowing of many different properties to be re-connected in other, creative, ways. If LEMMA I gives us the possibilities for new connections, collisions, or obstacles, LEMMA III engages the forces that generate these connections, collisions or obstacles. Speeds and slownesses provide the motion of bodies’ particles; affective capacities show the forces and directions of the impacts between these particles in motion. If, as Guattari states, machines are nothing more than ‘hyperdeveloped and hyperconcentrated forms of . . . human subjectivity’ then, via Spinoza’s body, they can be considered as sped up or slowed down modes of affecting or being affected that traverse all things, humans included. Indeed, this may be the point of machines: that they speed up, slow down, connect, disconnect (and so on) all the many different flows that can be called ‘affective’. Via Spinoza we may see that machines are not ‘hyperdeveloped or hyperconcentrated forms of . . . human subjectivity’ as Guattari says, but that human subjectivity is a particular, special or partial singularisation of the multiple connections, affects, speeds and slownesses enacted by machines. In itself this is nothing new; this is the argument of Deleuze and Guattari’s *Anti-Oedipus* (1984) after all. Nevertheless, it positions the importance of the machine – and so of us, humans, too – somewhere new: crossing real-imaginary, actual-virtual, material-metaphysical, practical and theoretical boundaries. As these oppositional couples dissolve into and out of each other, the affective aspect of Spinoza’s argument and the power and control

aspects of Guattari's align: when forms and functions are relegated in importance by thinking of bodies/things as affective machines operating at different speeds and slownesses, then the constitution and delivery of affect expresses both the ethical and political consequence of their workings. It may be that any singular emergence of thing or person contains elements under different rates that cross other singularities; at the very least, these bodies, their elements and so on will impact each other with various qualitative and quantitative levels of disturbance. When our elements are shared, or our bodies affect or are affected, we are in the realms of politics and ethics (or ethology as Spinoza and Deleuze prefer).

A Speculative *Machine*, then, is such a Spinozistic body: in motion, impacting, colliding and repelling. A singularisation of a multiplicity of parts that themselves smear through other bodies. It is affecting and being affected, speeding up and slowing down, in constant motion and occasionally at rest. Its emergence stems from and enables all of these different phases. In fact, this *is* emergence: a self-organising creative whole erupting from the relation of myriad particles within a supportive medium. A *Speculative* Machine pulls from these affecting and emerging materialities a temporal coefficient. Writing on Simondon, Anne Sauvagnargues (2012) refers to this as the bringing together of the topological and the chronogenetic: where the complex folding and connecting of space *is* at once a similarly complex, folded and connected time.[3] This is highlighted so

3. This concept of complex interweaving of space and time is also evident in the work of philosopher of science Gaston Bachelard (1969), particularly in the following passage: 'In its countless alveoli space contains compressed time. That is what space is for' (Bachelard

well in those digital machines materialising as acts of speculation that are covered in this volume. Actual and conceptual, they mobilise a number of different creative flows in their bringing together and throwing out of futures, pasts and presents.

The nexus of bodily modes Spinoza announces is of importance to those of us interested in Speculative Machines. Unleashed from constraints of form, function and substance, the resultant explosion of the body into a multiplicity of modes (held in loose configurations, with their constituent particles impacting each other and those in/of other bodies at different rates) offers opportunities also to rethink designing things more generally. Spinoza's bodies connect, deny, develop and create a range of spatial and temporal ontologies describing ways of being for us in a multitude of possibilities. Simondon operates similarly. Thinking not of identities, beings that are stable over time, Simondon works instead with modes of existence, ways of becoming whose processes emerge from the complex interplay of space and time (and everything else). The issue then becomes: how might the focus on modes of existence – relying, as it does, upon the dispersal of body/thing particles across a wide space-time – help articulate a position on a material speculation through design? I offer Simondon on technical mentality as a way into this question.

He explains: 'technical mentality is coherent, positive, productive in the domain of the cognitive schemas, but incomplete and in conflict with

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1969, 8). I discuss the spatial aspects of this more fully elsewhere (see Brassett 1991 and 1994). The temporal complexities and the consequences for rethinking causality are examined in De Boever et al. (2012), Massumi (2011) and Whitehead (1961).

itself in the domain of the affective categories because it has not yet properly emerged' (Simondon 2012, 1). At the boundary between coherence and conflict, the technical mentality is always about to emerge when considering the range of affective relationships in which it is nested: there is forever more to come. It is also coherent when considering it as a snapshot of the spatial moment in which it exists. Generating a complex topology of interiority and exteriority, and a creative temporality of becoming, technical mentality collides with the Speculative Machine in many ways.

I will return to these in more detail in the paper that follows, which is structured in this way: first, I will venture into Simondon's concept of 'technical mentality' noted briefly above. Because it is a concept in which the possibilities for becoming at the confluence of the technological, biological and non-organic are still underway, and which the dynamic development of these creatively impacts their very milieu.[4] Speculation on modes of existence that are materially constructed will need to recognise their relation to the emergence of a network that technical mentality announces. This places speculation not at the beginning – wondering 'where to go?' 'what to do?' – but in the middle: infused by the matter at hand, constructed as the demands of immediate tactical action and strategic planning undergo immanent compression.

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4. 'Milieu' is an important concept, one that influences Simondon from the work of one of his thesis advisors, Georges Canguilhem. It is a thing's spatial environment, its material medium, and its ontological status as 'in-between'. This is important to remember when encountering this word in this article. See also Brian Massumi's translator's notes for *A Thousand Plateaus*, which discusses this concept well (Deleuze and Guattari 1987: xvii).

Following this, I will look at the way that Deleuze and Guattari articulate the pragmatics of their creative philosophy. This is because theirs is one of the few philosophical articulations that prioritise it as practical, creative and, even, innovative work (Brassett 2015). The final section will go towards constructing a philosophy and design along which a Speculative Machine becomes a vector of creative action.

Technical Mentalities

I would like to return to the quotation used a little above: 'technical mentality,' Simondon writes, 'is coherent, positive, productive in the domain of the cognitive schemas, but incomplete and in conflict with itself in the domain of the affective categories because it has not yet properly emerged' (Simondon 2012, 1) and emphasise 'not yet properly emerged'. In conversation with the editors of a book called *Gilbert Simondon: Being and Technology* (2012) Massumi notes that the designer is 'the helpmate of emergence' (De Boever et al. 2012, 26). Collaborator, assistant and spouse, the helpmate participates in the production of emergence, in creating the conditions for the new from the material of the future and a vision of/from the future. Here the short quotation from Alfred North Whitehead used as the epigram to this paper is insightful, as it points to concepts Massumi uses when discussing Simondon. For Whitehead and Massumi the future acts as an attractor for the present, a causal singularity towards which the present drifts. I would like to position designers in this space as speculative philosophers, constructing the present from the material of the future such

that the becoming-future of the present, is also a becoming of the future in/as the present (Brassett and Marenko 2015; Brassett and O'Reilly 2015). Any sort of designing is therefore a production of future and present together, out of the material of each other and is characterised by speculation. The modality of the 'what if?' discussed so well in scenarios work (Booth et al 2009) is therefore crucial also to designing. A designer as the 'helpmate of emergence' not only maps out the space and time in which future and present come together (and tend to the past), but also directs the material forms in which all these – future, present, space and time – become: emerge. To use Whitehead's words (1961, 191) designers insert the future in the crannies of the present, which is a speculative act. This affects Simondon's technical object too, because the thing with which the helpmate collaborates is (for Massumi's reading of Simondon) the technical object itself.

All sorts of mentality (human, technical, non-human, non-organic, and so on) come together to participate in delivering the emergence of future forms. Designers emerge: that is, they create emergence and are the outcome of emergence, they should not remain still, for if they do they fall into the confinements of stagnation. So, if technical mentalities are also in the process of coming about then they are at once occupying with all the other mentalities available, in chaos and order, in a zone of indiscernibility (Deleuze and Guattari, 1994) or regime of complexity that supports creative

becoming.[5] Such an occupation has to happen without totalisation or homogenisation of the environment in which it exists, for either of these acts will demand stasis, order and, eventually, death. Here is also a place of speculation: where coherence and production, incompletion and conflict also engage with and emerge from the collaboration of all 'helpmates'. Thought this way the Speculative Machine as thing is of interest (and importance) only because it has emerged from a process. This relates the speculative machine to the abstract machine invented by Deleuze and Guattari (1984, 1987, 1994) and put to work well by philosopher Manuel De Landa (1997): transcendentally material this abstract machine exists as a kind of blueprint, a virtual design, able to be actualised through a number of concrete expressions (for example, organisational design, personal relationships, geological formation, linguistic structures). It, too, is an outcome of the procedures that it performs, living in that complex space where it is always in a process of coming about.

For De Landa in *A Thousand Years of Nonlinear History* (1997), history is an abstract machine that operates in transcendentally complex ways. Such that history is not a story with a linear tale of beginning, middle and (presumably) end, with idealised and idealising stages following (or producing) a steady progress, but rather a fluid mass congealing at certain times, coupled with dissolving which releases, and allows for the later reincorporation of, a multiplicity of spatial and temporal elements. It is an

5. See the work of complexity biologist and philosopher Stuart Kauffman (1993, 2008); who is discussed in relation to the work of Deleuze and Guattari, design and innovation in Brassett (2015).

important point for De Landa that this abstract machine of nonlinear history follows principles from other complex sciences (geology, biology and linguistics characterise, but do not delimit, his three main sections). So, the ways minerals sediment and agglomerate, genes drift and express, or languages mutate and evolve, share abstract states and yet are all materially actual. If drawn, the blueprint of the abstract machine of history would match those of geology, biology and linguistics. Histories, events, concepts, minerals, flesh and linguistic forms are expressions of this abstract machine; they all involve and evolve, implicate and explicate their material through their activities. The reference to expression here brings us back to Spinoza. Deleuze explains, in *Expressionism in Philosophy: Spinoza*:

> Expression thus bears within it a double movement: one either takes what is expressed as involved, implicit, wound up, in its expression, and so retains only the couple 'expresser-expression'; or one unfolds, explicates, unwinds expression so as to restore what is expressed (leaving the couple 'expresser-expressed'). (Deleuze 1990, 333)

The abstract machine works as an engine of expression and an example of that expression; it expresses what is involved in it, what is implicit. The abstract machine unfolds and explicates too, promoting the evolutionary enfolding of its processes and their implications. Thus it is not a simple question of *rules* that must be followed: the abstract machine does not construct and enforce rules. It simultaneously illustrates the principles

according to which matter expresses itself under different forms and with different content, as it is an example of such expression. The very performance of history (as De Landa shows, for example) should be the material manifestation (expression) of the transcendental conceptualisation of the abstract machine. The question that emerges is of the relationship between the expressed/expression and the expresser, between the (seemingly) different realms of abstraction and reality,[6] as praxis (including designing) becomes actualised from conceptual conditions. I will return to this question of pragmatics in the following section, now I would like to turn back to Simondon and his articulation of the role of the machine in technical mentality.

He writes that 'the machine is different from the tool in that it is a relay; it has two different entry points, that of energy and that of information' (Simondon 2012, 6). While the tool actualises the separation between Human Beings (as information source) and Nature (as energy source) – without them it is mute – a machine is a nodal point at which flows of energy and information come together to create outcomes. As such the machine highlights the emergence of a network in which all matter, energy and information is connected. This network Simondon calls 'technical mentality', explaining that 'the technical mentality can be developed into schemes of action and into values, to the point of yielding a morality in human environments that are entirely dedicated to industrial production' (Simondon

6. Deleuze's discussions of *virtual* and *actual* – as they come through especially in *Bergsonism* (1988) – would designate another interesting line of enquiry to take at this point. De Landa's more recent thinking (2002) is steeped in such a theme.

2012, 8). This is an important point. Technical mentality – the transcendentally material networking that emerges from all the elements upon which it is constituted being in relation in time and space – is expressed in its entirety through any of these elements. The whole (technical mentality) does not simply sit at an ontologically removed level above the parts (technical objects and the machines that they form) from which it comes, but it inserts itself into the mix (Deleuze and Guattari (1984) make a similar point). In this way technical mentality is also a measure of the affective relations and speeds and slownesses of the system in which it both expresses and impresses. The affective ethology announced by Spinoza's body is thus extended into technics. The speeds and slownesses and affective capacities of bodies already expose them to the networked and impactful power of the elements from which bodies emerge. Even if a 'human environment' is utterly machinic it is not devoid of pragmatic or ethical import. For Simondon when standardised subsets enter modes of existence that are special and collective, concentrated and spread out, they engage a 'thought-network' whose relations can develop singular constructions. Technical mentality attests to the qualitative and quantitative pressure from the pragmatic and ethical impacts of any of the elements that combine to make the networks within which they operate.

Philosopher of science Bruno Latour is positive about the vectorial nature of Simondon's speculation upon ontology, for its ability to take thought in directions other than lazy oppositions. 'For [Simondon],' Latour writes, 'subject and object, far from being the beginning of thought like two

hooks used to suspend a hammock destined for philosophical snoozing, are only the rather belated effects of a real history of modes of existence' (Latour 2011, 307). Not only is Simondon's work able to shake us out of slumbering between concepts made comfortable by years of habit, Latour says, but does so by focusing upon technology as both a product and producer of 'modes of existence' too. While good work has been done on this in the Latour-inspired Science and Technology Studies faction of Sociology – attesting to the role of artefacts as nodal points in vast networks of connected, affective constructs (on the relation of STS to design see, for example, Kimbell 2011, 2012) – design theory is also working in these areas, exploding the consequences for *all* actors in these networks in rethinking the ontological status of designed, technological objects (Marenko 2015). Furthermore, as Massumi explains: '[Simondon] recognized technological innovation as a key theatre of thought materializing in matter becoming, in ways imbricated with life transformations' (De Boever et al. 2012, 20). Technological innovation draws lines along which matter grows and spreads, becoming, allowing modes of existence to emerge, erupting along the way. But as well as drawing the possibilities for these modes to emerge, technology and innovation are also material instances of this emergence. As matter drives its own forming and technology creates the opportunities for forming to happen, then the networks along which such morphogenesis occurs become key. Each occurrence of form and matter coalescing changes the nature of the milieus in which all this happens, which redesigns the conditions for possibility of further becoming, throwing everything into

new relief. This is a key consideration bearing in mind speculative machines. The landing and rippling in the present of future things, reconstitutes the nature of the present via its milieu, develops possibilities of its own becoming, and the developing of connections between present, future and past. Speculation is just such a launch; and the machine is that which is drawn along the lines of the connections, disjunctions and conjunctions between all actors in the speculation. This is all enfolded in this comment from Massumi, where he allies to Simondon's thinking the chrono- and morphogenetic ('thought materializing in matter becoming'), machinic speculation ('technological innovation as a key theatre of thought materializing . . .') and the role of creativity in all this ('innovation' and 'life transformations').

We can see many of these issues surfacing in Simondon's own discussions of technical mentality. He writes:

> [the] technical mentality successfully completes itself and rejoins nature by turning itself into a thought-network, into the material and conceptual synthesis of particularity and concentration, individuality and collectivity – because the entire force of the network is available to each one of the points, and its mazes are woven together with those of the world, the concrete and the particular. (Simondon 2012, 9)

There is so much here to remark upon, so much folded into this single sentence, that it exhibits formally the concepts it is concretising. Many of Simondon's concepts are available here in these lines, converging on lines to create maximum impact here, in this node, and taking further lines away, back out into the various wilds of his theoretical constructions. The force of the network, and the forces that ripple and disperse through the network, are encompassed in his concept of technical mentality. These forces complete and re-join themselves after journeying wide, collecting singular points and concentrating collectives. Technical mentality is the emergent whole, and so is a particular concept of the whole that joins the parts as a member of the multiplicity (Deleuze and Guattari 1984). As Simondon says, technical mentality rejoins itself after emerging from the network, but is also – at the same time – a particular concept that is able to concentrate itself at any point in the network. Technical mentality infuses any particular technical object, or any machinic collection of them within a network; and any particular technical object and collection into machines will allow for the creative reorientation of the possibilities that technical mentality can become.

In his *On the Mode of Existence of Technical Objects* Simondon writes that the machine, 'as an element in the technical ensemble, becomes that which augments the quantity of information, increases negentropy, and opposes the degradation of energy' (Simondon 1981, 9; translation modified). Here we have another coming together of a number of the points I have been highlighting in this article so far. First, there is the networked nature of the machine as an affective and affected thing. Second, its creative

role, from undermining the thermodynamic urge to entropic stasis. Third, the primacy of matter's morphogenesis: in-forming itself through the creation of its own negentropic ensembles. The Speculative Machine, as I have been positioning it here, is just such a thing.

Having encountered technical mentalities and speculative machines, then, I would like now to turn to relate these concepts to a pragmatic philosophy as evinced by Deleuze and Guattari. This is not only to highlight a sense of speculation's creative aspect, but also to address the everyday understanding of the concept that places it outside of practice.

Pragmatic machines

There are so many places one could begin when discussing pragmatic philosophy and speculation – William James and Charles Sanders Peirce to name just two – and so much to say that I am not able to encompass it all here.[7] For this reason I will focus on some of the creative or design-related issues in pragmatic philosophy insofar as they have a direct impact upon the topic broached here: beginning with Deleuze and Guattari.

As Deleuze and Guattari highlight throughout *What is Philosophy?* philosophy is a successfully affective creativity. 'Philosophy does not consist in knowing and is not inspired by truth,' they write. 'Rather, it is categories like Interesting, Remarkable, or Important that determine success or failure' (Deleuze and Guattari 1994, 82–3). Philosophy is not about truth or falsity,

7. Steven Shaviro (2009) encounters speculation and pragmatism/radical empiricism well; see also Massumi (2011).

but about the interest, success or importance of its creative products and processes.[8] That is, philosophy is concerned with the ways that its concepts impact in their contexts, and the creativity of the processes that create them. It is pragmatic – Deleuze and Guattari explain in '587 BC–AD 70: On Several Regimes of Signs' from *A Thousand* Plateaus – in that its creativity is generative, transformative, diagrammatic and machinic (Deleuze and Guattari 1987 139, 145–6). If this was not enough Deleuze and Guattari describe pragmatics 'as a whole' in terms replete with design language. They write:

> Pragmatics as a whole would consist in this: making a *tracing* of the mixed semiotics, under the generative component; making the transformational *map* of the regimes, with their possibilities for translation and creation, for budding along the line of the tracings; making a *diagram* of the abstract machines that are in play in each case, either as potentialities or as effective emergences; outlining the *program* of the assemblages that distribute everything and bring a circulation of movement with alternatives, jumps, and mutations. (Deleuze and Guattari 1987, 146–7; original emphases)

An interesting, successful pragmatic philosophy will be tracing mixtures, mapping generations, diagramming abstract-real relations and programming

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8. Deleuze and Guattari are clear about the criteria they use to judge success (or otherwise) of philosophy; not only the 'interesting', 'remarkability' or 'importance' of *What is Philosophy?* (1994) but also the principles of rhizomatic writing or Body without Organs production of *A Thousand Plateaus* (1987), or the blueprint for schizoanalytic desiring machine production of *Anti Oedipus* (1984), among many other examples across their work.

machines. Its creativity will be characterised by these practices. For Massumi, writing in *Semblance and Event*, pragmatics is not 'practical *as opposed to* speculative or theoretical. It is a synonym for composition' (Massumi 2011, 12; original emphasis). A pragmatic philosophy creates: it composes, fabricates, connects, mixes and changes; it designs. It is thus a Speculative Machine.

Mixing and combining are important aspects of discursive, 'semiotic', regimes as Deleuze and Guattari discuss in the part of *A Thousand Plateaus* from which the references to pragmatics above come. For them semiotic regimes are never pure, always crossing and combining with others to generate a complexity of content and form of expressions in which simple recourses to meaning via interpretation are never adequate. This is why their engagement with pragmatics here is telling, especially pragmatics considered as tracing, mapping, designing and programming. The creative combinatorics announced by pragmatics is also a production of regimes that feedback into a whole complex of machinic networks where distribution of control and power accompany urges to meaning and truth. We remain close to Simondon on technical mentality here. As we have seen, this concept expresses the networked-ness of the assemblages into which any technical objects always find themselves. Such networks should not simply be seen structurally however; Simondon emphasises that technical object 'is not only *structure* but also *regime*' (Simondon 2012, 13; original emphasis). The technical mentality announces not only that its objects exist in a relationship with others, but also that this relationality becomes a way of considering the

ontological status of any objects that come into contact, combination or mixture with it.

Discursive regimes tethering constructs to particular meanings, then, may dominate in any creative context, but such domination may not necessarily entail stability or permanence. Ontologies enacted in structures and regimes, through relations, and flavoured by the mentalities of the networks thus generated, are themselves in processes of coming about. For Simondon – and for Deleuze insofar as he follows the work of Simondon – the ontogenetic describes the process of being's never-ending coming about. While this issue of ontogenesis and the becoming of being is not the focus of this paper, it is worth mentioning here as it shows that in pragmatic creativity, in tracing, mapping, designing and programming, in bringing together a range of things into machining networks that have affect, such mixing does not necessarily homogenise or totalise into fixed ontological positions.

I say 'not necessarily', but this does not mean 'not every time' of course. The mixture of semiotic regimes that Deleuze and Guattari examine show that while they are always open onto each other, blockages can be produced by regimes seeking domination and control, stasis and conformity. Such drives however will provide leakages worth following, moments where the drives to totalise are undermined by 'minor' currents signifying, ontologising, practicing and creating in different ways (Deleuze and Guattari, 1986). Moreover, it is not only the fact of being mixed that should permeate all semiotic regimes, but also of promoting mixing, of generating never-

ending mixing. In any case the assemblage that gives rise to the regimes that it mixes, and to regimes that mix, will have parts that mutate or congeal as they face their many different directions. Deleuze and Guattari explain:

> Semiotic systems depend upon assemblages, and it is the assemblages that determine that a given people, period, or language, and even a given style, fashion, pathology, or miniscule event in a limited situation, can assure the predominance of one semiotic or another. We are trying to make maps of regimes of signs: we can turn them around or retain selected coordinates or dimensions, and depending on the case we will be dealing with a social formation, a pathological delusion, a historical event, etc. (Deleuze and Guattari 1987, 119)

Deleuze and Guattari here use the term ‘regimes’ to describe the spaces of practice or activity, that engage and express, inform and impress, the systems of control and power that produce these practices and activities. These regimes that cut across network types of order, chaos and complexity (Deleuze and Guattari 1994; Brassett 2013, 2015) are not distinct regions with easily demarcated borders, but shifting locales with many different points of entry, barriers, or zones of indiscernibility between them, and moments of eruption of the one into the other. Their different creative moments – where chaotic coalesces into islands of order and frozen edifices dissolve into chaos (Serres 1982; Kauffman 1993, 2008) – relate to each

other in dynamic ways. A regime's dynamism, constraint development, material production and relationships to other regimes are immanent, therefore. For Deleuze and Guattari semiotic regimes mix and combine, create and construct, they provide few opportunities for purity of expression and occur as becomings into and from each other. Each is a different way of constructing the assemblage that they all constitute, and by which they are constituted. The chaotic tends towards complete dissolution; the ordered rigidifies to oppressive stagnation; and the complex does both, partially, undoing what is ordered, and bringing consistency to chaos. The regimes of signs Deleuze and Guattari discuss are themselves complex assemblages, with the regime affording complexity and the status as assemblage.

Simondon uses 'regimes' in a way that connects to both but takes a new direction, one that is worth following here. For him a regime marks the field of possibilities from which any particular mode of existence can be expressed. This relates to the thermodynamic concept 'metastability' – which is a key concept in Simondon's work – with interesting correspondences to the relations between order, chaos and complexity mentioned above. If stable states (regimes of order) have no opportunity to actualise any potential because it has all been used up, and completely unstable states (chaos) can generate nothing, then the metastable state exists in a regime of (complex) possibilities where creative generation of the new can occur. Metastability attests to a complexity of possibilities that can never be exhausted either by being used up (becoming stable and ordered) or utterly dissipated (unstable and chaotic). Regimes are such metastable positions: encompassing the

complex assemblages from which machines can emerge as speculative, transcendentally pragmatic, possibility projections. So when Simondon says, as mentioned above, that the technical object 'is not only *structure* but also *regime*' (2012, 13; original emphasis), it points to the way in which each technical object is related to a whole network, and exhibits the mentality of the technical network in the production of its existence. It is complex, and gestures both to order and chaos in its position of metastability.

I stated above that an interesting, successful pragmatic philosophy following Deleuze and Guattari, would trace mixtures, map generations, diagram abstract-real relations and programme machines. We have just navigated the creative generation offered by mixing, and already encountered the machinic opportunities proposed by the parts and wholes of assemblages. A focus upon pragmatics can draw the abstract machine away form abstraction towards material speculation. With this is activated a whole array of modes of existence that exhibit technical mentality when they engage technological, industrial networks. Speculative Machines are the innovative driver of such mentalities.

It seems to me that the designerly approach to such pragmatics is also placed within the speculative realm. The transcendental diagram of the abstract machine, as we have seen, expresses its concrete material outcomes. Designing is crucial here. It brings the future into the present (thereby changing/creating both space and time), and articulates the material affects that everything within its generative space-time has with everything else (including their space-times). This is its speculative function: a

speculation that machines and participates in, involves and evolves, the technical mentality that emerges.

Last thoughts, but not the end

In 'Crystals and Membranes: Individuation and Temporality', Anne Sauvagnargues grows her thoughts about Simondon around the crystal: 'the Simondonian example *par excellence*' (Sauvagnargues 2012, 59). This is because it involves a seed, a supersaturated solution and a growing of form from matter as a morphogenetic becoming. She writes:

> The crystalline solution, a pre-individual milieu in a metastable state, can only begin to emerge, begin to crystallize, on this condition: that a seed, which must 'resonate' with the milieu in order to produce disparation,[9] be introduced, to which the individual responds as a resolution of the problem. (Sauvagnargues 2012, 60)

I would like to position Speculative Machines as the crystal here: growing from the relationship between a singularity and its context, generating its own temporality that takes it outside of the entropic sea within which all else sinks. A singularity that can infiltrate the space as a speck, an irritant, and

9. Alberto Toscano in a conference presentation posits 'the possibility of envisaging the concept of disparation as a non-dialectical but nevertheless political conceptualisation of conflict and transformation' (Toscano 2007, 1). While examining the role of disparation in the terms I have been elucidating here would warrant further research, it is clear that this concept relates to the position of speculation as machinic, creative and networked.

once ‘resonating’ with that milieu, all can emerge. Infiltrate or as we have seen following Whitehead, insert. When inserting the future in the crannies of the present designers are taking future specks to grow the present as a crystal in the material medium and environment that already resonate with future and present possibilities. Speculative Hardware is one such irritant, inserting itself as an outcast from the future in the middle of a present that becomes itself only once it has adjusted its medium to allow the future to resonate. The other line we need to bring back into this moment is the pragmatic.

Such irritating event creation may seem like magic, but it is certainly not ideal. For a present announced by Speculative Machines to crystallise, not only does it need an environment receptive to the resonances it offers, but also an act of placing, of insertion, of – to recall Stengers’s term – infection. These acts have to be designed. But this is not to be taken simply, not hylomorphically, not with some energised, vivid designer transferring some of his power to form inert matter, as re-presentations of God. Rather – and this is Simondon’s great gift to those of us working across boundaries of design, philosophy and many others – forming is an emergent behaviour of all matter. Sauvagnargues puts it well:

> Far from being external to the matter which it transforms, form acts at the level of forces and functions as a signal: that is, as an instance of information capable of catalysing a process through the irruption of an

> emergent singularity in a system, engaging disparities in a system of correspondence. (Simondon 2012, 64)

Speculative Hardware is one such erupting emergent singularity. Its form emerges from the context in which it operates, and allows that milieu to emerge on its own line of becoming. The designer (inserting, infecting, affecting, and so on) is thus also the milieu: the material, the environment, and in the middle of it all, as John O'Reilly 2015 shows when he investigates the concept of milieu (via Canguilhem and Deleuze and Guattari) in relation to the work of illustrators Saul Steinberg and Chris Ware. The designer becomes the work, as it becomes him or her, and all becomings affect space and time. A force itself, Speculative Machines' becomings are also particular expressions of technical mentality and are proof of its (technical mentality's) generation of creative possibilities. Any Speculative Machine will articulate and express the technical particularities and collectives of the networks within which it operates at any one time. As such it is not only an instantiation of the spaces within which it exists in all its topological complexity, but also creates new temporal opportunities.

I would like to finish by referring to the second of the quotations used as epigrams to this paper: the one by Isabelle Stengers (2011), who writes:

> Speculative philosophy is not about giving a plausible account of what exists but about approaching each society with the question of what it

> might be capable of, and this capacity designates not its judgements but the interstices to which it provides shelter. (Stengers 2011, 509)

Speculative Machines as I have sought to construct them here already posit themselves as refugees from the future, hacking into our fleeting present, providing glimpses of the modal possibilities for becoming more than what we are. 'What if we were to become thus?' they suppose, and at that moment the line of flight this announces is already underway. They insert themselves into the crannies of the present, lurk in these interstices, erupt from their midsts: becoming, emerging. Like Oxman's digital machines that I mention at the opening of this essay, Speculative Machines take us away from the instrumentality of the present into the creative possibilities that this present may become, and do so by burrowing into its cracks. With the affect that each society becomes criss-crossed, interrupted, disrupted and regenerated by the technical mentalities all its machines – abstract and real, actual and speculative – create. Those of us who create – things and concepts and all – would do well to attend to the affective networks, the Technical Mentalities, within which our creations exist, and the opportunities they allow for further creative expression.

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