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DEPLETION DESIGN: A GLOSSARY OF NETWORK ECOLOGIES

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CAROLIN WIEDEMANN & SOENKE ZEHLE

DEPLETION DESIGN: A GLOSSARY OF NETWORK ECOLOGIES

Theory on Demand #8
Depletion Design: A Glossary of Network Ecologies

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CONTENTS

DEPLETION DESIGN

We, or so we are told, are running out of time, of time to develop alternatives to a new politics of emergency, as constant crisis has exhausted the means of a politics of representation too slow for the state of exception, too ignorant of the distribution of political agency, too focused on the governability of financial architectures. But new forms of individual and collective agency already emerge, as we learn to live, love, work within the horizon of depletion, to ask what it means to sustain ourselves, each other, again.

"We need", Felix Guattari suggested a long time ago, "new social and aesthetic practices, new practices of the self in relation to the other, to the foreign, the strange". To relate is to create, design, maintain new modes of relation, inventing the spaces from within which to do so in the process. Above and beyond well-meaning injunctions to conduct ourselves more artistically, more playfully, more openly, a wave of socio-technological decentralization reminds us of our individual and collective capacity to create.

Eager to assist, organize, and structure our lifestream logistics, new corporate actors offer communicative freedoms based on commercial user-as-product philosophies of expression. But we now design our own interfaces to face our others, our algorithmic others.

Our collective reflection on nature as machinic assemblage has yielded functional foods and the financialization of agriculture. But networked selves already develop other ecologies, reclaiming social machines as technologies of the common, unearthing the conflicts covered in disaster-driven environmentalities whose horizon is delimited by energy security and resource efficiency. Both helped and hindered by the ontological resonances of the common, these ecologies remain fragile, not yet structured by a politics of rights, animated by an interest in the autonomy of things.

As nature continues to seep across the curriculum, research and education struggle to keep track of the corrosion of their institutional frameworks. Powered by a cartographic vision unconstrained by the statist political imagination, the study of supply chains has already become a paradigmatic form of transdisciplinarity, moving across the boundaries of life and labor, tracking every speck of dust on the scratch-free screens of our mobile economies as a reminder of the complexities of mutual constitution.

The question of depletion is the question of the institution, of what it means when subjects and objects join in a refusal of roles in the great games of reification. No accident, perhaps, that philosophies of play are back, not quite a renaissance of aesthetic experience, but an affirmation of the openness of objective and subjective constitution.

Of these and other knowledges so created, there can no longer be an encyclopedia; a glossary, perhaps. This is its initial iteration, its entries conjoined by a logic of connotation and constellation.

Carolin Wiedemann & Soenke Zehle

ALGORITHMIC ARCHITECTURE
LUCIANA PARISI

In the field of algorithmic architecture and in the works of, amongst many, digital architect Greg Lynn, computational design takes inspiration from vector fields, used to model, for example, the speed and direction of a moving fluid throughout space, or the strength and direction of some force, such as the magnetic or gravitational force, as it changes from point to point. Here the architectural form is the result of the computational processing of biophysical variables (e.g., the distribution of weight, gravitational pressures, the circulation of air, the intensity of traffic, the frequency of movement). Influenced by the second-order cybernetics of evolving feedbacks, during the 90s algorithmic architecture started to adopt biophysical dynamics to input change in the software program, for instance by retrieving biophysical data as a new parameter to be added to the sequence of algorithms.

By closing the gap between mathematical models and bio-physical contingencies, algorithmic architecture entered the topological field of spatio-temporal connectedness, involving a continual transformation of form without cutting or tearing. From this standpoint, biophysical unpredictability became superior to mathematical axioms and the reality of abstraction slipped behind the concreteness of matter. Similarly, the digital design of space has now left behind the Euclidean matrix of extension, and has added temporal evolution to fixed points developing a topological surface of continual variation enveloping all points.

The figure of the blob or topological surfaces of continuity now dominates digital architecture. In particular, parametricism, according to Patrick Schumacher, now represents the new global style for architecture and design. When applied to large-scale urbanism, for instance, parametricism is said to transform the differential distance between points into an integral surface of continual variations. From this standpoint, parametricism implies the inclusion of contingent objects (e.g., atmospheric, geological, biological, physical elements), which become variable parameters whose temporal evolution contributes to the overall transformation of the architectural whole. This means that variables, for instance, are not only added to the program (as if from the 'outside'), but rather partake of the software environment of parametric relations. Parametric programming, therefore, is not just concerned with the computation of existing elements, but also, and significantly, with how feedback relations between finite parameters can engender the infinite variations of the architectural form.

From this standpoint, parametricism is, as Hatherley calls it, a manifestation of the "cultural logic of late neoliberalism", whose topological operations of continual transformation, structural coupling and mutual correspondence between the inside and the outside are now defining the choreographic arrangement of data. This is not a new argument, and it is also one that is, to a degree, separate from the issues that I aim to pursue here. I am not specifically concerned with criticizing parametricism or its excessive formalism for its inability to address infrastructural issues and the political implications of lived space. Instead of arguing that parametricism promises a formally open-ended and flexible space that does not physically match realized ar-

chitectures (as in the case of the Evelyn Grace Academy Zaha Hadid Architects) and instead of contending that parametricism is the direct incarnation of the spirit of the neoliberal market, I would suggest instead that parametricism is not abstract enough to meet the possibilities offered by a radical algorithmic formalism that exposes the algorithmic governance to its internal inconsistencies, which, I argue, imply an understanding of algorithms as actual objects.

This means that a critical approach to parametricism does not and cannot exclusively disqualify the computational production of spatio-temporalities on the grounds that this is always already an expression of totalizing neoliberal governance. Whilst it is not my intention to deny that parametricism is an instance of the topological aesthetic of governance, I also want to problematize the tout court rejection of the agential character of computer programming and the actual reality of algorithmic objects that seem to lie behind the political critique of parametricism or of what is also called Deleuzian architecture. This is to say that algorithmic objects are necessarily implicated in the sociality that they invisibly structure. But the stealthy intrusion of computational programming into everyday culture requires a close engagement with the nuances of the digital apparatus and of the axiomatic thought that indirectly infects such a culture.

From this standpoint, the topological architecture of relations expressed by parametricism is precisely what needs to be challenged in order to reveal the transformation that algorithmic objects have brought to digital formalism. A close analysis of this transformation may help us to explain how structural changes in programming are not negligible, but are in fact ontological expressions of computational culture and power. This analysis may also contribute towards indicating the incongruence, the asymmetry and not the equivalence between algorithmic architecture as a totalizing system of governance and as a series of fractal or inconsistent events.

One can argue that an immediate level of transformation that parametricism exerts upon digital formalism is its attempt to incorporate contingencies into the enterprise/model by including real time data in software programming. However, I would argue that the introduction of temporality into programming does not fully challenge the formal nature of algorithmic architecture. Instead, it affords its formalism the pretension of describing how mathematics can incorporate physics by creating a totalitarian system of relations, according to which a few mathematical rules ground the evolution of complex structures by establishing continual feedback with the environment.

This means that the topological qualities of parametricism do not in fact challenge but instead appear as the reification of its formalism, insofar as the computation of biophysical contingencies only serves to reinforce formalism using the biophysical environment to construct itself as being open to change. Rather than challenging computational formalism by claiming that computation can never account for the whole of continual relations, it is necessary instead to unpack the internal limits of computation, and to thereby search for its internal inconsistencies.

Interactive and responsive computation work not to reveal but to occlude the what and the how of algorithmic objects, which are deemed to remain passive in the face of an ever-changing governance of continual feedback. We need therefore to turn to information theory to address its rather complicated and subtle notion of algorithms, which, far from being equivalent to the continual surface of connecting data, are instead sequential spatio-temporal data structures that

are conditioned by infinite amounts of information. I believe that these data structures are actual spatio-temporalities and are precisely the objects of algorithmic architecture. This means that an algorithmic object is more than a temporal form or the result of interactive inputs, and rather defines spatio-temporal structures as the increasing amount of automated data in our computational culture.

Contrary to the view that computation is a reductive form of rationalism, I want to suggest that the ingression of the incomputable in axiomatics can help us to re-think computation in terms of, to borrow from A. N. Whitehead, speculative reason. Computation as an instance of speculative reason does not correspond to the topological order of potential connectedness between points. On the contrary, Whitehead's understanding of speculative reason explains that the function of reason is to add new data to the continual chain of cause and effect – the continual processing of data for instance.

Similarly, a speculative view of computation implies that this is not equivalent to a mere compression of data or to a structure of relation defined by sets and subsets. On the contrary, a speculative understanding of computation implies that each set and subset of instructions is conditioned by what cannot be calculated, the incomputable probabilities that disclose the holes, gaps within and not outside the formal order of sequences. This means that a notion of speculative computing is not concerned with quantifying probabilities to predict the future, but with a concrete system of algorithmic objects defined by randomness or incompressible quantities of data detaching from the relational order of topological continuity.

This is why speculative computing is not to be confused with the capacity of algorithmic architecture to create temporary forms that simulate what spatio-temporal structures and infrastructures could become. Similarly, it does not mean that the governing enterprise of a relational database can always already incorporate into its own structure the amounts of data processed. On the contrary, the notion of speculative computing advanced here is used to suggest that random data – which in information theory mean not arbitrary but non-fully compressible into a smaller program - are the contagious architectures of the present. These architectures, far from withdrawing from the present (and thus remain temporal forms that appear and disappear), rather are actual objects, which even when they cease to be here, nonetheless remain objective data to be inherited, evaluated and selected by subsequent algorithms.

It is possible to suggest therefore that algorithmic architecture reveals the immanent reality of patternless data exposing the inconsistent unity of algorithmic objects, thus determining a fractal and not topological arrangement of spatio-temporalities in our computational culture. What is of most importance is that this reality cannot be encompassed by the totalizing and invariant function of a topological model. From this standpoint, algorithmic architecture does not just reveal the operation of soft-control and neoliberal aesthetics of topological relationality, but rather I want to suggest that this aesthetics is broken open by the reality of algorithmic events or the automated selection and production of incomputable data: random information.

Algorithmic architecture does not correspond to a topological whole bigger than its parts, but is defined by parts that are irreducible inconsistencies divorced from the whole that can be built

through them. Algorithmic architecture works not against but with the chaotic parts of information, comprised neither within finite axioms nor within open interactions. Algorithmic architecture may offer us the opportunity to discuss the nature of algorithmic objects beyond formal mathematical and physical models. It may contribute to unravel the speculative reason of algorithms that may well overturn what is meant by the digital governance of space-time.

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ANONYMOUS
GABRIELLE COLEMAN

> *A 'subterranean man' [is] at work, one who tunnels and mines and undermines. As though he perhaps desires this prolonged obscurity, desires to be incomprehensible, concealed, enigmatic, because he knows what he will thereby also acquire: his own morning, his own redemption, his own daybreak?* Friedrich Nietzsche

Anonymous – a name taken by different individuals and groups to organize collective action - often defies expectations and thus easy definition. It is a cluster of ideas and ideals adopted by various, at times unconnected hackers, technologists, activists, geeks, and human rights activists, and is grounded in the concept of anonymity. It is a banner for online political campaigns and street demonstrations, actions ranging from fearsome pranks to hacking for sensitive information to human rights technological support for revolutionaries in Tunisia, Egypt, and Libya.

Just as a twist of a kaleidoscope conjures a new, unexpected colorful pattern, so too does the pattern behind Anonymous morph easily, its axis shifted by world events, a new node hatching, or conflicts within and between networks. Changes to its constitution and its amplitude are difficult to predict, and frustrate the sociological imperative for clarity and comprehensiveness. Anonymous participants prefer not only to live in the shadows of pseudoanonymity, but they take up their residence in multiple places. It is thus difficult to comprehensively map the entire terrain they build and traverse. If Anonymous is constantly in motion, with no stable center of gravity, how might we understand its recent presence on the world stage? How do we account for the consistency of its many actions? One way to do so is via the place of its birth. The uncanny and canny tactics of Anonymous cannot be understood independent of the cultural dynamics on 4chan, the iconic and transgressive image board from which they first arose.

Starting roughly around 2005, Anonymous was a name used almost exclusively by some 4chan users to troll - harass, humiliate, prank, and sometimes ruin the reputations of chosen targets. In 2008 the name acquired more layers and different meanings when some individuals deployed the alias to protest earnestly the human rights abuses associated with the Church of Scientology. Anonymous soon settled into what media scholar Marco Deseriis defines as a multiple use name, "the adoption of the same alias by organized collectives, affinity groups, and individual authors." In December 2010, Anonymous rose to public prominence when individuals part of the AnonOps network came to the defense of Wikileaks - launching a distributed denial of service (DDoS) campaign against financial corporate giants that had bowed to pressure and refused to accept donations for the whistle-blowing organization. Many of the individuals and groups who rallied around the name Anonymous for these and other activist causes still carried with them the irreverent, roughish disposition - what they call the "lulz" (a pluralization and bastardzation of lol) - formed in the heady days when Anonymous was a name heralded for the sake of trolling alone.

Anonymous' meteoric rise and consistency must also be assessed via the skills and capacities of those who install, configure, and deploy various pieces of software, such as Internet Relay

Chat (IRC), where they congregate, and the scanning tools that scour the Internet for software vulnerabilities - prime targets for exploitation. In the media it is common to portray Anonymous as wholly inaccessible, inchoate, spectral, and impossible to locate, its thunderous rise beyond explanation, simply a magical effect of the "Internet." Although this portrait contains kernels of truth, some of the mystery vanishes when we consider the software they use and the skills and capacities of the participants.

In fact, a great many Anonymous participants are rather easy to find: just log onto one of their Internet Relay Chat networks. While being on IRC is not required - some participants act individually and others use Web forums, Twitter, and/or Skype chat rooms - many make their second home on various IRC networks, chatting on public channels, on back channels, at times with single Anons, sometimes with purpose, often without much aim. By today's standards, IRC, invented in 1989, is a rather primitive chat program. But its staying power has to do with its simplicity: it is ideal for real time communication and has become the location where participants organize ops, and it acts as the communicative medium through which bonds of fellowship often form.

To recognize the importance of IRC is to recognize the importance of those who install, configure, and maintain the server: the system or net administrator. Once they install an IRC server, their work is not over. Often aided by a small team of individuals with similar skills, the administrator is part plumber, part groundskeeper, and part ninja, fixing problems, maintaining the system, and fending off attacks. In the case of some Anonymous networks, they use their extensive and intimate knowledge of servers, networks, botnets, security, and vulnerabilities to thrash servers by burdening them with too many requests as part of a DDoS campaign or embarking on a hacking operation to access information (some networks never use such tactics staying well within the bounds of the law and many of the admins only maintain infrastructure).

Even if much within Anonymous is impenetrable, these individuals and the team tasked with doing the work of maintenance and upkeep are some of the more known quantities on these networks. Indeed, some of the networks even erect Web pages offering the public this information, proudly announcing the "staff," and these individuals often have a symbol (a flag, @, & or star) next to their nickname to designate the privileges they hold on the network.

If it were so simple, however, one would not need to heed the social and technical life behind these networks. Individuals pour tremendous labor into critiquing and modulating the concentration of power that is a byproduct of technical structures (although technical affordances also contribute toward the fragmentation of power as well).

Let's then return to IRC, the home of so many within Anonymous. It is established largely in the guise of a platform where users are usually afforded the freedom to initiate their own operations and channels. While the founders and staff can ban individuals or a channel, or discourage an operation from flourishing, most IRC networks have a long tradition - and this is no different with Anonymous - of a laissez faire, hands off approach to the creation of channels (although some ops that don't get informal sanction from the operators never thrive). Thus although those who manage and control technical resources do wield more power than others - as an example, admins can and do ban users with some frequency and will do so for violating explicit rules, informal

norms, and over petty personal disagreements as well - there is no one group commandeering authority over the dozens of operations, some in full swing, some more tempered, making their home on any number of IRC networks in existence.

When it comes to single operations, there can be, as one Anon put it, “ad hoc leaders,” many whom don’t maintain the technical system. Each operation has its own distinct history and organizational culture. Technical operations, such as hacking or DDoS, usually lean heavily on a smaller number of individuals (a DDoS campaign can also become more populist when single individuals contribute using a tool like Low Orbit Ion Cannon). But power does concentrate. Or at least some Anonymous participants think it has, at times, to an intolerable degree and have taken quite targeted action as a result. For example, the birth of new nodes, crews, and networks is often the result of dissatisfaction with power dynamics on or tactics used by one network.

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Anonymous acts in a way that is irreverent, often destructive, occasionally vindictive, and generally disdainful of the law. These actions are unlike the work of traditional activists, who might rather urge citizens to stay within the bounds of the law, to wield the law, to call their local representatives, or to charter an NGO. Anonymous stokes the hot embers of transgression, tricksterism, and irreverence - a fire long in existence and yet in perpetual need of renewal. In ancient Greece, the cynic philosopher, Diogenes, masturbated in public to proclaim his disdain for what he saw as the artificiality of decorum. More recently the Yes Men have tightly fused pranksterism and activism, in one instance presenting a three-foot-long golden penis (“employee visualization appendage”) at a World Trade Organization textile-industry conference as a means of controlling workers.

Anonymous is an heir to this tradition: when advertising their campaigns on Twitter participants will joke about a certain bodily appendage; on IRC they remind each other not to take themselves too seriously; they will at times feed the media with false information as part of an elaborate prank. Subversions, whether a media hack or an anatomy joke, unravel the often oppressive force of norms, conventions, and the law. To transgress is to also highlight absurdities of current political life and generate the spectacles that elicit coverage from the mainstream media. Anonymous may enact a less elegant version of this irreverent tradition, but it is more populist and participatory than most anything that has come before it.

Along with copious transgressions, Anonymous also offers a compelling alternative and antithesis to the logic of constant self-publication, the desire to attain recognition or fame. Anonymous is configured as e pluribus unum: one from many. Although individuals do fail at times to live up to the norm, the revelation of self is discouraged. Depending on what op they run, who they know, and especially what back channels they are in, individuals within Anonymous can accumulate status and prestige. But marshaling this prestige to speak on behalf of Anonymous, to reveal yourself to the mainstream media, or to make a name for yourself, is taboo.

In instances when this occurs, people are often drubbed, chastised, sometimes even banned. In an era when we post the majority of our personal data online, and states and corporations collect and market the rest, there is something hopeful - one might even say necessary - in Anonymous’s

effacement of the self, in the cloaking of identities, in offering a small symbolic oasis of anonymity in the current expansive desert of top down and bottom up surveillance. From a more experiential perspective, participants often express the joys of anonymity and pseudonymity, regular fixtures in these environments. One Anon participant elaborated it as follows:

> I used to enjoy the hivemind feeling at 4chan, where everyone was anonymous and everyone was the same, ops coming and going in the time between a thread starting and 404'ing sometimes. For me now it's about the old fashioned Internet pseudonymity, where you can have a persona that persists but is not connected to your 'real life self'. Now everything is about Facebook and showing your real self on the internet, the Anon IRC/twitter world is full of people enjoying these personas where they get to pretend to be lulz pirates or jesters or whatever – theres less and less chance for that now it seems on the net.

The icon most associated with Anonymous, the Guy Fawkes mask, seen at protests around the world, symbolizes the trading of individualism for collectivism. In an age of atomization, in a period where the individual seeks recognition, and at times profit, for every expression and creation, it is unsurprising that Anonymous has so captivated the publics imagination. Nevertheless, Anonymous does not signal the reappearance of the mass political subject united by one program or aspiration; it is not a united front, but a hydra, a rhizome, comprising numerous different networks and working groups that are often at odds with one another. Indeed there is always a degree of disorder present even with the stable networked nodes of Anonymous—chaos following from the permanently contingent environment so common to IRC, the tensions and conflicts between individuals and networks, and the fact that operations are often reactive responses to unpredictable world events.

Despite operating behind a mask, shall we declare Anonymous the new face of democratic digital politics, as some have suggested? Does it provide the antidote to cure the world of its many political ills? Or should we write them off as cyber vigilantes who lack aim (but still manage to cause diabolical havoc)? When it comes to assessing the political significance of Anonymous, we should resist grand declarations and pronouncements. The work of politics and social transformation requires multiplicity - from fine tuned policy interventions to rowdy subversive tactics - and we should be wary of christening any one a magic bullet (the norm today, at least with the many pundits who overstate the role of digital media in political life, declaring some element, such as social networking, as our technological savior).

Through its actions, Anonymous created different platforms for individuals to act politically. Although cloaked and veiled, many of their actions seek transparency from the state and corporations and also often strike at legislation - copyright statutes, surveillance bills - seen to threaten Internet freedoms. It depends on a spectacular visibility and invisibility; it is everywhere, yet difficult to pin down. It thrives off a dynamic tension between cool and hot, openness and secrecy, pranks and seriousness, and predictability and unpredictability. In some instances, it is a place for the many to participate. There are also more exclusive groups of hackers in existence for those willing to break the law for political dissent. Laughter and humor, sometimes lighthearted, other times wickedly dark and offensive, are a staple part of the carnivaleque atmosphere.
Whatever your interpretation of their actions, Anonymous has undeniably catalyzed and spurred

copious conversations about a range of topics, from the ethics of DDoS tactics to the existence of a privatized security apparatus, demonstrating that spectacular interventions can sustain a public debate. What does Anonymous mean to you? Since it is not a singularity but a multiplicity, I am sure there are many answers. But perhaps that is precisely the point.

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BIOPOLITICS
SEBASTIAN OLMA

Towards the end of the seventies, Michel Foucault tentatively introduces the notion of 'biopolitics,' i.e., the political exercise of 'biopower,' in several texts. The notion of biopower is mentioned for the first time in the final pages of the first volume of the History of Sexuality, published in French in 1976. It appears rather suddenly without much elaboration: 'During the classical period […] there was an explosion of numerous and diverse techniques for achieving the subjugation of bodies and the control of populations, marking the beginning of an era of 'bio-power' (Foucault, 1981: 140). What Foucault does mention in this text is that the new techniques of power – above all demography and statistics – were indispensable for the development of capitalism: "The adjustment of the accumulation of men to that of capital, the joining of the growth of human groups to the expansion of productive forces and the differential allocation of profit, were made possible in part by the exercise of bio-power in its many forms and modes of application" (ibid: 141).

The appearance of the notion of biopolitics itself is usually attributed to Foucault's lecture series at the College de France 1975-1976 published under the title Society Must Be Defended (Foucault 2003). Here the emergence of biopolitics is dated to the mid 18th century and opposed to the notion of discipline that Foucault had developed above all in Discipline and Punish (Foucault 1979):

> The new technology that is being established is addressed to a multiplicity of men, not to the extent that they are nothing more than their individual bodies, but to the extent that they form, on the contrary, a global mass that is affected by overall processes characteristic of birth, death, production, illness, and so on. … After the anatomo-politics of the human body established in the course of the eighteenth century, we have, at the end of that century, the emergence of something that is no longer an anatomo-politics of the human body, but what I would call a 'biopolitics' of the human race (Foucault 2003: 242–3).

Unfortunately, Foucault never fully develops his notion of biopolitics. His hesitancy in fleshing out the concept is clear even in his Birth of Biopolitics where the term is used very scarcely. However, what hat the discussion of liberalism and neoliberalism show, the notion of biopolitics marks the emergence of mode of political power that is different from the old Raison d'Etat in its particular – as Foucault has it: "pastoral" – approach to social life. What makes matters complicated is that at this point, biopolitics somewhat merges with and becomes a subcategory of another notion that Foucault introduces around the same time: "governmentality." Governmentality denotes what Foucault calls the modern insertion of 'life into history'. He analyses this development with reference to the emergence of political economy. As he demonstrates, the technologies of power shift toward governmentality at the precise moment that economy (understood in its strict Greek sense as the government of the family) and politics (likewise understood as the government of the polis) start to converge. Life, previously confined to the oikos enters the polis as a generative principle that is inherent to the population and thus needs to be harnessed.

Foucault's notion of governmentality marks a historical transformation of the dispositifs of power toward a modality that is different from both sovereign domination through law and disciplinary moulding through confinement. Whereas sovereignty and discipline actually shape their object (the people, the body) according to their own intrinsic logic and finality, governmentality approaches life on life's own terms "in the pursuit of the perfection and intensification of the processes which it directs" (Foucault 1991: 95).

While the notion of governmentality allows Foucault to account for the pragmatic character of modern dispositifs of power, it also signals an important methodological opening in his analysis of power per se. His focus broadens toward an analytical perspective including the institutions and technologies of biopolitics as well as the problem of the construction of subjectivity that he elaborates in the second and third volume of his History of Sexuality (Foucault 1986a, b).

The notion of biopolitics has entered contemporary academic and political debates by way of roughly four different interpretations: The first major strain emerged with Francois Ewald's work on the welfare state (Ewald 1986) and has found its preliminary climax in Niklas Rose's comprehensive Powers of Freedom (Rose 1999). Sometimes also referred to as "governmentality studies", this school of thought develops the notion of biopolitics to an analytical instrument for the purpose of "revealing" the normative character of all forms of political power. While this biopolitics-as-research-method approach is academically speaking absolutely sound, it erases any political potential the notion of biopolitics might hold. Foucault's approach is transformed into an administrative exercise for the sake of showing that every effective (i.e., powerful) intervention into society entails manipulations of subjectivity, epistemology etc. Biopolitical analysis is rendered a comprehensive audit of the overwhelming weight of political pouvoir: the academic auditor literally knows every political trick in the book, including that there is nothing to be done about it.

A second interpretation revolves around the work of Giorgio Agamben and might be referred to in terms of a politico-theological reading of biopolitics. In the centre of this school of thought there is a strong notion of biopolitics as resistance. Paradoxically however, this notion of resistance rests on the demand of radical passivity expressed in the notion of bare life (Agamben 1998). Bare life should be understood as the limit condition between zoë and bios, between natural life and political life, i.e., as that which always resists its inclusion into the order of the polis. The revolutionary act these writers allude to amounts to the creation of an alternative polis based on a radical retreat from the current – i.e., for Agamben, capitalist – political actuality into the limit condition of pure potentiality. They assume that only such a retreat into a transcendent zero-point of politico-ontological praxis can provide the conditions for the creation of a polis adequate to the essence of human life, i.e., bare life. The political utility of this interpretation of biopolitics must be seriously questioned as it falls short of engaging with the question of how such a position might be collectively reached, settling instead for a mere gesture of ontological radicalism.

A third reading of biopolitics comes out of the tradition of post-autonomous Marxism and has been popularised above all by the work of Antonio Negri and Michael Hardt (Hardt and Negri 2000, 2004, 2009). Here, Foucault's notion of biopolitics is approached by way of Negri's neo-Marxist reading of Spinoza (Negri 1998), mapping Negri's Spinozean distinction between poten-

tia (constituent power) and potestas (constituted power) onto Foucault's thought thus arriving at a similar duality marked by the opposition between biopolitics and biopower. Although this might be seen as a simplification of Foucault's original approach it allows these authors to evolve Marxist categories to the extent that they capture some of the specificities of contemporary capitalist production. In the notion of "biopolitical production," Negri and Hardt update the Marxist category of real subsumption in terms of a situation in which the results of capitalist production are first and foremost social relations and forms of life (through ubiquitous branding, advertising, lifestyle consumption and so on). While the dual notion of biopolitics/biopower mirrors the old Marxist antagonism, biopolitical production takes into account the complexity of Foucault's analysis of power. The capital relation is located at the level of anthropogenesis (Virno 2004), i.e., it is understood as an ontological force at work at the threshold of emergent social life, between the virtual and the actual. Biopolitical production thus marks a displacement of the capital relation into the processes that are formative of human life. However, by taking seriously the socio-technological progress that allows for (as well as forcing Capital into) such a displacement, revolutionary Marxist thinking is opened toward a parallelism of emancipative strategies that takes its cue from the Foucauldian notion of strategic intervention. What emerges from this is a political pragmatism that in spite of its obsolete revolutionary rhetoric might serve as a guide to a radical as well as effective political engagement with the contemporary world.

There is a fourth strain of interpretation that is related to the previous one but takes the notion of biopolitics even further. Guided by the Deleuzo-Guattarian demand for permanent conceptual co-evolution ("le survol") (see Deleuze and Guattari 1994) authors such as Maurizio Lazzarato and Bernard Stiegler are trying to preserve the political force of the Foucauldian notion by evolving it in an approach marking the "noopolitical" (Lazzarato 2004) or "psychopolitical" (Stiegler 2008) character of contemporary production. These conceptual re-inventions draw attention to a crucial shift within the current mode of production toward an "attention economy." This is to say that much of the economic value generated today depends on the ability to capture potential consumers' attention. As these authors argue, the problem of economic scarcity has shifted from the supply-side to the demand-side as a result of the ubiquitous growth of the immaterial or cognitive-symbolic content of commodities. Selling products today increasingly means to cathect the scarce resource of psychological presence not least because consumption has become a very 'labour'-intensive activity involving complex processes of interpretation of symbolic assemblages defining the commodity and their integration into one's lifestyle or subjectivity. Noopolitical or psychopolitical strategies thus capture attention and turn it into economic value. By doing so, they deflect the enormous potential inherent to the contemporary state of socio-technological development: the puissance of the "network of brains" (Lazzarato 2002) is wasted in the construction of corporately branded pseudo-worlds (through the 'creative act' of consumption) thereby devolving the creative minds to highly stimulus-sensitive attention (read: consumption) zombies.

However, precisely because such noo-/psychopolitical strategies are built on (and supposed to save) the social and political structures of an obsolete industrial era they are not capable of containing the potential for new (technologically enhanced) cooperative forms of organisation and production. It is here that these approaches assume their full political significance by pointing toward a dynamic of emancipation that might not lead beyond capitalism but perhaps to an "economy of contribution" (Stiegler 2009) that will certainly mark a "revolution of capitalism" (Lazzarato 2004).

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THE COMMON - A POLITICAL CONSTRUCTION
JUDITH REVEL

Everyday language attributes to the term “common” the weak valuation of a banality, of something evident: Common in this sense means everything that can never be considered desirable. The “common” is too present to be remarkable, too clearly exposed to ever be in demand.

But in philosophical term, having something in common means that you share the same basis, the “common” is the ground of any sociality. Especially from the perspective of political philosophy, the common always seems to precede communities, to represent their foundation, the ground, the immutable root, the essence, nature. It seems impossible to imagine a dimension where being together would not be before everything else – logically, chronologically, ontologically – built up on the space of a resemblance, an affinity, a first definition. The “shared” makes shared futures possible, and community can only develop and become stronger because it is rooted in a common that justifies it: The pretty tautology of a political thought that puts “polis”, i.e. inter-subjectivity, the possibility of living together, both as its cause and effect.

What if the common is what has to be built politically through the creation of new communities, and does not always precede - like a condition of possibility - our existence? To invent a new grammar of politics at the beginning of the XXIst century, we have to deconstruct the categories and cleavages that have structured modern political thought for three centuries, to refuse the oppositions between private and public, between individual and polis, between the particular and the universal, between the backdrop of the domestic world and the theatre of pure social representation, in order to redefine the common: a new articulation between the differences of each of us and the space of their possible assemblages.

The ‘public’ and the ‘private’ seem to form a conceptual tie beyond which you can not easily situate yourself: what is not ‘public’ automatically seems to belong to the ‘private’ sphere; and what is not susceptible to be guided by a purely domestic economy of the household is necessarily exposed to the public sector of political affairs.

And even in situations where the two categories and the play of their opposition seem to become blurred, nothing seems to question that what we see as ‘private’ in reality belongs to the domain of the individual and that what we define as ‘public’ in reality belongs to the field of the state.

We have to untie these two categories if we want to think the ‘common’ differently; let us therefore go back to this construction of the dichotomy between the individual and the state. Something is private when it only belongs to me, or when I refuse to share it with others. Private property - remember the famous analyses in the Discours sur l’origine de l’inégalité parmi les hommes by Rousseau: et le premier homme qui dit ‘ceci est à moi’ etc. -, private property is an appropriation of the common by a single person, an expropriation of all the others by making this ‘common’ private. At the same time, private property is the construction of the opposition between individual interest and common interest, the idea that the legitimation of this appropriation by a single per-

son produces an injustice which is the real origin of inequality and of corruption. Private is what I take for me, and that is not only what the others won't have anymore but also what they will miss.

Yet at the time of Rousseau, this common that is attributed to a single person through an act of private appropriation corresponds essentially with the resources and assets that we now call natural: the earth, water, the rights of movement and border-crossing, the products of hunting and fishing - that is exactly what at that time constitutes the core of the privileges of clergy and aristocracy. To denounce the privatization of the common is therefore for Rousseau to denounce the socialization of nature, i.e. its intimate corruption. As it is impossible - even for Rousseau - to imagine any return to a state of nature or to a kind of lost Eden that existed before private property, we must think how to prevent such appropriation and regulate individual desires. This system is that of the social contract, the management of the 'public', the management of the state, of the land and of wealth. In sum: an appropriation by the state to prevent individual appropriation.

It is not evident that things are the same today as they were in the eighteenth century. The very definition of 'common' has changed. Earth, water, energy, gas: our nature is now unthinkable without any valorization that immediately turns it into a product, always already cultural, socialized, cooperative. 'Natural' resources are one component of this valorization that the joint action of human beings (this transformation of nature that is commonly called work) makes possible. The analysis of Rousseau was moving and correct, but it worked paradoxically within a horizon of thought which was that of the ancien regime, a world where pure property, i.e. titles, privileges and exclusive usufruct counted more than work and the valorization of a resource. Today, however, private property means precisely to deny people their common right to everything that only their collaborative work is able to produce: innovation, social cooperation, circulation of knowledge - in short everything, at the time of cognitive capitalism, that is the core of economic valorization.

Today, to fight against private property is to demand the right to reclaim, non-individually and not in terms of state ownership, the social production that everyone in her/his own way permits. This means that the common is both what we want to remove from the false dilemma of private / public, and what we are trying to define as a new mode of organization of this non-individual and non-collective reappropriation. 'Common' is the name of an appropriation without owners, without deprivation and without a state, from which all could benefit.

Back to Rousseau's analysis of private property: The second category of our analysis, the 'public', seems precisely to oppose this illegitimate appropriation. Yet to anyone? 'n'appartienne pourtant à personne': the trap-door closes behind Jean-Jacques, and behind us at the same time: what belongs to everyone but to no one personally belongs to the state. The only way to escape the authority of the individual, of the institution of privatization (of property) as a system of deprivation (of all those excluded by this very privatization) is the construction of the state.

For the state, which should mean: us, it is necessary that its effective agents invent something to secure their grip on the common: to make us believe, for example, that if the state represents us, and if it assumes the rights to what nature offers us, that this is to protect us from the worst. The problem becomes more complicated when we move from 'natural' resources – or from those considered to be 'natural' - to work and production (i.e. the transformation of the world by the

joint action of human beings): to say that the state has rights over what we produce is to say that the 'we', i.e. is the community to which our productive work gives form, is quite distinct from what we actually produce: our common 'we' is not what we produce together (in common), invent and organize as common, but what allows us to exist as unitary subject, in eternity, regardless of what we do together or how we transform the world (and ourselves in this world). The common that characterizes us, says the state, does not belong to us, since we do not really create it: the common is our soil, our foundation, we have it under our feet: it is our nature, our identity, our shared origin, our essence. And if this common does not really belong to us - because to be is not to own - state control of the common is not called appropriation but (economic) management and (political) representation.

The state manages the wealth that we would do well not to deal with, as it is negligible in relation to our nature. But the duty of detachment from wealth in the name of the original purity of humanity (an argument designed, of course, exclusively for the poor) does not concern the state that - having no essence on which to fall back on for a pure and disinterested contemplation - then assumes the right to say that it owns what our work has produced. QED: The relentless beauty of public pragmatism.

Nature and identity are mystifications of the modern paradigm of power. To reclaim our common, we must first of all criticize these concepts. We are nothing and we do not want to be anything. Our common is not our foundation but our production, our constantly renewed invention. The common is the refusal of an origin, it is the identification of being and creating and producing, it is the will to exist both singularly (but without private property: never 'alone') and commonly (but never 'collectively': without reducing our many differences to the unity of the state or a party); it is the radical critique of all forms of private or public property. It does not replace the 'deprivation' in any kind of ethics of renunciation of worldly goods - but instead of transient and shared usufruct that would make all of us citizens and beneficiaries of the same world.

The common means to end the idea that nothing in this world is natural, not even nature itself, and that everything therefore belongs to everyone. For almost three centuries we understood democracy as government of the commonwealth, i.e. as institutionalization of state ownership of the common. Today, democracy needs to be considered in radically different terms: as common management of the common. This management in turn implies a redefinition of space - cosmopolitan -, and of temporality - constituent -. It is no longer a matter of defining a form of contract that makes everything being produced by all owned by everyone. No, everything being produced by all belongs to everyone. The opposite of deprivation, this is not detachment and asceticism. The problem is not that of wealth and property, it is that of the ownership of wealth and goods. Access to goods and wealth does not necessarily mean to possess them. The uses and lifestyles, sharing and movement, cooperation and exchange are ways to access goods and wealth in a different way: they are also ways of producing and increasing goods and wealth to infinity. In short: if modern democracy was the invention of freedom starting from the restatement of property, today radical democracy wants to be the invention of the common starting from the intransitive freedom of all people.

CREATIVE INDUSTRIES
SEBASTIAN OLMA

The topos 'creative industries' is a conceptual amalgamation made up of emergent social structures, urban planning fantasies, real estate speculation, academic marketing and local politicians' last hopes for regeneration. Its birth certificate is of British origin and was issued in 1998 (upgraded in 2001) by the Blair government's Department of Culture, Media and Sport's (DCMS) in the form of the so-called *Task Force Mapping Document* decreeing a new post-industrial supersector out of 13 otherwise distinct sectors ranging from advertising, interactive leisure software to performing arts. The Australian *Creative Nation Initiative* might be seen as its predecessor but receives hardly any attention in the literature.

The central idea behind the British initiative was that in order to stay on top of the global value chain, a national economy needs to specialize in creativity and innovation. Developed by thinkers such as former Marxist Charles Leadbeater, this thesis was based on the assumption that the semiotic emancipation of the commodity as predicted for instance by Baudrillard or Debord (the image/spectacle of capital) could actually be turned into economic policy. The Blair government immediately recognized the ideological potential of such an approach: creativity fit the new labour bill perfectly as something that was neither capital nor labour in any conventional sense, instead pointing toward a *third way*. On top of that, Britain was assumed to be in the fortunate position of harboring an indigenous population whose exceptional creative and innovative faculties give the country a natural competitive advantage. As Tony Blair put it "We can say with pride that Britain is the 'design workshop of the world' – leading a creative revolution".

The DCMS also provided the necessary data in support of the claim that the creative industries are the post-industrial economic engine: £60 billion profits in 1998 and an estimated £112 billion for 2000. Unfortunately, these numbers were largely the product of the DCMS' own creative accounting based on, among other things, the inclusion of the software industry into the creative sector. It is certainly true that by the end of the 1990s cool *Britannia* could refer to a number of achievements: Soho had just pushed Madison Avenue from the throne of the advertizing industry, the young British artists where conquering the art world and there where a few internationally successful British pop bands. However, the phenomenon never reached a magnitude that would legitimize the belief the creative industry could lead the British economy out of its misery.

Here one encounters a crucial problem with regard to the creative industries – one that economists repeatedly level against creative spin doctors: the lack of a solid economic foundation. As for instance *The Guardian's* chief economists Larry Elliot and Dan Atkinson (2007) argue, there is to this date no detectable creativity effect within the British economy. The same applies to the creative industries' role with respect to urban regeneration. Certainly, there are cases of urban regeneration based on the concentration of cultural and artistic entrepreneurs. East London and Glasgow are prominent examples. However, attempts to copy their (relative!) success fail regularly. James Heartfield, mouthpiece of the economically-informed left in Britain, draws at-

tention to the short half-life of countless art centres and similar New Labour investments that systematically fail to instigate the creative sector and reverse the process of post-industrial urban devastation (Heartfield 2005).

Another important issue concerns the effect CI-subsidy policy had on British artists – not least because this has by now become a problem for artists on a global scale. Under the aegis of the CI-paradigm art subsidies are increasingly bound to demands of either positive social relevance or commercial value. Which is to say that art has become an instrument of social policy. This has led to the substantial growth of the community arts movement but also pushed art practice further away from the idea of an autonomous or even critical aesthetics. As sociologists David Hesmondhalgh and Andy Pratt emphasize, artist are forced to think of themselves explicitly as entrepreneurs. One does not need to find this problematic *per se*. However, one should be aware that the artist who is consciously a business man is essentially different from the one who beliefs him- or herself to be autonomous (Hesmondhalgh and Pratt 2005: 8-9).

Through the publication of Richard Florida's *The Rise of the Creative Class* (2002), the creative industries paradigm received an important push in its rise to global prominence. Florida, US-American urban sociologist, claimed to have discovered the pivotal factor of present and future economic well-being: a new class of highly educated 'creatives'. Although creative people had always played an important role in capitalism, today they make up about 30% of the working population (Florida included lawyers and bankers as well as artists, entertainers and architects in this category). According to Florida this meant that "the creative class has become the dominant class in smemociety" (Florida 2002: ix).

Florida thus intensified the British debate by repackaging the arguments in pseudo-radical class rhetoric. If one were to take his intervention seriously, momentous policy adjustments would be in order as decisive factor of future economic success, the creative class must first be attracted and then pampered in order to make its members stay. Local politicians and business leaders are to create the apposite people climate or else the creative class goes elsewhere and with it economic success. The most important consequence following from Florida's argument is that the traditional rules of local policy making have to be abolished or at least displaced onto the new competitive terrain of the three T's: talent, technology, and tolerance. According to Florida, these are the parameters setting out the playing field upon which cities and regions compete against each other for a successful economic future. The most important element of the T-triade is doubtlessly talent. If Florida is right then future urban success-stories will be written exclusively by those who are able to make creative talent feel at home.

Florida's theses found very eager listeners among local politicians throughout the US. There are two reasons for that. The first one is of practical nature: just as in Britain, the creativity paradigm was a new source of hope for the economically run-down post-industrial cities. What is more, investment in art and culture (to generate the creative eco-system) cost less and provide for better PR than the intricacies of sustainable economic policy (Peck 2005). The second reason for Florida's success is of an epistemological nature: the sociology professor invoked the entire arsenal of management commonplaces that during the 1990s had made their way into the official political discourse. Peter Drucker's insight (actually from the 1960s) that in the knowledge

economy, knowledge was the new and decisive factor of production, Florida simply redrafted in terms of creativity, combined it with Rosabeth Moss Kanter's and Kenichi Ohmae's competition geography and wrapped the whole thing in new-economy rhetoric à la Fast Company. This package, topped with a clever marketing strategy, made Florida a guru and his consulting company *Catalytics* a very successful business venture.

In spite of its limited practical success and a very substantial body of critique, recent years have seen the rise of the creative industries paradigm to something of a global panacea among urban policy makers and city planners. Since the start of the new millennium, more and more governments sign up for the creative industries paradigm and policy hoping to have found a viable path into the post-industrial future. Canada, New Zealand, East Asia, Brazil and Western Europe are on the list. Hence, rather than continuing to criticize the ideology behind it, it might be more apposite to contextualize the phenomenon within the contemporary configuration of capitalist development. Very constructive in this respect is the approach suggested by Australian media theorist Ned Rossiter. If one wants to understand the phenomenon of the creative industries, he argues, one has to read the DCMS's *Task Force Mapping Document* in conjunction with the 1995 WTO *Agreement on Trade-Related Aspects of Intellectual Property Rights* (TRIPS), which inaugurated the juridical regime of control over the increasing informatization of social relations.

According to Rossiter, this double foundation of CI policy makes clear what is at stake at the rise of the Creative Industries paradigm. As the DCMS put it, the central goal of its initiative is "the generation and exploitation of intellectual property". In other words, CI-policy aims at a transformation of the structural conditions of production in such a way that 'creativity' (the reference here is to 'individual creativity, skill and talent') can be channelled into regimes of property. However, as Rossiter stresses, in order to address the political dimension of CI, the 'structural determination' resulting from these policy interventions has to be understood in combination with "the conditions and experience of creative labour as it relates to intellectual property regimes" (Rossiter 2006: 26). In other words, the phenomenon creative industries can be made accessible only by an analysis of both, its discourse and its practice.

In order to come to terms with the practical conditions of creative labour one needs to understand that capitalisms contemporary network-ecology does not only mean that "companies are becoming like project co-ordinators, outsourcing the 'business-as-usual' parts of their operations so that they can be left free to design and orchestrate new ideas" (Thrift 2006: 287). Rather, the rise of the creative industries indicates that companies find it increasingly effective to outsource the 'business of new ideas' as well, that is, into the urban space of the creative commons. In the process, the structural conditions of creative labor are altered as well leading to collateral openings and opportunities for new forms of (political) organisation. The standard example here is the network *Coordination des Intermittents et Précaires* in which French media workers try to collectively empower their unorganised existence. Another, more pragmatic strategy for potential emancipation are the so-called *co-working spaces* that have started to mushroom in the global metropolises. These spaces come in all shapes and forms but what they share – and that makes them interesting – is the intuition that the loose form of networked collectivity they practice is the organizational modality most adequate to contemporary capitalism's main source of value:

the living network of cerebral potential, i.e., the virtual common. There is absolutely no revolutionary ideology behind these new spaces of work. However, they might indeed be incubators of a post-corporate kind of capitalism; of something that has been called an 'economy of contribution' (Stiegler 2009, Moulier Boutang 2007).

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THE CYBORG & HER SIBLINGS
MARIE-LUISE ANGERER

"I would rather be a cyborg than a goddess." Donna Haraway

The cyborg was born as a girl who didn't want to become a Woman. Donna Haraway is her mother, there is no father, the father is inessential. She, the Cyborg, is a creature in a postgender world, in a world without genesis. She didn't pass through the Oedipal apocalypse, therefore she doesn't suffer from any unconsciousness or super-ego. Her life is on the surface of the body. A body which plays with affinity, not with identity. A body that transgresses its borders, oscillates between machine and organism, between human and animal, between social reality and fiction. The cyborg is the new ontology, politics has to face her arrival. Her appearance marks the movement from an organic, industrial society to a polymorphous, information system. The home, work place, market, public arena, the body – all can be dispersed and interfaced in nearly infinity, polymorphous ways. The crucial tools today are communications technologies and biotechnologies. Communication sciences and modern biologies are constructed by a common move – the translation of the world into a problem of coding.

Donna Haraway wrote her *Manifesto for Cyborgs* in the midst 80s of the twentieth century, introducing the metaphor of the cyborg as a tool of imagination and a better understanding of what's going on.

A cyborg is a cybernetic organism, a hybrid of machine and organism, and was first introduced as a term by Manfred E. Cleynes and Nathan S. Kline in 1960 to address the future man in space. Cleynes and Kline, the former in charge of the Dynamic Simualtion Lab, the latter director of research at Rockland State since 1952, focus their research on human beings under non-human conditions, since the political and scientific will to travel into space had become the rocket for the cold war. Space travel challenges mankind not only technologically but also spiritually, in that it invites man to take an active part in his own biological evolution – according to the two scientists. The term cyborg was introduced to free man to explore his new environment, to address the fact that he could and should be controlled automatically by apparatuses and machines taking over parts of the human organism.

The cyborg thus has not been innocent, its history full of patriarchal imaginations of *Übermenschen*, transhumans, posthumans. Haraway was fully aware of these burdens but nevertheless arranged her feminist manifesto arround the cyborg, redefining it as a girl, a she, envisioning the future as no man's land. In Ridley Scott's film *Blade Runner* (1982), Roy Batty, one of the replicants (a kind of cyborg-brothers and sisters), tells Deckard, the Blade Runner, in his death struggle that he has seen things mankind can't even imagine. "I've seen things you people wouldn't believe. Attack ships on fire off the shoulder of Orion. I've watched c-beams glitter in the dark near the Tannhäuser Gate. All those moments will be lost in time, like tears in rain. Time to die." Cyborgs inhabit the presence, thus merging the past and the future, – of man, machines, animals, and other species.

In the meantime, Donna Haraway has defined new siblings for her cyborg – significant others & companion species. I have come to see cyborgs as junior siblings, as Donna Haraway writes in her *Companion Species Manifesto*, siblings in the much bigger, queer family of companion species, in which reproductive biotechnopolitics are generally a surprise. Cyborgs are refigurations for living within contradiction, attentive to the naturecultures of mundane practices, opposed to the dire myths of self-birthing, embracing mortality as the condition for life, and alert to emergent historical hybridities.

But today we have to ask different questions, since we have to rethink kinship structures and the meaning of co-habitation. We have to think about alter-globalisation and autre-mondialisation, terms coined by European activists to stress that their approaches to militarized neoliberal models of world building are not about antiglobalization but about nurturing a more just and peaceful other-globalization. There is a promising autre-mondialisation to be learned, as Haraway emphasizes in her introduction to *When Species Meet*, in retying some of the knots of ordinary multispecies living on earth. I am, she continues, a creature of mud, not the sky. I am a biologist who has always found edification in the amazing abilities of slime to hold things in touch … I love the fact that human genomes can be found in only about 10 percent of all the cells that occupy the mundane space I call my body, the other 90 percent of cells are filled with the genomes of bacteria, fungi, protists …

Today Donna Haraway lives with her dogs rethinking and reshaping the relationship of humans and non-humans. In this process bio-capital has become one of her major interests. Bio-capital designs and re-designs kinship-patterns, biological stratifications, the hierarchy of values (for instance women's eggs are becoming more important in cloning processes than they were in reproducing ›naturally‹, as Luciana Parisi describes the new bio-digital state of the art in Abstract Sex). Whereas the cyborg was meant as a figure to indicate the tiny difference between technology and human beings, the shift towards the companion species underlines the necessity to understand the human being as one species among others – under the control of a globally-acting bio-capitalist network.

The question of design has turned into a question of bio-creature and bio-engeneering. Design has become a question of life, of designing the patterns of bodies, species, societies, cells, and bacteria, traffic, waves, and other moments of becoming-other.

Deleuze & Guattari have never discussed the cyborg in their philosophy, but they have stressed the moment of becoming-other, devenir-femme, devenir-animal, becoming-invisible.

In her *Manifesto for Cyborgs*, Haraway made the point that Michel Foucault's *Birth of the Clinic* has to be turned into the Death of the Clinic, since processes of domination in our time no longer work through medicalization and normalization, but operate through networking, communication redesign, stress management.

Almost everything Haraway wrote in the midst 80s has become real since then: patchwork families, global economies, the body as market value, wellness & yoga as new enhancement tools for body & soul, a quasi elementary status of electronic media, as Thacker and Galloway have put it.

The cyborg today has changed its function, role, and appearance. Everybody might be one, some are excluded, others seem to be part of the club of C.

The cyborg, born 25 years ago, played with her technical part, played with her body as interface. The hybrid species of today is entangled in social networks, globalized food & drug streams, biochemical data-exchange. Whereas the Cyborg-girl was meant to address the new human-nonhuman relationship, today humans have already become another species among others, an affective organism which has more in common with apes, rats, and dolphins. The question is no longer who is human, machine or animal, the question is rather who or which is able to do things in a word of electronic communication. Sadie Plant, one of the co-writers oft he Cyberfeminist Manifesto (together with VNS Matrix, 1994) wrote in the mid-90s (ten years after Haraway's Manifesto) that women were the first cyborgs, they were never included in human history, never a subject of language, of rights and politics. She, the woman-cyborg, is perfectly adapted to move along the waves of 0 :1. If the male human has been the only human, the female cyborg is the only cyborg. Women have always been in-between, they sent the messages fom A to B, they counted the numbers (of their husbands), gave birth to their children. But the arrival of the universal code dissolves the distinction between message and messenger, between container and content, between materiality and immateriality, with radical consequences, as Sadie Plant puts it: Complex interactions of media, organisms, weather patterns, ecosystems, thought patterns, cities, discourses, fashions, populations, brains, markets, dance nights and bacterial exchanges emerge.

She, the cyborg, who didn't want to become a Woman, today stands for the necessity of being multiple, de-centered, affected, single alone together, … articulating patterns of communication and exchange, building images of surfaces and connecting dots.

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DIGITAL EMBODIMENT / DIGITAL MATERIALITY
ANNA MUNSTER

How might we conceive of a digital embodiment that takes account of both the incorporeal dimensions of bodies and the materialities of computation? This is a somewhat different task from reconfiguring new media technologies by taking into account corporeality or rethinking corporeality as something changed by new media. The first approach has been tackled in recent approaches to embodied human-computer interaction and to the growth of areas such as affective computing. Paul Dourish, for example, takes inspiration from phenomenology, asking how the user experiences technology as embodied. Research into the areas of wearable computing and robotics has also rethought the corporeal basis of gesture and mood in creating digital systems and processes that both respond to and try to emulate (human) emotions. Affective computing is an interdisciplinary approach but has been championed by the Affective Computing Group at the MIT Media Laboratory; the original paper that kick-started this approach was written by the Group's director Rosalin Picard in 1995.

By way of contrast, an approach to digitality and corporeality that traverses the gaps, discontinuities and differentials between bodies and new media so as to unfold an always emerging, processual digital embodiment needs emphasis. We should start with thinking bodies and technics in concert. There can be no corporeal rethinking of the digital – as if bodies exist in some other nontechnical domain. Nor can there be an absolute qualification of the body due to the rise of 'new' media. Embodiment is not a 'thing' to be retrieved from or added into a cultural or technical domain. Embodiment is the very process through which the domain of the cultural, technical or aesthetic and the register of the affective, get pulled together.

The question is how to think this body-technics as an ensemble and how various assemblages inflect it. Mark Hansen develops technogenesis as key to understanding the body-technics constellation. But my concern is that there is a danger in granting historically generated technicity – digital code as it has contingently unfolded – teleological privileges. If we suggest that new media gives us some kind of special insight into embodiment then we end up dematerialising these technologies, in the sense of removing them from their relations from and with specific social, political and economic assemblages. We consequently reify the relations between corporeality and technics. If, according to Hansen, new media both takes place within an ongoing human-technical ontogenesis and yet specifically facilitates an expansion of human bodily activity, then how can new media become anything other than this, its manifest destiny? What room is there for an ongoing virtualisation of new media or, for that matter, matter?

Felix Guattari instead asserts that planetary computerisation offers the potential for knitting together heterogeneous 'universes of reference' even if, at the same time, it is actualised in the shadow of an oppressive mass mediatisation, through a neo-conservative politics and the economies of late capitalism. Nonetheless, the transversal lines that new media produce and enable might actualise so as to usher in conditions for the ongoing production of differences, toward

processual singularisations. Following upon a conception of the 'machinic', initially elucidated through the work of Deleuze and Guattari, we can conceive the digital as a machinic movement. The digital is a flow of information, technologies, cultural and social deployments, potentialities, delimitations and regulations. It possesses intensive and extensive qualities and circumscriptions such as its range of speeds and its poles, which provide directionality for its flow. These poles should not be considered the causes of movement but the oscillatory horizons toward and out of which any material flow whatsoever will tend.

At one limit, we find the potential directions in which a flow of matter moves or can be organized: what capacities and functions allow the movement of this flow into a specific or more localized material formation, such as a particular technical machine. This pole organizes the limits around which a specific technical machine, like the desktop computer, is capable of functioning. In the case of the digital, at this abstract limit pole we would find: the capacity of silicon to conduct electrons at particular speeds; its resistance to degrees of deterioration; its ability to change its composition and properties according to temperature; the possibility of its combination (or not) with other material flows such as particular organic molecules; and the functions, such as superconductivity at high speeds, which all these capacities enable and which specifically characterize the operation of computers. These qualitative traits, potentialities and delimitations of matter flows comprise the virtual, abstract pole of any machinic movement.

At the other limit or pole, we discover the concrete and situated expressions that these capacity-function relations can assume at a given time. These forms are actualized through assemblages of social, technical and material elements that can be quite specific, such as the human hand/keyboard/monitor assemblage. Whatever elements an assemblage deploys will depend upon a tussle between existing and emerging socio-technical relations. These may be actualized as larger expression-formations by also mobilizing the rhetoric around 'the information society'. Effectively the virtuality – or abstract pole - of the machinic movement of the digital will have been blocked as it actualizes. Although the virtuality of the digital is not unlimited – it has very real material parameters – neither will it have been exhausted by current actualizations.

This oscillating horizon, which I have described as the directional field for machinic movement, always combines the flows of technics with the work of a social machine. The latter captures and drives the development of matter-flows in specific ways. The technical element is always in relation with elements outside itself; its form is therefore indeterminate and virtual. It cannot be known ahead of the actualization that occurs as a result of these combinatory relations. Although the machinic can be seen as the potential for movement of technical, material, social and aesthetic elements between limit poles, any actual formation of a machine (whether technical or social) cuts across and separates itself from the flux of all these constituents. This provides us with a starting point for a new way of conceiving machines as movement-capture formations: they arise out of heterogeneous flows yet sever the flows' myriad directions.

Many contemporary collective aesthetic and political activities involving new media technologies have found ways to actualize the materialities of digital flows so as to exploit their virtualities. Examples range from the massive electronic sit-ins coordinated by Electronic Disturbance Theatre to the interventions around precarious labour in digital contexts and physical shopping malls by

Italian networked groups such as The ChainWorkers through to recent experiments with wireless peer-to-peer transfer of digital information that evades proprietary telecommunications hubs such as netless.

Electronic Disturbance Theater were most active during the late 1990s and early to mid-2000s both supporting Zapatista networked actions and protesting against corporate and government involvement with bioweapons research and in cutting US domestic spending on areas such as health care. Practicing electronic civil disobedience, the EDT pioneered online tactics such as Floodnet, where a program downloaded and installed on hundreds of 'sympathetic' computers targeted a website (for example a Mexican or US government site), automatically reloading a page several times a minute and thereby resulting in a slow level or complete denial of service for that site. EDT asserted that such tactics were also forms of conceptual (net) art. The ChainWorkers, an Italian-based precarious workers 'media' and socio-political group, were largely active on and off-line during the mid-2000s and in relation to the performance, graphics, video, networked and visual culture of Euro MayDay events and movement. Netless is an experiment in producing a network without the internet in which all data is accessible to anyone using a prototyped wireless device while they become a node 'in' the netless network. While moving through urban space, senders and receivers can exchange data using encrypted keys that they pass between them as they converge on each others' wifi locations. The experiment is not simply an attempt to circumvent (inter)network surveillance but also to produce a completely different idea of networking in which both nodes, links, storage and data are in constant topological movement relative to each other. The network is radically 'unbackboned' and relatively 'infrastructureless'.

What is done with new media comes to differ radically from what prevailing assemblages of new media actually are and this opens technics up again to ongoing process, differentiation, becoming. Embodiment emerges in relation to technics but not because the technical reveals something special about 'the body'. Rather embodiment in digital cultures is a kind of entanglement that knots and unravels as it extends and contracts relationally in concert with digital economies, politics and socialities. What role might experimental and technologically-based art practices play in this entanglement? Does art operate to consolidate a privileged place for the technical or can it open up this processuality of technics and body? Of course, it can and does do both. New media 'art' perhaps more than any other art 'platform' is deeply engaged with the processes of reproducing infotainment economies and cultures, with all their indebtedness to military research, venture capitalism and the rhetoric of infinite growth. I do not think we can only navigate a course through the art works we like and feel are exemplary of an 'embodied approach' to new media. We need to think both the convergent and divergent, the mainstream and experimental aspects of information aesthetics together. I'd like to do just that by looking at two different 'new media' works and seeing how both might allow us to unfold the relationality of digital cultures as immanently processual even though nonetheless captured in networks of 'information culture'.

In her installation *Untitled* (2006), Shilpa Gupta inverts the representationalist trappings of the computer monitor so that it no longer safely offers us a voyeuristic 'window' to another place. Instead, four monitors are each mounted on separate walls, facing outward and forming the exterior of an impenetrable space. Positioned as if on the exterior of a house, participants are only able to circle the space but cannot enter or peer into it. The installation disengages all the familiar habits

and expectations of digital interaction – extension of the user's body into a virtual space – displacing these by refusing entry into its world. Place and body are configured here as somewhere, definite, potentially familiar and yet completely elsewhere, impossibly far away and impassable.

We watch moving and still images from the Kashmiri political and natural landscapes – zones that many western audiences would never have encountered. Gupta deploys visual and tactile strategies of seduction, luring us with the beauty of Kashmiri landscape and architecture and the appeal of haptic interaction via touch screens. We watch its landscape unfold in scenic drive-by images but when we touch the monitor screen, soldiers sprout out of its landscape. On an adjacent screen, a photograph of laughing Kashmiri children seems to convey innocence until we discover, by haptically exploring the masked image, that they are huddled around the remains of a bomb blast. On the next monitor, our touch triggers a window smashing in a traditional Kashmiri house and a finger has to literally drag together the broken pieces of glass to 'reset' the screen's image.

Gupta gives us only glimpses of, and limited haptic interaction with, Kashmir and the complexity of its politics and social fabric. Yet just as *Untitled* (2006) retains a sense that its world is physically impassable for remote audiences, such as those on the global art circuit, it also exquisitely conveys the fragility – broken glass, the sound of children laughing – through which the Kashmiri peoples nonetheless survive their tumultuous landscape of violence and political conflict. Here, then, precisely is an example of processual singularisation at work – the digital installation functions to knot together and open up heterogeneous universes of reference. Gupta works with the asynchronous differentials of new media to situate people across two places at different times – the local conflicts of the Kashmiri and the audiences of a global art circuit. In producing these gaps between times, histories, landscapes, between expectation of interactivity and delivery of virtually no interaction, that a passage emerges marking our felt negotiation of this work: the passage of processual digital embodiment.

A quite different approach to how information materialises in the context of socio-political and economic assemblages, can be traced in Jakob Boeskov's *My Doomsday Weapon*, which ran from 2002-4. In 2002 Boeskov constructed a website for a company he called 'Empire North' devoted to 'non-lethal' weaponry research and development. Boeskov and a Danish industrial designer, Kristian von Bengtson, set to work on coming up with a logo, slogan and proto-type weapon which they called the ID-Sniper. This was to be a non-lethal weapon for inserting GPS microchips into humans, while simultaneously recording the insertee's image for storage and later image analysis with a digital camera mounted on the sniper.

Armed with his first blueprint and image for the weapon, Boeskov posed as Empire North's CEO and secured himself a booth at the first international weapons fair held in China –China Police 2002. At the fair he met various weapons dealers and start-up companies from Europe, Brazil, Japan and China. Boeskov found himself in a situation in which the interpenetration of virtual and actual – the condition of real virtuality – has at once become so leaky and so imbricated that he literally lost his 'script' for how his art piece should play out. A Chinese businessman from the Beijing Sen Qili Scientific Trade Centre set up a meeting between Boeskov and his company's CEO. Wanting to know if any potential human rights violations entailed in the manufacturing of such a weapon could be offset by moving its production to China, Boeskov decided that the

performance of his artwork must end. He disassembled his booth and left the fair two days early. There is an interesting postscript, giving us an insight into the extent to which this kind of new media arts practice travels the same routes of the broader information economy. Inquiring into the possibility of patenting the ID-Sniper design back in his native Denmark, Boeskov was advised by lawyers that making such a specific registration for the technical specifications of the design ran more of a risk of the weapon being copied. Boeskov realized that by operating increasingly at the level of information (from concept to design to intellectual property protection), the weapon itself exponentially materialized. Someone could actually copy the design and manufacture it.

In Gupta's installation, the experiment dislodges the correspondence and lengthens the gaps between digital information and visual/haptic interaction. Bodies and digital media/technics must be brought differentially into concert and process in order to generate an ensemble. For Boeskov, the relays between concept-design-information and their materializations have become both the key to conceptual digital art performances and the reality of living in a time in which information has almost instantaneous materializations. We must pay close attention to both intensive speeds and lags and to the extensive vectors from virtualization to actualization, in order to comprehend and make our way processually through digital embodiments and materialities.

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DIRT RESEARCH
NED ROSSITER

'Dirt is the stuff that makes a system jump'. Born, Furján, Jencks, 2012

The phrase 'dirt research' described the 'direct' method by which Canadian political economist and communications theorist Harold A. Innis (1894-1952) collected material for his research on economic history in Canada. The result of extensive travels across Canada, where he gathered oral testimonies on the staples industries (fur trade, cod fisheries) and transport systems (rivers, railways) combined with exhaustive archival research, Innis' method of dirt research sought to establish a 'general organizing principle' by which patterns of economic and social development could be understood 'beyond the basic data' (Watson).

Innis' method of dirt research during his staples work was later combined in his communications work with a form of data-mining from his 'idea file' – an index of file cards consisting of telegraphic notes, ideas and quotations derived from his expansive reading across Canadian economic history, ancient history and philosophy. The resulting texts comprised a predigital form of recombination – or what John Watson calls 'textual scrambling' – to the extent that some might consider them partial works of plagiarism. Innis, on the other hand, was refining a method that enabled him to sketch vast historical relations in an effort to crystallize his thesis on the correspondence between civilization and culture and the spatial and temporal power of communication media and transport technologies.

Dirt research might be understood as both *a priori* and *a posteriori* metadata organizing a research process. Architect-designers Born, Furján and Jencks suggest that 'Dirt is designed. It is uniquely composed, site specific, and innately intelligent. … Dirt is a design tool. Collecting and composing dirty matter is a fruitful foundation for the creation of spaces, artifacts, and atmospheres'. As architects and designers are often wont to do, there is a tendency here of valorizing an aestheticization of that which, in the case of depletion design, is also a political practice addressing the proliferation of data. Nevertheless, we get a sense that dirt research is at once shaped by the model or program of investigation (design) while feeding back into the organizing principle itself as a result of the material and affective properties or qualities of the object of research (data).

Data consists of materials, details, inscriptions and symbols in motion. We gather or capture data and in so doing render it temporarily static to produce information and knowledge about the world. The digital coding of data within the grammar of algorithms shares with the analog technology of archives the logic of governance, of ordering, of method. How to move between the digital and the analog is a question of translation across time and space. Some relevant analytical methods within media research include the political economy of 'supply-chain capitalism' (Tsing) as a way of identifying the production, distribution and labour of electronic waste. Another

consists of media archaeologies that bring medium theory stemming from Innis together with cybernetics, German media theory and software studies to register the transformation of bodies and institutions technologically situated within communication systems. These sort of interests in the materiality of communication can be considered as contemporary extensions of dirt research.

In the age of 'big data' everything and anything is or has the capacity to become digitally encoded. Data sets are everywhere, residing as a standing-reserve awaiting incorporation as topological parameters into analytical models and capital expropriation. Within a topological horizon, the politics of parameters amounts to a battle around epistemological and social legitimacy in the form of measure. Parameters are also a matter of protocols, which Alexander Galloway understands as 'the technology of organization and control operating in distributed networks'. Both parameters and protocols are rules that govern systems. If a person, thing or phenomena is without rule or measure it might just as well not exist. In assembling data sets selection is predicated on the poverty of excess, which is data gone to waste. This, at least, is the doxa of a logistical world view where everything is about accountability, efficiency and productivity calibrated in systems of real-time. Data produces and is accompanied by other forms of waste, forms more insidious than the economist's 'wasted opportunity'.

Forms of pattern recognition beyond the basic data hold relevance for how the emergent paradigms of digital humanities and software studies analyze the massive volume of big data generated by digital transactions and user-consumer practices online. Big data analysis of habits of consumption is interesting for commercial entities, but not particularly exciting for social and political analysis of network ecologies. How to ascertain a relation between data, materiality and subjectivity is a problem little addressed by either digital humanities or software studies. What would the practice of dirt research consist of in the study of big data? How might such practices be designed on transnational scales involving networks of collaborative constitution? What are some of the particular problems surrounding the politics of depletion that come to bear both in the method of dirt research and the data sets under scrutiny? Where is the dirt that disrupts the pretense of smooth-world systems so common within industry, IT and state discourses around global economies and their supply chains? And can disruption be understood as a political tension and form of conflictual constitution?

Within cybernetics, dirt is 'noise' in the system. Noise is a force of ambivalence, interference and disruption, refusing easy incorporation within prevailing regimes of measure. Constituent forms of subjectivity and the ontology of things often subsist as noise. Undetected, without identity and seemingly beyond control, noise is the 'difference which makes a difference' (Bateson). Dirt research diagrams the relations of force and transformation operative within ecologies of noise populated by unruly subjects, persistent objects and algorithmic cultures. The capacity for change does not assume some form of conscious will. Such a faculty is beyond the reckoning of objects and code and assumes an articulated agency only occasionally displayed in the case of subjects more inclined toward the unconscious routines of habit. As noise, it is enough for entities to resonate as material and immaterial perturbations.

Yet the paradox of noise is the unforeseen gift offered to technologies of control: as contingency, noise is the prompt for biopower to remodel its parameters and in so doing bolster the fortunes of control and its technologies of extraction. A story of origins within Italian *operaismo* consists

of the *refusal of work* as the catalyst for capitalist restructuring and the transformation of labour processes. The shift from Fordist to post-Fordist modes of production and the governance of labour-power was not a result of management of their own volition refining structures of capital. Rather, the refusal of work in the form of factory strikes, infrastructural sabotage and willful acts of laziness cajoled capital into adjusting its mode of production in ways that could accommodate more flexible, mobile and contingent modes of work and capital accumulation.

Within the economy of networks the extension of this logic is taken to its extreme, with the rise of 'free labour' as a norm through which productivity is registered in the online action of users. Content is not so relevant here as the proliferation and aggregation of data, which media proprietors endlessly recombine to mine user's tastes and habits in the packaging of profiles to be sold to third parties. Data is the myth of a new empirics, of abstraction made concrete. Where does this leave a politics of refusal if not as withdrawal made anew in the social production of value, where life itself is put to work? What new forms of capital restructuring are precipitated by informatized labour? Mental and social fatigue within the ecology of networks eventually leads to the depletion of refusal. Politics as a practice of conflictual constitution is left empty handed.

Dirt research within the current conjuncture investigates how circuits of capital connect with the constituent force of labour, life and things, shaping the production of time, space and economy in variational ways. The social production of value and the algorithmic mining of data seem the last frontiers of economic extraction. But so often we're talking about a social milieu and informational economy that is profoundly abstracted from the multiple informal economies and geocultural settings engaged in secondary forms of value extraction. A substantial portion of the latter are associated with economies of electronic waste, with the Global South structurally and historically consigned the role of manufacturing and later dispersion of discarded ICTs and consumer electronics. Both the production and dismantling of e-waste exposes 'workers and ecosystems to a morass of toxic components' (Maxwell & Miller).

With Internet transmissions long ago exceeding measure, and annual increments in computational power ensuring planned obsolescence, both analytical capacity and consumer desire become destined to their own forms of obsolescence. Jennifer Gabrys: 'Obsolescence is not so much innovation in reverse as it is the ongoing maintenance of a sense of technological development'. On the sidelines of speed, dirt research might seem left pondering the disaster as a program beyond control.

Depletion design, however, is also a practice of organization. This includes tracking the distribution of electronic trash following the stages of manufacture and consumption to investigate how electronic devices 'become the means for possible infrastructures of reuse' (Gabrys). And it consists of generating rumours as a tactical intervention into fluctuating contours of markets, corporate practices and government agendas. As Keller Easterling proposes, 'Design also vividly anticipates and materializes change, using tools found in many forms of cultural persuasion'. The use of pictograms and design databases as techniques of cartographic analysis in projects by Bureau d'études and Josh On's They Rule are indicative of how design engages in the production of counter-imaginaries of corporate capitalism. Dirt research of global infrastructures and logistical operations special to supply-chain capitalism would do well to design counter-depletion into its repertoire of methods.

The recent revival of media archaeology is one idiom of analysis that registers within media theory the practice of dirt research. In his entry on 'dust matters' in this volume, Jussi Parikka notes how 'practices of reuse (zombie media), alternative design, an attention to components and materials used, are all tapping into the entanglement of intensity of non-human matter (dust), and the matter of abstract political economy of work and production'. Intensity and political economy. Affect and power. To diagram the relations of such agencies is to design the operation of depletion and generation, of subtraction and multiplication. At this point the material condition of dust with its often imperceptible force shifts to the level of program, or dirt research.

As a method, dirt research brings institutional borders, disciplinary limits and expertise into question. First and foremost, dirt research challenges what Innis termed 'monopolies of knowledge' shaped by the spatio-temporal bias of communication media in conjunction with institutional forms. In the case of electronic waste, it is clear the academy is well behind other actors in understanding the economic operation, environmental impact and conditions of work associated with this industry. Dirt research entails, then, a certain intermingling of bodies and brains, institutional settings and disciplinary practices. As a transversal mode of knowledge production it necessarily encounters conflict of various kinds: geocultural, social, political and epistemological. How dirt research organizes itself across a diagram of coordinates and forces cannot be programmed but must instead engage the social-technical practice of translation. The seriality of disruption, dissipation and undulations of intensity and attention will then define the transnational organization of dirt research.

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DISORGANIZATION
BOYAN MANCHEV

Post-Fordist capitalism (I tend to call it *perverse* or *performing* capitalism) is radicalizing the basic operation of capitalism, which is the operation of the production of substance - productibility –, by trying to capture and make something producible out of power itself: speaking with the pomposity of Paolo Virno, we no longer speak of producing productibility, but of the production of potentiality as such. But first, we should ask ourselves: what does "pure potentiality" mean in the situation of performing capitalism? Is it not rather about reducing the power to a fake performing substance: the fiction of pure *energeia*, of the total performance of the Thing?

The decisive question in the situation of the constitutive transformation which is ours - a situation of absorption of the powers of life, but also of the power of resistance and the potentiality of transformation of political subjects, and thereby the question of the exploitation of potentiality as a potentiality, is simple: with potentiality being captured, is resistance still possible?

What is Resistance?

According to Dimka Gicheva-Gocheva, who speaks of a 'counter-possibility', Aristotle tried to think the possibility of the possibility, the *dunamis*, appearing as a counter-potentiality. In other words, Aristotle is the first to introduce a concept of counter-potentiality, which anticipates the notion we identify here as resistance. In his *Metaphysics*, Aristotle distinguishes four different meanings of the category of potentiality (*dunamis*), and it is the fourth which is especially interesting to us. It is the most underestimated point of the Aristotelian definition of the potentiality, which is the operation of potentiality as a counter-potentiality, as an intrinsic resistance which keeps things away from an undesirable development, a decline, a degeneration, i.e. which guarantees its movement towards the best (1019a 26-30; 1046a). The first three aspects being translated respectively by *potentia*, *possibilitas* and *potestas*, the fourth term does not even have a translation of it's own in Latin.

This is a crucial point in Aristotle's thought, which seens to have remained mostly unkown, its explosive potential for the radical political thinking largely unexplored. Aristotle postulated resistance - resistance against actualization, the resistibility - as an intrinsic quality of potentiality. It is a 'demonic' force, opposed to the first motor - 'God' (or the sovereign Subject) - , pure actuality without any residue of power. However, resistance seems absolutely necessary for Aristotle: without it, there would be no power; without power, there would be no actualization. The ontology of potentiality is therefore impossible without the idea of resistance - without the idea of the event-metamorphosis. Without any doubt, this return to Aristotle could pave the way for a possible connection between the ontologies of potentiality and the question of resistance, providing the ontological ground of Deleuze's much-discussed paradoxical statement 'resistance is primal'. Resistance is emerging as a *dynamic* category, as a category which implies an active potentiality, the act of potentiality. Resistance is not only an act that doesn't exhaust potentiality; it is a potentiality-act: it is the *act of potentiality* itself. Resistance is the energeia of the *dunamis* but without *ergon*, that is to say *organum*. Resistance is a *dis-organization*.

But then, is the emancipation of the body, its resistant disorganization, not absorbed by the quasi-opening of the inorganic world, within the so-called open of a radical modifiability, a 'prosthetization' that affects the very conditions of living (such as the biotechnological practices, symptomatic of the new biocapitalism)? How can you resist, or rather, *persist* in the totalizing flow, in biopolitical and tekhno-aisthetic fluidity? How to resist the absorption of the transformability of life without abolishing the possibility of emergence of the event (of the) subject? How would subjects resist the appropriation of their orginal transformability?

The first possible resistance would consist of a suspension of this 'openness'. Resistance against the perverse appropriation of technical transformation would consist of the "revelation" of the transformation as an unsurpassable and irreducible condition. Then the first phase of resistance will be the movement that demonstrates that the transformability has nothing to do with fluidity and 'permeability', the unlimited speed of merchandized forms of life, or the infinite reversibility of substance efficient capitalism continues to praise. On the contrary, the potential of transformation involves an intrinsic resistance of body-subjects (let's say: resistability) Aristotle had already known, and that was inseparable from his definition of *dunamis*. While the inorganic is appropriated by perverse capitalism, the body-subject resists by disorganizing itself. Disorganization is resistance.

The Disorganization of Life or the Tekhno-Aisthetic

If we can then talk - concerning body-subjects - of political resistance, it would not be from the perspective of the body-subject *inscribed* in a regime of political representation and economic performance but from the perspective of a thought that considers politics a movement of exscription of the body, as an immanent resistance to any appropriation, to any inscription: this excription, this ek-sistence, this ex-corporation of the body, is precisely what we call *disorganization*. Disorganization is life that exposes itself as a resistance.

Before being an ethical or aesthetic, disorganization is an ontological concept. Disorganization is above all a disorganization of life. "Disorganization of life" does not presuppose an organized life, working toward its autonomy, which would subsequently be disorganized, as if by the intervention of an external force, an externality. The disorganization of life is not a lost original condition, anomic to life, virgin material or wild, raw or innocent. I never intended to affirm a dialectic of organization and disorganization.

Disorganization is not a force of disintegration, no less than the negativity of creative action. If the negativity of creative action, of the self-creation of human beings, is governed by the strength of organization, disorganization gives a name to a force of affirmative resistance immanent to life. The concept of disorganization indicates that life always has the possibility to organize itself without closing itself, without fixing itself in the perfection of a limit, to experiment always further. There is therefore a movement, or a power of disorganization immanent to life, which is the only "essence" of life. Disorganization is the concept that expresses the pulse of life, its intensity, the multiplicity of its organizations; this concept asserts the irreducibility of this multiplicity. Multitude of organizations of life, multitude of the moments of life, com-positions of life = disorganization of life. Disorganization is the name of a singular instant of life, and of the singularization of life as a metamorphosis of life.

In other words, disorganization is a non-dialectical movement of alteration, an atelic and therefore continuous movement. But its continuity is not a homogeneous flow, but a continuous, syncopated rhythm. Disorganization leads to a straightforward and ontological thinking of metamorphosis: metamorphosis which appoints the coincidence of movement and the substance - movement as the only substance of life. The movement of metamorphosis is dis-organisation.

But its continuity is not a homogeneous fluidity: it is a rhythmic, syncopated continuity. Disorganisation leads therefore straightforward to an ontological thinking of metamorphosis: the metamorphosis which gives it's name to the coincidence of movement and substance – the movement as the only substance of life. The movement of metamorphosis is dis-organization.

Disorganizing resistance is therefore the force of metamorphosis: the dynamic com-position of singularities-events. Metamorphosis, or the freedom of the body, the dis-enclosure of the power is, is paradoxically at first glance, a powerful resistance against the performing fluidity and the erasure of form, against the double movement of revulsion-fascination of formless matter: on one hand from the libidinal energy captured by the circuits of synthetic production, and the one of the fiction of the original substance (the one of "traditional values" and identity obsessions), on the other. Thereby, ultimately, the crucial question that arises is not the question of other life forms and their control, production and governance, but the question of the force or of the power of transformation which is passing though these forms. What is the force that make the body-subjects and the networks in which they operate transform themselves?

The most appropriate name of the force of metamorphosis is precisely *resistance*. If resistance is immanent to the potentiality, it is also immanent in the transformability of the body: it is in that respect that it is the act of its own potentiality. Resistance is therefore not overdetermined. As an immanent moment of potentiality, it is definitely primal. It is first as an operation of singularization, that is to say, invention-production of singularity, or of unusual life forms. The resistance of body-subjects operates with the *tekhnai* of singularization into the emptiness of the common, as with "pure" forces. The body appears in this emptiness not as a conglomeration of signs or as a substantial organic power - an organic or machinic homogeneous unity; on the contrary, it is always taken in the movement of dis-organisation. From this perspective, one can understand dis-organization as the movement immanent to the body, which exceeds the opposition between organic and inorganic.

Beyond doxic understandings of the organic, the movement of dis-organization demonstrates techniques taking their origin in the body. The concept of disorganization allows to get out of a bad dialectic of the organic and the inorganic, of the organic "substantial" and prosthetic or "a-substantial" technique. There is no organization without technicity. We must therefore think the primal technical condition, which is neither the plenitude of the origin nor its absence, as an alterative disorganization of the body that demonstrates its intrinsic transformability, the undecidability of the passage from body to instrument and vice versa.

Disorganization is another name for what I call tekhno-aisthetic. The *tekhnai* (I translate freely the Greek tekhné as 'know how' or 'modus operandi') are modes of subjectivation: "channels" of subjective futures. And so, each pro-sthesis corresponds to some tekhnai respectively to cultural

practices that are historically maintained, but also to singular tekhnai which are often unspeakable. For their part, these tekhnai still engage material processes and sensitive intensities: they are part of the sensitive-future of the sensitive as an immanent force. Let us talk about aisthetic *tekhnai* and tekhno-aisthetic processes as immanent to the power of the subject. The body-subject becomes subject through the complex operation of (dis)organization of its *tekhnai*, that is to say singularization-operation, through which the common space is re-composed. Yet the tensive core of the construction of the common power is immanent in the common movement of the body-subject as a future of multi-singularities, as their composition.

We know that we cannot discuss biocapitalist transformation regardless of the transformation of modes of subjectivation which are always material, that is to say tekhno-aistethic (not only 'cognitive', 'linguistic' or 'semiotic'). Biopolitics means in the first place a process of production (and, respectively, of absorption) of the modes and tekhnai of subjectivation. The decisive question of the political-subject today is the tekhno-aisthetic question.

The task before us is therefore the disorganized experimentation of the potentiality of the body that is not picked up as a function or a commodity: a counter-operation transforming the standardized methods of the production of subjectivity, of the encoding and "commodification" of body, perception, thought and emotion in the politico-economic system of the globalized pervert capitalism, trying to reduce the horizon of life to the over-exploited space of the globe. The resistance of the subject means invention of singular forms of life which dismiss the forms of typified life - commodified, per-formed, perverted; the manifestation of life forms as a power is the manifestation of transformability. If we paraphrase Benjamin, our task is not about bio-aestheticising politics, but about (re-)politicizing (bio-)aisthetics, or rather to follow its immanent political rhythm. An aisthetic battle in favor of unconceivable subjects to chart the future to come.

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DUST MATTER
JUSSI PARIKKA

Let's start with the insignificant: dust. It covers a lot of the globe (deserts) as well as a lot of our obsolescent media, but also participates in processes of production of electronic high tech. Yokokoji-Harwood (YoHa) art project *Coal Fired Computers* (2010) articulated the entanglements of fossil fuels, miners lungs, bronchitis and emphysema, and computer culture already, but coal dust is not the only type of dust relevant to perspectives on depletion. Aluminium dust is one of the excess products from fabrication of computerized technology culture, in this case from the process of polishing iPad cases. The minuscule dust particles however carry with them a double danger; they are highly inflammable, and more importantly, they can cause a variety of lung diseases to the workers. Chemical exposure is just one of the markers of saving in costs at the production end of production of digital culture, but dust can in this sense act as a good trajectory to understand the significance of the nearly imperceptible non-human element.

Dust can transport us to discuss new materialism. In the words of Reza Negarestani, in *Cyclonopedia* and the extensive (political) philosophy of dust offered:

> Each particle of dust carries with it a unique vision of matter, movement, collectivity, interaction, affect, differentiation, composition and infinite darkness — a crystallized data-base or a plot ready to combine and react, to be narrated on and through something. There is no line of narration more concrete than a stream of dust particles.

Dust already counts, as does a litany of other non-human things/processes: technologies, chemicals, rabbits, chairs, airplanes, LCD displays, ionization, geological formations, insects, shoes, valves , density of surfaces, and skin. Instead of an exhaustive list, let's just state that matter has its intensities, its affordances and tendencies that are not just passive, waiting for the activity of form(ing) by the human. A lot of the so-called new materialist debate has revolved around trying to figure a way out of the (post-)Kantian world where we do not really have access to such things as dust. We are just able to know about them, mediated through the assumed a priori categories (temporality and spatiality, specific to the transcendental subject).

Non-humans and the world are approached through a variety of epistemological measures, and the question of how do we actually know, and be sure about that knowledge, of the world. The same has applied to a lot of academic theory too, where ontology has not been on top of the agenda for instance in a lot of cultural and media studies (despite such pioneers of rethinking materialism as Lawrence Grossberg). Discussing matters ontological, real and ontological has had a bit of a rough time.

The past years have seen an intensifying debate that argues we need to think more broadly than the question of categories of knowledge and actually account for ontology and ontogenesis. In other words, new materialism tries to steer clear of the hylomorphic fallacy – of a division between us (humans, knowledge, meanings, form) and them (the real world of objects, things,

materialities, often assumed passive and meaningless in the signifying sense). The French philosopher Gilbert Simondon was adamantly arguing that in order for us to grasp materiality of things and technology, we need to rethink and challenge the assumption that form is external to matter. Perhaps there is a *forming* inside matter already, an intensity, or as Gilles Deleuze suggested, an element of the virtual? For Simondon, the name for this mattering was individuation – that matter individuates in its milieu. Often in contemporary cultural theory, this is referred to through a broader idea of "new materialism" – not just the materialism as we used to think of it as mechanical, or in political economy versions as historical or dialectic materialism, but also the materialism of non-humans – whether inside us (for instance bacteria or genes) or outside us (ecology, media technologies, and well, bacteria and genes). Or in terms of dust: as the reported health problems as well as safety issues around aluminum dust demonstrate, such *things* are not merely those of knowledge, but of material effects registered on the skin and lungs of cheap labour, and the surfaces and depths of nature.

Quoting Negarestani earlier than mentioning the more established philosophers from which new materialism stems from - Simondon, Brian Massumi, Deleuze, Bruno Latour, Rosi Braidotti, Elizabeth Grosz and others, for instance in the object-oriented ontology brand of thought - is emblematic of the embracing of the speculative nature of the world. It accounts for the insistence that objects and non-human events speculate too even before the philosopher enters the scene. Speculation is participation. Dust, and other things, processes non-human participate in the human world, constitute it. Speculation is not so much a cognitive attitude but a mode of engaging in a situation, in a milieu. Also the particle of dust that we started with speculates through its "unique vision of matter, movement, collectivity, interaction, affect, differentiation, composition and infinite darkness". Speculation engages (in) the event that unfolds. Insects speculate, so do bacteria too, dust, and non-organic formations too, as long as we credit that they have a certain duration, characteristics and a milieu. Speculative realism might often, in its object-oriented forms, avoid this talk of events, but still it's worthwhile to remind of their contribution to the new materialist discourse. Speculation, in speculative realism, is something that also wants to avoid the linguistic understanding of speculation, but claims that the world, already and outside the human, is speculative, contingent and prone to change. Just like the speculative human thinker or designer, speculative matter is not always sure and determined where it is going and what will happen next. Speculation forces us to question causality.

Yet, speaking of new materialism we need to ask whether the focus on non-humans is sufficient, or whether we need a further level of specificity? In short, if new materialism is interested in the qualities of objects, things, processes and the wider vibrancy of matter (as Jane Bennett has it), is it sufficient to just brand everything as objects or do we need to keep the agenda much more open to a variety of encounters in thought and (creative) practice, including design? In such speculative design practices as described in *Design Noir*, by Anthony Dunne and Fiona Raby, objects become only one passage point in understanding the wider topology, spectral geography, of electromagnetic media. This design perspective forces us to link epistemological considerations (visualisations and computer simulations that make the electromagnetic spectrum understandable to the human senses), design practices (how do you engage with such real but invisible worlds) and speculative ontologies (matter that is effective and affective as a mediatic milieu, and yet escapes into the non-human frequencies and speeds).
Indeed, the already briefly mentioned posse of theorists has elaborated very different ways of

engaging with activity of matter; that matter does, is and more likely becomes. Dust, electromagnetic phenomena, and other non-humans engage in intensive differentiation that demand a different cultural studies vocabulary than the one we inherited from the language-biased deconstructionism or representation-analysis. This has ontological implications, as the term "flat ontology" coined by Manuel Delanda and Levi Bryant has demonstrated – we should not give privilege to one particular (generic) type of being.

So-called new materialism is a good conceptualization and a methodology to track why non-human particles carry with them wider contexts. The dust particle from the polished iPad is an excess of the admittedly beautiful fetishistic surface; the dust particle is what registers the globalized wage labour relation on the soft tissue of the Chinese worker. This is where new materialism can contribute to thinking "depletion design" and media theory more widely. Mixing philosophy with media theory offers an insight to why we are so interested in non-human bodies and objects, processes that escape direct and conscious human perception, intensity of matter of technological and biological kinds.

In short, this media-biased proposition goes something like this: New materialism is not only about intensities of bodies and their capacities such as voice or dance, of movement and relationality, of fleshyness, of ontological monism and alternative epistemologies of generative matter, and active meaning-making of objects themselves non-reducible to linguistic signification. Not wanting to dismiss any of those perspectives, I just want to remind of the specificity and agency in mediatic matter too. New materialism is already present in the way technical media transmits and processes "culture," and engages in its own version of the continuum of natureculture (to use Donna Haraway's term) or in this case, medianatures.

Instead of philosophical traditions, let us read modern physics, engineering, and communications technology as mapping the terrain of new materialism: the basis for signal-processing, use of electromagnetic fields for communication, and the various non-human temporalities of vibrations and rhythmics of for instance, computing and networks are based in non-solids. But also, let us follow the entanglements of chemicals and flesh together with the more abstract but as real labour relations that define the political economy of digital culture devices.

Besides dust, media history is one big "story" of materials and experimenting with different materials from glass plates to chemicals, from selenium to coltan, from dilute suphuric acid to shellac silk and gutta percha, to processes such as crystallization, ionization, and so forth. All of those could be approached through the non-hylomorphic idea of individuation that Simondon proposed. What is more, the materials have their aftereffects, nowadays most visible in the amount of e-waste our electronic culture leaves behind, which presents one further "materiality" for our investigation interested in tracking non-human dimensions of media culture.

This is the stuff that can contribute to one particular possibility of "new" materialism: the perspective of minerals sedimented for millions of years before being mined by cheap labor in developing countries for use in information technology factories. After that short use-period of some years, they become part of the materiality of e-waste leaking toxins into nature after river-dumping or incarceration, making them into toxic vapors that attach to the nervous systems of cheap labor

in China, India, Ghana, etc. Delanda wrote earlier of the thousand year of non-linear history as a proposition to engage with the long durations of rocks, minerals, biomatter and language. Now we can push that into a million, billion years of non-linear history almost in the way Negarestani suggests in his work of theory-fiction concerning petroleum, dust and other material agencies. A new materialist archaeologist, excavating how the *sedimented* participates in the contemporary biopolitical sphere.

Such material biopolitics is embedded in a multitude of durations: A specific design solution concerning a screen or technological component has an effect on its becoming obsolescent sooner than "necessary" while the product itself is embedded in a capitalist discourse emphasizing newness as a key refrain and fetishistic value driving the purchase decisions. And, after being abandoned for another device, what is often called "recycling" is actually waste-trade, wherein old electronic media is shipped, for instance, to India, to be dismantled with very rudimentary (and dangerous) processes that attach toxins to the lungs and nervous systems of the poor workers. Hence, practices of reuse (zombie media), alternative design, an attention to components and materials used, are all tapping into the entanglement of intensity of non-human matter (dust), and the matter of abstract political economy of work and production.

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ECOLOGIES OF PRACTICE
HEIDI RAE COOLEY

For some, Henri Bergson's notion of duration – the time in which things happen, i.e. the ripening of a creative and dynamic force or process – elucidates the temporality of reciprocity, as instantiated between ourselves and our work (and perhaps with and through the various technologies each of us is engaged with). For others, it articulates a particular (and perhaps ideal) relation to the world – a way of knowing and being in the context of our historical and cultural time-place. 'Ecologies' surfaced for me as a way of theorizing an ethical response to a condition of always already being in-relation, i.e. to bodies, technologies, and vital processes (biological, digital, social, etc.). An ecological mode of engagement would pursue an acquaintance with and a responsibility for the various bio-logical lines of life initially proliferated as a result of the body's being in-relation to technology and whose continued dynamism – in time and space – is enabled by the articulatory forces of social-networking. Such engagement would emerge out of and be sustained by means of a living that transpires in-relation to a global array of virtual vitalities which have the potential to 'live' on toward (if not into) the future. Memory, history, potentiality are all bound up in the bio-logical, its kinetics, its dynamism, but also its ephemerality. Living in-relation means that we orient ourselves in response to this condition.

Linking a reading of Bergson with the notion of 'ecology' and a commitment to aesthetic practice has important precedents in work by Felix Guattari and, more indirectly, Elizabeth Grosz. Indeed, it may be implicit in the ordinary dictionary definition of the term 'ecologies', plural for 'ecology', which is of Greek origin and refers to a 'house' or 'dwelling'. According to the *Oxford English Dictionary (OED),* the word designates 'the branch of biology that deals with the relationships between living organisms and their environment' but also extends to the relationships of organisms themselves. Sociologically, the term refers to the study of the relationships among people, social groups, and their environment. In a rather expansive dilation of denotation, the *OED* an instance whereby scientific 'biology' meets the intuition of connectedness.

In *The Three Ecologies*, Guattari (2007[1989]) describes three sites of inter-relational transaction upon which he founds what he calls an ecosophy. Referring to an 'ethico-political articulation' of 'the environment, social relations and human subjectivity' (p. 18), the three ecologies propose a way of living that is responsive to the current 'ecological crisis' perpetrated and perpetuated by the rise of techno-scientific advances, mass media homogenization of the social, post-industrial Third-Worldization, and territorializing systems and structures (e.g. of state and market). Constituting a new assemblage of relations, the three ecological registers in constellation mobilize 'new modalities of group-being [*l'etre en-groupe*]' (p. 34) which proceed according to an ethico-aesthetic paradigm that destabilizes the ratio-scientific paradigm that stratifies the world and degrades relations among people. Ultimately, the three ecologies are a way to think 'transversally' across nature and culture, to begin to 'comprehend the interactions between ecosystems, the mechanosphere and the social and individual Universes of reference' (p. 43).

According to Bateson (2000[1972]), such relational thinking only materializes with the advent of cybernetics, systems theory and information theory. However, it is important to note that in

making this association, Bateson participates in a tradition in which metaphors of the web and the network in the discourses of and about communications systems and computer science function as alibi for biological and environmental processes. Such analogical thinking has tended to reduce a dynamic articulation of vital processes to a static and contained mapping of these processes (Fox Keller 1995, 2003). Like Guattari, but working from a different starting point, Bateson advocates a kind of 'ecological health' (p. 502), one that depends upon flexible inter-relationality across differences (of species, as well as contexts and circumstances of being and living). For Bateson, whose expertise spans diverse disciplines, including anthropology, communication theory, and cybernetics, flexibility – specifically, of the organism-in-its environment – is the condition of possibility for the 'potentiality and readiness for change' (p. 457) necessary for survival (i.e. of both organism and environment). Moreover, ecological health requires the flexibility enabled by relational thinking, i.e. of the organism thinking itself in-relation to its environment. Such thinking is precisely what constitutes an 'ecology of mind' – a 'mental world … not limited by the skin' (p. 460). In other words, flexibility means adaptability, a plasticity of form and thought, as well as living.

In Guattarian parlance the flexibility constitutive of the ecological translates as ongoing processual articulation. The three ecologies, each a 'partial existential locus' (Guattari, 2007[1989]: 45), enter into indeterminate 'existential assemblages' that engage in 'irreversible durations' (p. 44). As such, they are governed by a particular kind of logic, which 'is concerned only with the movement and intensity of evolutive processes' (p. 44). Such a logic is referred to by Guattari as an 'eco-logic' (p. 44). Eco-logical endeavor does not strive to delimit objects or construct bounded systems or discrete structures. Rather, proceeding according to a 'logic of intensities' (p. 44), it is a mode of thinking and acting – and becoming – that aims 'to capture existence in the very act of its constitution, definition and deterritorial ization' (p. 44). In other words, an eco-logic understands the three ecological terrains as fundamentally in-relation (i.e. no ecological domain is a pre-constituted given in-itself) and, consequently, attends to the various vectors of de/formation that materialize any coming into being whatsoever.

In this regard, Guattari's ecosophy is, not surprisingly, in conversation with Gilles Deleuze's ethology. For Deleuze (1992), the matter of 'how to live' involves 'slip[ping] in among things' (p. 626). In 'Ethology: Spinoza and Us', he explains that: 'The important thing is to understand life, each living individuality … as a complex relation between differential velocities, between deceleration and acceleration of particles' (p. 626). It is speed and slowness, i.e. the mode by which one 'takes up or lays down rhythms', which installs one in the midst of living (p. 626). This is because velocities, i.e. acceleration and deceleration, are constitutive of the body and thought; but so, too, are affectivities constitutive of the body and thought. It is 'the arrangements of motions and affects' into which a body or a thing enters – and not its form or functions – which define it as a body or a thing (p. 627). Thus, how to live is a matter of being attuned these arrangements of velocities and affectivities, for it is in the combination – or, composition (a word Deleuze uses in reference to music) – of relations, capacities, thresholds, amplitudes, variations, and transformations that one comes to 'know' the body. But this knowing is not a knowing beforehand (as in a rational–empirical knowing); rather, it is a knowing in its becoming, in its being lived. Knowing, in this case, in its being an attunement with (à la Grosz), can only proceed as an intuitive awareness of the body in its being lived as an articulation of metabolisms, perceptions, actions and reactions, impulses, intensities, and attractions.

Eco-logical praxis does not intend to domesticate or hierarchize or stabilize. Rather, it embraces the enunciative openings out of systemic ruptures, which catalyze a-signifying events of creative potentiality. It harnesses the dynamic forces of bifurcating lines of flight (as made possible by deterritorializing breakages and unintended accidents) such that processes of ongoing rein vention and renewal prove effective counters to the complacency (perhaps fatigue) that, for reinvention Guattari, defines our era (p. 69). In this way, an eco-logical praxis is a style of practice and approach that is 'concerned with *intimate modes of being*, the body, the environment or large contextual ensembles relating to ethnic groups, the nation, or even the general rights of humanity' (p. 53, emphasis added). But Guattari is careful to specify: eco-logical praxis does not operate according to, nor establish, universal rules that define its engagements (e.g. so as to pre/determine its outcomes). Fundamentally and expressively generative, eco-logical praxis is about mobilizing 'the "included middle"' (p. 54). Never an outsider to evolutive processes, it inhabits an in between where the articulations of the three ecological registers trouble binarized and abstracting modes of thinking and relating.

In this regard, it is appropriate to think of eco-logical praxis in terms of intuition, as theorized by Henri Bergson. While Guattari (2007[1989]) does not cite Bergson directly in *The Three Ecologies*, the 'stroboscopic trace' (p. 38) to which he refers, i.e. with respect to the play of discursivity and non-discursivity within any discursive chain, is allusive of Bergson's notion of ordinary reflective consciousness, which he describes as being of a cinematographical kind. For that matter, any seemingly Bergsonian reference is not to be unexpected, given Guattari's close affiliation and collaboration with Gilles Deleuze. For Bergson (1998[1911]), intuition is the capacity to '[break] down' the barrier – the space between observer and observed, subject and object – instantiated by intellect. It is that which '[enables] us to grasp what it is that intelligence fails to give us, and indicate the means of supplementing it' (p. 177). Intuition is a particular kind of knowledge which 'leads' towards 'the very inwardness of life' (p. 176). It is a particular mode of intelligence, a philosophy, which '[turns] the mind homeward', such that human consciousness coincides with 'the living principle whence it emanates' (pp. 369–70). It accomplishes this by establishing a 'sympathetic communication' between us and the rest of the world and thereby invites an expansion of our consciousness such that we are introduced 'into life's own domain, which is reciprocal interpenetration, endlessly continued creation' (p. 178). This 'constant becoming' of our inner states makes them 'living things' (p. 231), according to Bergson; they are generative and inventive.

Similarly, he understands the 'internal impetus' of invention as boasting the durational quality of constant becoming. Specifically citing the artist as example, he writes: 'But, to the artist who creates a picture by drawing it from the depths of his [sic] soul, time is no longer an accessory … The duration of his work is part and parcel of his [sic] work. To contract or to dilate it would be to modify both the psychical evolution that fills it and the invention which is its goal. The time taken up by the invention is one with the invention itse. It is the progress of a thought which is changing in the degree and measure that it is taking form. It is a vital process, something like the ripening of an idea' (p. 340). Bergson explains that this 'second kind of knowledge', i.e. knowledge enabled by intuition, which is counter to ratio-scientific knowledge, transpires within the time of becoming and is made possible by 'an effort of sympathy' (p. 342). This 'second kind of knowledge' is of the kind that Bergson charges the philosopher to embrace. Grosz (2004) likewise emphasizes the link between intuition and aesthetics. She explains that intuition is 'Akin to an aesthetic … under-

standing', a 'close, intimate, internal comprehension of and immersion in the durational qualities of life' (p. 234). Drawing upon this conception of intuition, which is wholly Bergsonian, Grosz (2001) calls for 'developing an acquaintance with things' (p. 183). Acquaintance strives toward sympathetic communication and reciprocal interpenetration. As such, it involves attending to 'the unique particularity of things, their constitutive interconnections, and the time within which things exist' (p. 183). It is a matter of accommodation, a coinciding with all things – living and non-living – and not merely a simple coexistence with things. Instead, it is to engage actively in 'the teeming, suffuse network within which things are formed' (p. 179). It proceeds according to what Grosz calls 'an empirical attunement', which she describes as a mode of intimate 'knowing' (p. 179).

Empirical attunement as an intimate 'knowing' is knowing in being: it is ecological. It is an intra-relational, wherein the knower is an effect of the relation of knowledge, rather than its precondition (as in rational– empirical knowing). My use of the term 'intra-relational' refers to Karen Barad's (2003) theory of intra-action. Informed by Niels Bohr, whose philosophy–physics radically challenges both Newtonian physics and Cartesian epistemology, Karen Barad theorizes a 'relational ontology', wherein causal relations of 'agential intra action' materialize in and as phenomena. Importantly, she uses 'intra-action' in contradistinction to 'inter-action', a word that presupposes the prior existence of separate entities with already defined properties. Intra-action, by contrast, refers to the fact that there is no 'prior existence of independent entities' but, instead, separability into determinate entities is enacted locally and at each moment. It is only through the agential intra-acting of 'components' (which she defines as discursive practices, [re]configurations and relations) that 'agential separability' is materialized and resulting boundaries and properties become determinate (although not permanently so). Importantly, this separability must be understood as a 'local resolution'. There are no characteristics inhering in a body of any sort that precede the process of intra-action; properties and boundaries only become apparent – and measurable – in and through agential intra-action.

It is a knowing in its becoming, in its being lived. It is a knowing which recognizes the fact that we are of the world (i.e. part of its mattering), not simply in the world. As such, it acknowledges that our practices of knowledge and our being are mutually implicated; and they are so in the differential becoming that is the world. To position ourselves outside dynamic intra-action or as discretely separate from the things that surround us – to assume that such an outside or separateness exists or is possible – is to disavow intuitive awareness and thereby effect a violent severing of ourselves from what is most material, i.e. what matters , to our being and our living: our integral and reciprocal connectedness.

Following this Groszian–Bergsonian line of thinking, Guattari (2007[1989]) sees the artist as epitomizing eco-logical praxis. Most explicitly, he describes the ecosophical logic of the three ecologies as 'resembl[ing] the manner in which an artist may be led to alter his [sic] work after the intrusion of some accidental detail, an event–incident that suddenly makes his [sic] initial project bifurcate, making it drift [*deriver*] far from its previous path' (p. 52). Aesthetic practice is the example par excellence, 'the catalyst of existential change' to which Guattari attributes the vitality and potentiality of all logical praxes (p. 45). For it is a consequence of the a-signifying ruptures catalyzed in the moment of 'some accidental detail' that art-making materializes – both work and art – as existentially transformative. Insofar as he calls for cultivating eco-logical praxes

according to an 'ethico–aesthetic ' (p. 69, added emphasis) as a means to re-imagine how we live and work in the world, asks us to consider the kind of work artists do and make; he requires that we take aesthetic practice seriously as a transformative endeavor: 'By means of these transversal tools [*clefs*] [i.e. eco-logical praxes], subjectivity is able to install itself simultaneously in the realms of the environment, in the major social and institutional assemblages, and symmetrically in the landscapes and fantasies of the most intimate spheres of the individual. The reconquest of a degree of creative autonomy in one particular domain encourages conquests in other domains – the catalyst for a gradual reforging and renewal of humanity's confidence in itself starting at the most miniscule level. Hence this essay, which sets out, in its own way, to counter the pervasive atmosphere of dullness and passivity [of our era]' (p. 69).

'Ecologies of Practice', then, refers to aesthetic practice that evolves in sympathetic relation, i.e. with an attunement, to the process of that practice. It materializes as ethos, as ecology, as eco-logical. It involves an intuitive attention to the gesture of the body in its relation to the implements and technologies of art practice, in its relation to the materiality and immediacy of the moment of art production, in its awareness of a variety of pasts (personal and socio-cultural) informing its living and making, as well as the pastness which the body itself (as a living organism) always already registers.

Ecologies of art practice open onto questions concerning temporality, specifically the time in which gesture (broadly speaking) manifests as mark (on a surface or within a frame or framing) and body materializes its otherness. Both 'mark' and 'gesture', as I use them here, are intended metonymically, not simply literally. They speak to the time and trace of artistic expression; they communicate the body's (both that of the artist and viewer) necessary working in and through aesthetic encounter; they imagine the eco-logical potentiality of creative movement and change. Practice of this kind, which engages practice as inter relation, embraces a Bergsonian notion of intuition and the materiality – the othering constitutive – of its duration.

In my own thinking, empirical attunement, as a mode of eco-logical engagement, serves as a counter to biopolitical enterprise; it is a way of intervening in mechanisms endeavoring to know-in-advance and, thereby, secure life itself. In other words, empirical attunement, insofar as it is a way of attending to the multiplicity of vitalities in process, refunctions the abstraction and quantification operative in biopolitical techniques of management. It reconfigures without abolishing them and thereby opens them to alternative effects. At stake in such a project is a living in time with and in-relation to the speeds and slowness of the kinetic body, the acceleration and decelerations vivifying the physiological body, but also the streaming of, for example, digital signals proliferated via our various mobile technologies. Here, the ethical is not about any sort of moral imperative nor does it really advance a politics, although it may have implications for politics. Rather it's a matter of pursuing a way of being with and through one's practice, practice which is deeply committed to thinking about the interconnectedness of life and life processes (be they biological or socio-cultural) – and the resulting sedimentations that is the artwork in its becoming.

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ECOLOGY WITHOUT NATURE
TIMOTHY MORTON

In order to activate ecological awareness fully, we must drop the concept Nature, which I capitalize in order to emphasize how it is not "natural," but rather an artificial construct. Nature is nowhere given to me in my phenomenal experience. I see rabbits, I see thunderstorms, I hear the mewing of cats. But I fail to see or otherwise sense Nature. Perhaps then Nature is the totality of a certain set of things. I go about constructing this set: birds, fish, mammals … Yet by definition the set always excludes something. Let us add nonliving forms such as iron deposits and chalkhills, which are made of lifeforms - as are most of the top levels of Earth's crust. This set excludes what lies below the crust and, say, the electromagnetic shield around Earth that protects it from solar rays, and so enables life to evolve. So let us now include nonlife in our set. I must then include the Sun, without which the chemical soup could not have developed into strands of complex proteins. And there is no way to stop the inclusion arbitrarily at the Solar System, since comets containing organic chemicals and the sheer fact that stars are made of all kinds of other materials prevents the set from being closed. Yet once Nature covers absolutely everything, it also includes spoons, computer software and traffic cones.

Nature only works as a concept when it is normative, and this normativity is predicated on a difference between Nature and non-Nature. Since I can't decide in advance what to include in the set - since the set of everything just is absolutely everything - Nature becomes useless as a concept. Modernity has been the story of how science has undermined a stable, rigid concept of Nature, precisely because it has shown how boundaries between life and nonlife, and furthermore between sentience and nonsentience, are not thin or rigid enough to produce distinctions that count beings as Natural or non-Natural. Darwin's devastating insight, for instance, was to show that lifeforms arise from non-life, and that lifeforms are made up of other lifeforms. Furthermore, he demonstrated, there is no rigid boundary between a species, a variant and a monstrosity. Thus what we encounter when we comprehend Earth in a Darwinian way is a vast assemblage of entities, some of whom we call chimpanzees and some of whom we call butterflies, and so on.

These entities are unique and distinct - a chimp just isn't a butterfly - yet they are all related in an evolutionary sense. But there is no way to chop up the evolutionary stream in an arbitrary way, without being involved in paradoxes that resemble both Zeno's paradox concerning temporal succession, and the Sorites paradox concerning what constitutes a heap or bundle of things. Zeno demonstrates that if we assume that time and space are a series of concrete, constantly present units, motion between two points cannot occur, because any movement can be subdivided infinitesimally, thus resulting in stasis. Yet objects seem to move all the time. Thus it would be expedient to drop the idea that temporal and spatial frames of reference are constantly and rigidly present, as difficult as that may be. The Sorites paradox relates to entities that are vague - and plenty of ecological entities, such as forest or habitat are easily understood to be vague, so the paradox applies quite obviously to them. If I remove a single leaf from a tree, I still have a forest. If I go on removing leaves, and then branches, and then trees, the same logic applies all the way down to no trees whatsoever. Thus I can conclude, wrongly, that there is no forest. But it is quite

evident that there is something unique and specific about a forest. Likewise I can start with one tree and say correctly that I do not have a forest. I can go on adding thousands and thousands of trees, and the same logic applies. Thus there is no forest. If we want forests to exist - and this is a good idea both philosophically and ecologically - we might as well accept that forests are not directly and constantly present.

Likewise, when we consider sets of lifeforms - sets that constitute the things ecology talks about, such as biome, ecosystem, and biosphere - we discover vague entities that are nevertheless distinct and unique. A meadow is not a football field. And yet when we try to isolate what is essentially meadow-ish from what isn't, we fail or end up with paradoxes. This is because meadows are sets of things that aren't meadows. Thus we have to allow that at least some things that are real - crickets, meadows and daisies for instance - are sets of things that are not members of themselves, thus violating Russell's prohibition against the set paradox. Ecological entities such as woodlands and fields just are contradictory and ambiguous in the way that Russell feared. A single lifeform is a set of things that are not that lifeform. Since we can, and must, think without recourse to the metaphysics of presence, the very notion of "present" can and must under intense scrutiny. Difficulties and paradoxes arise when we don't. Moreover, the precise difficulties and paradoxes that arise in thinking Nature have to do with the ways in which we tend to cleave to a certain default ontological view. On this view, to exist means to be constantly present.

In a somewhat schematic way, this prejudice about what it means to exist hampers knowing the kinds of beings that lifeforms and ecosystems (and so on) actually are. Such views are a hangover, we must conclude, from a pre-Humean, pre-Kantian era of Western thinking that decided upon certain metaphysical truths, without thinking fully enough concerning how those truths are grounded. For instance, before Hume it was likely that one thought that everything has a cause and that if one traces the causes back far enough, one reaches something like God, a causa sui (self-causing being). Yet this was never satisfactorily demonstrated, so that Hume reduces causality to mere statistical correlation. It's just very likely that when I smoke a cigarette, I will get cancer. But I can't ever prove a direct causal link. This is because there is something fishy about the notion of causes as constantly present, metaphysical entities that subtend their effects. Modern science just is Humean in this sense, which is why global warming science is constantly hampered by climate change denial. For the same reason that it's easy for a tobacco company to insist that you can't prove decisively that smoking causes cancer, a denialist can argue that you can't prove that global warming is caused by humans.

Thinking in this modern way requires an upgrade, the sort of upgrade that Kant provided as the deep reason for Hume's assault on clunky theories of causality. There must be things that are already given to our intuition, argues Kant, things such as time and space. These intuitions are the a priori synthetic judgments that allow for the possibility of thinking causality, for instance. There is always already a conceptual frame in place, as if there were a gigantic but invisible ocean of reason at the back of our heads. This ocean is not directly accessible, but it is thinkable. It is correlated to things, insofar as mathematical truths are true thoughts about reality. From this we deduce that there is a reality, not from seeing or touching things such as raindrops.

The thing in itself is profoundly withdrawn from (human) access. We can think about it, but we can't experience it. What we can access are empirical and sensual phenomena. Kant opened up a disturbing gap in the real, a gap between empirical phenomena, and what he suggestively calls the Unknown = X. Ecological phenomena such as climate and biosphere provide extremely elegant examples of phenomena that can be thought - often with the aid of computing devices - but not directly seen or touched. The rain falling on my head in subtropical Houston is not directly global warming, but since it occurs in the early twenty-first century, it may well be. This means that the raindrops are not directly present in a way that makes them real - they are manifestations of something deeper. Kant makes this observation using the very example I have just employed - that of a rain shower.

Ecological phenomena are bound up with a kind of nothingness, a gap between phenomena and things, a gap that is disturbing insofar as it is irreducible. Thinking ecology means thinking nothingness, which is another and deeper reason why Nature is a defunct concept in a post-Humean, post-Kantian - that is, contemporary—age. Using Nature to talk about ecology is like using a medieval weapon against a ballistic missile. And a fake medieval weapon at that.

Since we can't directly point to the depth of a thing, any metaphysics founded on a notion of constant presence is hampered. There is just not enough evidence in the (human) phenomenal world to justify it. Some of the most spectacular discoveries of modern science have been to do with things that cannot be seen or touched because they are not constantly present, at least not to three-dimensional sentient beings of limited intelligence. Evolution is the emergent pattern produced by the interaction of a set of algorithmic procedures that occur at the DNA level. I can't directly point to evolution. El Niño is an entity that occupies a high dimensional phase space of weather patterns over the Pacific. I can't directly point to El Niño, an entity that was among the very first high dimensional climate events to become detectable and thinkable in the later nineteenth century.

Climate is a vastly complex set of derivatives of weather that executes its functions in, again, a high dimensional phase space that is not available to my senses. But I can think all these things. A gap has opened up in understanding between phenomena and reason. I claim that this gap is the result of a deeper, or rather more pervasive gap, between appearances and things: this epistemological gap is just the Kantian, human-flavored version of a gap that occurs between and among every single being in the universe. To be real, on this view, is to have an irreducible gap between how you appear, even to yourself, and what you are, which is profoundly unavailable. What you are is profoundly *withdrawn*. So what manifests? Quite simply, appearance or form: what Kant calls *the phenomenal*. Now phenomena appearance or form is by definition a sort of story about a thing. Phenomena provide information about things. This information is by definition a kind of past. *The form of a thing is its past*. A raindrop tells a story about how a cloud formed, how it rose into the atmosphere, how it began to precipitate and fall. That form is the past becomes clear after a brief consideration of special relativity. There is a speed limit on the flow of information - information transfer cannot be simultaneous. Thus the appearance of anything arrives after time. When we pursue it further, this view means that time is an emergent property of a thing. Kant supposed that it was the form of thinking - the way thoughts follow one another in succession.

But we can generalize Kant to include anything at all, on Einstein's view. Any body emits a spacetime field that causes other entities to speed up or slow down relative to its position and momentum. That there is a spacetime vortex around Earth was recently verified by the use of a host of incredibly accurate gyroscopes in orbit.

What I shall now call the essence of a thing is not some dull substrate beneath its appearance, but is rather the thing in itself, as a withdrawn being that cannot be accessed phenomenally. We are about to enter a world of paradox, since the phenomenon just is this thing's phenomenon: an octopus does not appear like a toaster. There must therefore be a difference *within* a thing, a rift between its essence and its appearance. If appearance or form is the past, then what is essence? Consider a poem. We don't know what it means yet - we can read the words, but we have a limited grasp as to what it might mean. Is this not the case with any entity whatsoever - an emu, a saltshaker, a gyroscope? The essence of a thing is a kind of not-yet: it has not yet revealed itself.

And it *will* never fully reveal itself. It will not reveal itself n now-points from now. It will not reveal part of its essence, ever, indeed - for its essence never arrives, neither fully nor partially. Thus we can only conclude that the *essence of a thing is the future*. This does not mean "future" in some predictable or quantifiable sense, but rather a radically quality of futurality. What exists in the case of any entity whatsoever is a sliding of the past and the future, never touching, since the future never truly arrives, yet it is real insofar as the thing is real. The future manifests as a kind of nothingness, then: it is not the case that it doesn't exist at all, because this would mean that there is no thing in itself, no saltshaker, no tree, no ecosystem. But it is also not the case the essence of a thing, namely its futurality, is metaphysically real in the sense of constantly present. Furthermore, it is by now clear that there is *no such thing as the present* in some metaphysical, constant sense. The present is always decided in the relations between things, and may be arbitrarily specified to arbitrary degrees of precision: one nanosecond, one day, one century, one geological era.

What is called *present* is simply a kind of queasy relative motion without boundaries that can be established in advance, a "nowness". If this were not the case, if the present were a truly existing thing, it would have a fixed boundary and would thus be subject to Zeno's and Sorites paradoxes. If time were atomic in this sense, nothing could happen, because moments could either be subdivided to infinity, or never succeed one another. As strange as it sounds, a view of reality without a metaphysically real present is easier on the mind eventually, because it leaves lots of room for things to happen. Because of the strange rift between past and future - and the fact that an object is as it were "strung out" between these temporalities - an entity is always a little bit "in front of" itself. As obvious as it seems, inertia, which is the fact that things tend to remain in motion unless checked in some way, is very difficult to explain unless it is the case that a thing is displaced from itself, in-different to itself. This in-difference can now be observed empirically at a tiny scale, a scale that is nevertheless considerably larger than the quantum level at which we now accept that coherence happens, namely the smearing of a thing, the way a quantum cannot be localized.

That a thing is smeared in this sense is now visible to the naked eye in the case of a tiny metal paddle about thirty microns long. It can be seen to vibrate and not to vibrate simultaneously. Un-

less we choose to consider the possibility that things can violate the speed of light, it is necessary to accept that things do not occupy a metaphysically present, constant series of points in space and time, but rather than they "space" and "time" (intransitive verbs) as part of the ways in which they appear.

Kant restricted this "spacing" and "timing" to (human) cognition alone. But there is no reason, apart from anthropocentric prejudice, to restrict his argument to the correlationist gap between humans on the one hand, and everything else on the other.

Ecology involves thinking on temporal and spatial scales that outstrip our normal frames of perception and comprehension, thus making the gap between phenomenon and thing highly potent to our reason. For two hundred years humans have discovered entities that severely challenge the temporal and spatial scales on which we think, act and perceive. These spatiotemporal scales - global warming lasts for 100 000 years, for instance - undermine by sheer force of magnitude the prejudice that there is one relatively stable and rigid spatio-temporality. This prejudice now appears to be exactly what it is, a human flavored distortion of reality. Massive biological and ecological entities such as *climate, biosphere* and *evolution* have put more nails in the coffin of an anthropocentric world, just as Galileo and Copernicus demonstrated that Earth was moving, and just as Kant demonstrated that (human) intuitions give (human) significance to things.

Romantic Models

Of course Romanticism is taken to mean Nature poetry, in particular by later literary trends that want to perform what I call modernity talk: "Everything before us was old and naïve and uncomplicated, now everything is new and self-reflexive and complex." Ironically, if you are a Romanticist you know that this was the moment at which modernity talk was born! So Romanticism is already a nostalgia for Nature and Nature poetry, in other words, for a poetry that never existed until its demise was mourned.

So Romantic poetry is very much without Nature, even when it's telling you that an impulse from a vernal wood is better than reading loads of books. Actually this particular poem, "The Tables Turned" by Wordsworth, takes the form of an injunction to stop reading it, an injunction that is by definition impossible to obey, that is, if you want to understand the poem and what it's telling you. It's telling you to stop reading books and go outside. As Derrida argues, quite beautifully I think, the inside–outside distinction is already the beginning of onto-theology. And the one thing that the Humean–Kantian revolution rules out is onto-theology.

So we could reduce Wordsworth's poem to the sentence "Do not read this sentence." This sentence is of course a strange loop that does two things that are contradictory, at once: it tells you not to read it, and it is an injunction that you must read. This is also the logic of the SUV, which is advertised correctly as a traveling sofa fitted with a television screen (the windshield), out of which you can see reality, but from a safe distance. So we could say that even this poem, which is supposedly quite fiercely ordering you to go into the great outdoors, can't help forcing you, even more surreptitiously, as a condition of possibility of reading that you should be out of doors, to stay in your chair, reading. Nature here is already not fully present, in the sense that I can never grasp it fully, that I get the guilty feeling that I will never be able to shake the

irony out of my head and stick it in a tree successfully, that I will never be able to live up to the injunction. This is by definition the case, since I have just read a poem about why I shouldn't be reading a poem.

Now let's consider Wordsworth's "There Was a Boy". The climax of the poem is a beautiful example of a Wordsworthian anticlimax. We end up with the correlational circuit between the Boy and the "visible scene" he is apprehending. T.S. Eliot makes this kind of language into a very tight loop in *Burnt Norton* when he writes that "the roses / Had the look of flowers that were looked at." Nature is a something or other that is only real insofar as the Boy completes the circuit, and the poem supplies an analogy for this when it talks immediately about "that uncertain heaven, received / Into the bosom of the steady lake." The lineation and punctuation here underscores the role of blankness and nothingness, since to read the next line is to allow one's eyes to be received into the bosom of the steady blankness of the paper on the right hand side of the poem. The sky is a vague blur reflected in the water on whose shores the Boy is standing, the water becoming an analogy for his mind. Nature becomes a wavering mirage at the very moment at which maximum communion with it seems to have been achieved. Wordsworth is fully Kantian here, as we've seen in Kant's use of the example of raindrops: these raindrops, these actual wet droplets falling on my head, just are phenomena, not simply in my concept of them, but in my direct perceptual experience - they are not the things in themselves. Even as it falls on my head, even as it is my actual head, or my actual status as a human, that is to say this actual sentient being standing here in this rain shower, the thing in itself is phenomenologically the most distant thing from me.

The very most we can say then is that if Wordsworth is showing us some kind of essence here, then it's a weird essence that lacks the metaphysics of presence. The reality of the Boy seems to evaporate as well, as we see not his insides (how could we?) but the lake, then we get the caesura and the verse paragraph break, and the Romantic ironic chill as we realize that the narrator is standing by the Boy's grave. The point is that quite a way before this, at the very moment of communion, the Boy and Nature have already dissolved.

We are left with an experience of a reality that is as vivid as it is unreal. There was a Boy - the title makes his non-presence quite explicit, a non-presence that is also a true existence, not simply nothing at all, but a kind of nothingness, a *meontic* rather than an oukontic nothing. The form of the poem announces that form as such just is the past. The essence of the Boy is phenomenologically unavailable, and can't be located anywhere on the surface of phenomena, no matter how hard we examine the Boy, the lake, and what he did, and so on. What seems to be present evaporates into an uncertain futurality, as the poem's imagery fades into reflection of reflection, and then there is the lineation gap, which makes us wonder what happens next.

If anything, what we have here is a kind of weird relative motion between past and future, without the present. The Boy and the landscape are weirdly futural, they are not-yet - they exist yet their existence can't be isolated or pointed to, it is precisely nowhere in ontically given space. Yet it is real: there was a boy. It is as if, anticipating Levinas, Wordsworth is saying that the *il y a* of existence without existents is actually a "there was," never a "there is," that the existence of things is just this weird, strung out quality between past and future, without a present, or (which is saying

the same thing) with a present that I can specify to arbitrary precision - one nanosecond, a million years, 24.1 thousand years (the half life of Plutonium 239). That last example is quite germane, of course, since ecological entities such as plutonium and global warming are precisely so massively distributed in time and space that they force us to realize that most of what we think of as "present" and "presence" is indeed a human scale construct that is purely arbitrary. It is as it were the case that an entity is a kind of isotope of itself that exhausts itself eventually, through the inner gap between what it is and how it appears. In the end, Plutonium 239 fades, and even a black hole, the densest thing in the Universe, fades out by exhaling Hawking radiation. What is called present then is particular to any given entity, and is simply the way its appearance eventually exhausts its essence. By *essence* I mean futurality, rather than some metaphysically real substrate of the thing, whether that is atoms or primordial matter or even human discourse or the measuring device with which I measure the thing.

So ecology forces us to see that we are in this weird, impossible space between past and future, caused by the noncoincidence at every point in experiential space of past and future, which slide past one another like trains in a ghost station. And we can see that Romantic poetry is the place where this uncanny sliding begins to be thought.

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CRISIS: ECOLOGICAL OR WORLD-ECOLOGICAL?
JASON W. MOORE

How do we know an ecological crisis when we see one? For much of the world, the answer is a bit like the old cliché about defining pornography: I know it when I see it. Common sense answers to thorny questions always have some kernel of truth. But is common sense good sense? Climate change is unquestionably implicated in the crisis of our times, and there is no question that CO^2 and other greenhouse gases are important to these changes. But does it make sense to comprehend global warming primarily as an accumulation of molecules? The thinking that follows from this common sense may well obscure more than it clarifies about the murky realities signified by the language of "ecological crisis." For the molecular fetish is not empirically wrong so much as guilty of confusing biospheric data for historical facts. It alienates data from the totality of historical change, confusing time and space with history and geography. Molecular accumulations, geological depletions, diffusing toxifications – these become historical facts (and potential indicators of ecological crisis) through the movements of human civilization, and of the modern world-system above all.

If this history is typically viewed as a history of human relations with environmental consequences, a broader synthesis is suggested by four decades of green thought: modernity does not act upon nature but develops *through* the web of life. I have taken to calling this emergent synthesis "world-ecology." The modern world-system, in this view, is a capitalist world-ecology. It is a civilization that joins the accumulation of capital, the pursuit of power, and the production of nature in dialectical unity. World-ecology is a way of naming the process through which capitalist civilization emerges as a dance of human and extra-human natures. It is a way of refocusing on the dance itself, comprising the individuals but not reducible to their inoptic, a protest against the Cartesian binary and an alternative to itwhat we have since. This a relation of all nature, including those symbolic and material relations between humans often viewed as unquestionably social. The relations of capital, labor, and power move *through*, not around, nature. They are themselves "specifically harnessed natural forces" (Marx). World-economies do not interact with world-ecologies; world-economies *are* world-ecologies.

In this construct, *ecology* is not a noun modified by a geographical adjective; nor is it a synonym for relations within extra-human natures. Instead, ecology pivots on the *oikeios* (after Theophrastus) as the simultaneously generative and destructive relation of species and environments. The decisive methodological shift is from a Green Cartesianism that privileges the interactions of human and extra-human natures to one that puts the relation (the *oikeios*) at the center. The argument is homologous to (and intersects with) Marx's understanding of the law of value as abstract labor. It is impossible, Marx argues, to comprehend the historically specific interaction of exchange- and use-values without understanding the value relations that give rise to specific configurations and historical patterns of exchangeability and utility.

For exchange- and use-value: read human and extra-human nature. The latter's interactions are best considered as the results of an underlying historical process (value-as-*oikeios*), not its point of departure. Through the *oikeios* we may construct rich totalities of many determinations – such

as civilizations and their inevitable crises – made and remade through the environment-making activity of all species. (Does anyone today doubt that weeds, or diseases, are significant historical actors?) Through the *oikeios*, new historical connections appear, made by possible by transcending the symbolic violence of the Cartesian binary. Here the capitalist world-ecology's manifold modernities – financialization, industrialization, scientific revolutions, cultural hegemonies, patriarchal formations and racial orders (all these and more) – are revealed as messy bundles of human and extra-human natures. These bundles are at once symbolic and material, and it is by no means a simple (or even useful) exercise to separate the two. Front and center is the dialectic through which humans simultaneously create and destroy multiple environments, through which every environment simultaneously encourages and discourages the specific bundle of species it hosts (humans, not least). This dialectic directly challenges the monolith "humanity" signified by the popular term, "the Anthropocene," a description that creates a false aggregate of human activity whose diverse, unequal, and uneven historical geographies are reified, and whose unifying gravitational field (the accumulation of capital) is invisibilized.

Such invisibilization is a natural complement to a Cartesian worldview that proceeds from the interaction of two monoliths, nature/society. The historic contribution of Green Cartesianism was to illuminate what was previously invisible. The procedure of illumination was to create binaries of social drivers and environmental consequences, rather than accounts of the *oikeios*' shifting configurations. Thus did Green Cartesianism produce environmental histories *of* social processes rather than, say, looking at imperialism or industrialization *as* environmental history – as messy bundles of human and extra-human natures. It would be, however, uncharitable and ahistorical to consider the earlier procedure (environmental history *of*) deficient in an abstract sense; its marvelous contradictions suggested the paradigmatic shift we are seeing today (environmental history *as*). This shift is of no small consequence. For the view that financialization *has* environmental consequences implies a different set of intellectual and political responses from the view that financialization is a way of organizing nature. But is "nature" best considered as one dimension amongst many? I am not so sure. The perspective of a weak Cartesian today still predominates, identifying nature as one of several important relational domains. World-ecology, however, suggests an alternative: nature is not one amongst many domains of human experience but the historical matrix within which modernity's contradictions unfold.

The limits of Green Cartesianism come into sharp focus when we consider the paired terms, "natural limits" and "ecological crisis." To their enduring credit, greens are best known for sounding the alarm, beginning in the 1970s, about impending "limits to growth." The thesis is simple enough: modern economic growth creates relative scarcities in nature. The limits imposed are those of external nature first, and social contradictions second. Now, the first thing that needs to be said is that there is no such thing as natural limits – at least not in the way that the phrase is commonly understood. Nor are there social contradictions. There *are* limits, and there are contradictions. But these are neither social nor environmental, precisely because there is no such thing as conflict and contradiction between humans that is not simultaneously a relation within the totality of nature.

Civilizations create limits that derive from the original sources of their dynamism. Capitalism's genius, was to mobilize extra-human nature to advance human labor productivity. This was evident from the long 16th century, as capitalism effected a revolution in the scale, scope, and

speed of landscape transformation unprecedented in human history. That revolution was premised on the frontier as a way of advancing labor productivity, which became the civilization's primary metric of wealth. The limits taking shape today are those of the specific configuration of the *oikeios* (as value) that has governed modernity's broad contours of wealth, power, and species/environments.

If we take "limits talk" as methodological proposition (about relations) rather more than empirical claim (about substances), we can make better sense of today's global turbulence. Substances *do* matter. But their historical meaning forms within specific relations. The geological facts of peak oil, for instance, become *historical* facts through a historical frame in which geological and geographical particularities influence new conditions of, and constraints upon, capital accumulation. Geology becomes a matter of determ*ination*, not determin*ism*. The analytical problem is not whether more oil can be extracted on an abstract supply curve, but whether more oil can be extracted with less and less labor. Oil becomes peak oil only in specific world-ecological conditions.

Capitalism's limits include biophysical and biospheric realities but are not reducible to them. Such realities are more fully elaborated once situated within capitalism's peculiar civilizational project, itself situated within the web of life. From the 16th century, the rise of capitalism was premised on an epoch-making strategy that set in motion small amounts of capital and military power to appropriate vast oceans of nature's "free gifts." Marx's pregnant observation that fertility of the soil could "act like an increase of fixed capital" – advancing labor productivity – is relevant well beyond the early history of capitalism. It holds for the long history of enclosure and exhaustion of coal seams, oil fields, aquifers, and peasantries across the space and time of historical capitalism. In this light, the chief problem is not "peak everything" but peak *appropriation*. Capital's problem today is not depletion in the abstract but the contracting opportunities to appropriate nature cheaply (with less and less labor).

This relational approach to civilizational limits directs our attention to those moments when the strategic relations governing a civilization reach an impasse. One of two things happens when civilizations reach such an impasse. Typically, important but nevertheless quantitative restructuring occurs. More rarely, the old system cannot be restructured, and new modes of producing power, wealth, and nature emerge.

The present impasse of neoliberalism's financialized accumulation regime is one such impasse. Such moments are, at a minimum, turning points in the life of capitalism. They are world-ecological crises.

Since the end of the Middle Ages, we have seen two principal forms of world-ecological crisis – epochal and developmental. These are crises of civilizational ways of organizing nature, humans included. It is, then, not soils and species, forests and fuels, that make world-ecological crises, but the relations of power, production, and reproduction that move through forests and fuels, soils and species. (And of course much more beyond these.) There is no "ecological" crisis that operates alongside other crises, since the mosaic of constitutive relations (power, capital, science, etc.) are themselves messy bundles of human and extra-human natures.

The first of our two forms of world-ecological crisis can be seen in the long 14th century, during the crisis of feudalism. This was, it turned out, an epochal crisis. Far from a narrowly-conceived biophysical or atmospheric crisis – although such tipping points were clearly in play – the relevant crisis was one of feudalism's basic organizing relations. This was the irreversible breakdown of the specific lord-peasant dynamic that reproduced feudal power. Feudal civilization lived and died on the political extraction of surplus (the lord-peasant relation), yet recognized the peasantry's customary rights to the land. The resulting agrarian order provided neither the coercion nor the incentive necessary to sustain rising productivity, much less to reverse agricultural stagnation over the long-run. Although one usually talks of soil exhaustion as if it was a matter of biophysical properties, these properties only became significant through the lord-peasant relation, feudalism's gravitational center. Feudalism's limits were historical and relational, not absolute and external. The soil depletion inscribed in this civilizational crisis was a fundamental contradiction – because land productivity was decisive to surplus extraction – but only a minor irritant to the capitalist order that came next, precisely because land became a fungible and disposal asset. Exhausted land? Move to the frontier. This was the motto emblazoned on early capitalism's coat of arms.

The essential point is elementary, yet rarely taken to heart: "limits to growth" are historically specific. The conventional view is to think ecological crisis in terms of diminishing flows of substances: not enough food, not enough energy oil. But it may be more productive to think crisis as a process through which fundamentally new ways of ordering the relations between humans and the rest of nature take shape. There are indeed striking parallels between our situation today and a broadly feudal Europe in 1300: the agricultural regime, once capable of remarkable productivity gains, stagnated; a growing share of the population lived in cities; expansive trading networks connected far-flung economic centers, and epidemiological flows between them; climate change (the 'Little Ice Age') stressed an already overextended agro-demographic order; and vital resource extraction, especially in silver and copper, faced new geo-technical challenges.

The second form of world-ecological crisis is developmental. These crises mark the transitions from one phase of capitalism to another. One such developmental crisis occured after 1763 and would not be resolved until after 1815. The early Industrial Revolution also marked the end of the agricultural revolution that made English industrialization possible in the first place – largely by flooding the country with cheap food and cheap labor. Agricultural stagnation was not confined to England, and productivity faltered, inequality widened, and food prices increased across the Atlantic world-ecology at this time. Rising food prices threatened the rise of industrial capitalism, as Ricardo observed at the time. In England, food prices increased four times faster than the industrial price index at the end of the 18th century – a key moment of developmental ecological crisis. The skyrocketing price of bread in France contributed to the country's cumulative woes and the events of 1789. (Shades of the Arab Spring?) Land productivity could have been increased, but only through labor intensification, and this would have consumed the labor needed by industry and empire. The solution was ultimately found in two great frontiers, yielding two great sources of windfall profit. The first frontier was vertical, moving *into* the Earth to extract coal. The second was horizontal, moving across the Earth to produce wheat, especially in North America. When another "great depression" arrived in the 18 70s, the era's rapid industrialization was possible on the basis of cheap food, delivered by the co-operative labors of both frontiers, with mass starvation in South Asia and China and genocide in North America its civilizational counterpoint.

Is the unfolding Great Recession of the 21st century the latest in a longer history of developmental crises that capital has transcended, or is it an epochal turning point? It is worth recalling the distinctiveness of neoliberalism's less-than-lustrous golden age. In contrast to the golden ages of American and British world power in the mid-20th and mid-19th centuries, the era 1983-2008 was not built atop an industrial revolution in labor productivity. Quite the opposite! The robot factories of the future, widely anticipated in the 1970s, never materialized. The future became a world of sweatshops, surplus humanity, and shock doctrines, not automated factories. The surplus was realized through unprecedented appropriations (increasingly financialized over time), backed by the unprecedented deployment of coercive and disciplinary power worldwide. The two moments of frontier and coercive-intensive accumulation were tightly linked. Neoliberal capitalism sustained itself by appropriating what free gifts remained for the taking: the oil frontiers of the North Sea, Alaska, West Africa, and the Gulf of Mexico; the crest of Green Revolution agriculture in South Asia, appropriating and exhausting fertile soil and cheap water; the integration of the old Soviet Bloc into the world market, allowing cheap metals and oil to reduce production costs after 1989; the appropriation of the Chinese peasantry as a vast labor surplus; the privatization of state and quasi-state firms and public services. These free gifts will not recur. The Great Frontier is now closed. Closed, or very nearly so. What capital discovered was a mass of human bodies whose consumption could be radically suppressed, most dramatically though perhaps not always most significantly in the Global South. If productivity-advancing technologies were not generalized, the era was characterized by the remarkable expansion of the coercive and disciplinary technologies necessary to sustain a world regime of "forced underconsumption" (Araghi), one that found billions hungry or suffering from nutrient deficiencies even before food prices spiked in 2007.

By locating today's socio-ecological transformations within modernity's long-run and large-scale patterns of recurrence and evolution, we begin to illuminate the distinctive contradictions at play in the present crisis. Are we in the midst of a turning point in historical capitalism, not just a developmental crisis, but an epochal crisis? If the destructive character of modernity's crises has widely registered – the "what" and the "why" of capitalism-in-nature – there has been far too little consideration of *how* humans have made modernity through successive, radical reconfigurations of all nature, humans included. The *how* capitalism has worked *through* rather than upon nature makes all the difference. We have arrived at a paradigmatic moment, one that allows a way of seeing nature and crisis as irreducibly historical. In this way, capitalism as world-ecology allows for an understanding modernity's historically-specific natures as webs of liberation and limitation. The point can scarcely be overemphasized if we are to take seriously the idea that all civilizational crises emerge historically, out of the relations of humans with the rest of nature. And in equal measure, so do all projects for the liberation of humanity and all our neighbors on planet Earth.

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EXHAUSTION / DEPRESSION
FRANCO 'BIFO' BERARDI

Modern culture and political imagination have emphasized the virtues of youth, of passion and energy, aggressiveness and growth. Capitalism is based on the exploitation of physical energy, and semiocapitalism has subjugated the nervous energy of society to the point of collapse. The notion of exhaustion has always been anathema to the discourse of modernity, of romantic Sturm und Drang, of the Faustian drive to immortality, the endless thirst for economic growth and profit, the denial of organic limits. Growth is a cultural concept more than an economic criterion for the evaluation of social health and well-being. It is linked to the modern conception of the future as infinite expansion. For many reasons, infinite expansion has become an impossible task for the social body. Since the Club of Rome published the book The Limits to Growth in 1972, we have understood that Earth's natural resources are limited and that social production has to be redefined according to this knowledge. But the cognitive transformation of production and the creation of a semiocapitalist sphere opened up new possibilities for expansion.

In the 1990s the overall economy expanded euphorically while the net economy was expected to usher in the prospect of infinite growth. This was a deception. Even if the general intellect is infinitely productive, *the limits to growth* are inscribed in the affective body of cognitive work: limits of attention, of psychic energy, of sensibility. In the 1990s, Prozac culture was intermingled with the new economy. Hundreds of thousands of operators, directors and managers of the occidental economy took innumerable decisions in a state of chemical euphoria and psychopharmacological lightheadedness. But in the long term the organism collapsed, unable to support indefinitely the chemical euphoria that had sustained competitive enthusiasm and productivist fanaticism. Collective attention was supersaturated and this was provoking a collapse of a social and economic kind. As happens in a manic depressive organism, as happens with a patient affected by bipolar disorder, after the financial euphoria of the 1990s, there followed a depression. It is therefore a case of clinical depression that strikes motivation, initiative, self-esteem, desire and sex appeal at the roots. To understand the crisis of the new economy it is necessary to begin from the psychic experience of the virtual class, it is necessary to reflect on the psychic and emotional state of the millions of cognitive workers who animated the scene of business, culture and the imaginary during the decade of the 1990s. The individual psychic depression of a single cognitive worker is not a consequence of the economic crisis but its cause.

Modern culture has equated the future with economic expansion, so that for the economists it is impossible to consider the future independently of economic growth. But this identification should be abandoned because it is pathogenic, and the concept of the future should be rethought. The economic mind cannot make the jump to this new dimension, it cannot understand this paradigm shift, and unluckily the economic mind has identified with reality itself. The financial semiotization of the economy is a war machine that daily destroys social resources and intellectual skills. But social consciousness seems unable to get free from the double binds that are implicit in the financial semiotization of the world.

Finance is an effect of the virtualization which is acting on the psycho-cognitive sphere of the economy. At the same time finance is an effect of the deterritorialization of wealth. Financial capitalism has not to be identified with individual persons, just as finance is not the monetary counterpart of a certain number of physical goods. Rather, it is an effect of language. It is the transversal function of immaterialization and the effect of the performative action of indexicality: statistics, figures, indexes, fears and expectations are not linguistic representations of some economic referent that can be found somewhere in the physical world, as signifiers referring to a signified.

They are performative acts of speech producing immediate effects in the very instant of their enunciation. This is why, when you try to seek out the financial class, you cannot talk with someone, negotiate, or fight against an enemy. There are no enemies, no persons with whom to negotiate. There are only mathematical implications, automatic social concatenations that one cannot dismantle, or even avoid.

Depression descends on the cognitive worker because his or her own emotional, physical, intellectual system cannot indefinitely support the hyperactivity provoked by the market and by pharmaceuticals. As a consequence, things are set to go badly in the market.

What is the market? The market is the place in which signs and nascent meanings, desires and projections meet. If we want to speak of demand and supply, we must reason in terms of fluxes of desire and semiotic attractors that formerly had appeal and today have lost it.

We are not going through a crisis. Crisis means destructuration and restructuration of an organism that is able to maintain its functional structure. I don't think that we will see any re-adjustment of the capitalist global structure. I think that we have entered a major process of catastrophic morphogenesis. The capitalist paradigm is unable to express (semiotically and socially) the potentialities of the existing form of the General Intellect. But society seems unable to disentangle the possibilities implied in the General intellect, because the capitalist paradigm has been incorporated into the biopolitical fabric of social life and of social culture.

The intense and prolonged investment of mental and libidinal energies in the labor process has created the conditions for a psychic collapse that is transferred into the economic field with the recession and the fall in demand and into the political field in the form of military aggressiveness. The use of the word collapse is not as a metaphor but as a clinical description of what is happening in the occidental mind. The word collapse expresses a real and exact pathological phenomenon that invests the psycho-social organism.

What we have seen since the first months of the new century, when signs of economic decline started to appear, could be described as a psychopathic phenomenon of over-excitation, trembling, panic and finally of depressive fall. The phenomena of economic depression have always been described in psychopathological terms (Euphoria, Depression, slump, up and downs…), but when the production process of production involves the brain as the main force of cognitive production, psychopathology turns into the crucial aspect of economic cycles. The available attention time for the workers involved in the informatic cycle is constantly being reduced: they are

involved in a growing number of mental tasks that occupy every fragment of their attention time. For them there is no longer the time to dedicate to love, to tenderness, to affection. They take Viagra because they don't have time for sexual preliminaries. They take cocaine to be continuously alert and reactive. They take Prozac to cancel out the awareness of the senselessness of their activity and life.

Cellularization has brought about a type of permanent occupation of living time. The effect is a psychopathic mutation of social relations. The signs are evident: millions of packs of psychopharmaceuticals sold, an epidemic of attention disturbances spreading among children and adolescents, the diffusion of drugs like Ritalin in schools, the spreading of an epidemic of panic in the fabric of everyday life, and suicide becoming the first cause of death among young people everywhere in the world.

Networks have produced a leap in the speed and in the very format of the info-sphere, but there is no corresponding leap in the speed and format of mental reception. The receivers, human brains of real people made of flesh, fragile physical organs, are not formatted according to the same standard as the system of digital transmitters. The functional paradigm of the universe of transmitters does not correspond to the functional paradigm of the universe of receivers. This asymmetry is manifested by various pathological effects: permanent electrocution, panic, overexcitation, hyper-mobility, attention disturbances, dyslexia, information overload and saturation of reception circuits.

At the origin of this saturation is a dissimilarity of formats. The format of the universe of transmitters has evolved, multiplying its powers, while the format of the universe of receivers has not been able to evolve in a similar rapid way for the simple reason that it is based on an organic support (the human brain-body) that has evolutionary times completely different from the evolutionary times of machines. The consequence is a paradigmatic discrepancy, a schism between the paradigm that models the universe of transmitters and the paradigm that models the universe of receivers. In a situation like this, communication becomes an asymmetrical disturbed process.

We could speak in this regard of a discrepancy between constantly expanding cyberspace and cybertime. Cyberspace is a network that includes mechanical and organic components whose processing power can be accelerated without limits, while cybertime is an essentially lived reality, linked to an organic support (the human body and brain) whose processing time cannot be accelerated beyond relatively rigid natural limits.

The acceleration of information exchange has produced and is producing an effect of a pathological type on the individual human mind, and even more on the collective mind. Individuals are not in a position to consciously process the immense and always growing mass of information that enters their computers, their cell phones, their television screens, their electronic diaries and their heads. However, it seems indispensable to follow, recognize, evaluate, process all this information if one wants to be efficient, competitive, victorious. The practice of multitasking, the continuous shifting from one context to another for the complex evaluation of processes, tends to deform the sequential modality of mental processing.

According to Christian Marazzi, who in various books has elaborated the relations between economics, language and affectivity, the latest generation of economic operators is affected by a real and proper form of dyslexia, incapable of reading a page from the beginning to the end according to sequential procedures, incapable of maintaining concentrated attention on the same object for a long time. And dyslexia spreads to cognitive and social behaviors, leading to rendering the pursuit of linear strategies nearly impossible.

Some speak of an attention economy. But when a cognitive faculty enters into and becomes part of economic discourse this means that it has become a scarce resource. The necessary time for paying attention to the fluxes of information to which we are exposed and which must be evaluated in order to be able to make decisions is lacking. The consequence is crystal clear, and we are experiencing it every day: political and economic decisions no longer respond to a long term strategic rationality and simply follow immediate interests which are transformed into automatic procedures, and embedded in the social body in the form of "governance".

On the other hand, we are less and less available for giving gratuitously our attention to others. We no longer have the attention time for love, tenderness, nature, pleasure and compassion. Our attention is ever more besieged and therefore we assign it only to our careers, to competition and to economic decisions. And in any case our temporality cannot follow the insane speed of the hypercomplex digital machine. Human beings tend to become the ruthless executors of decisions taken without attention.

The universe of transmitters, or cyberspace, now proceeds at a superhuman velocity and becomes untranslatable for the universe of receivers, or cybertime, that cannot go faster than what is allowed by the physical material from which our brain is made, the slowness of our body, the need for caresses and affection. Thus opens a pathological gap and mental illness spreads as testified by the statistics and above all our everyday experience. And just as pathology spreads, so too do drugs. The flourishing industry of psychopharmaceuticals beats records every year, the number of packets of Ritalin, Prozac, Zoloft and other psychotropics sold in the pharmacies continually increases, together with dissociation, suffering, desperation, terror, and the desire to kill and to kill oneself.

Psychosis takes the place of the old Freudian days neurosis, and appears. If you want to survive you have to be competitive and if you want to be competitive you must be connected, receive and process continuously an immense and growing mass of data. This provokes a constant attentive stress, a reduction of the time available for affectivity. These two tendencies, inseparably linked, provoke an effect of devastation on the individual psyche: depression, panic, anxiety, the sense of solitude and existential misery. But these individual symptoms cannot be indefinitely isolated.

It is not possible to say: You are exhausted, go and take a vacation at Club Med, take a pill, make a cure, get the hell away from it all, recover in the psychiatric hospital, kill yourself. It is no longer possible, for the simple reason that it is no longer a matter of a small minority of crazies or a marginal amount of depressive persons. It concerns a growing mass of existential misery that is tending more and more to explode in the center of the social system itself.

Besides, it is necessary to consider a decisive fact: at the time when capital needed to suck in physical energy from its exploited slaves, psychopathology could be relatively marginalized. Your psychic suffering didn't matter much to capital when you only had to insert screws and handle a lathe. You could be as sad as a solitary fly in a bottle, but your productivity was hardly affected because your muscles could still function. Today capital needs mental energies, psychic energies. And these are exactly the capacities that are fucking up. It is because of this that psychopathology is exploding in the center of the social scene.

The economic crisis depends for the most part on a circulation of sadness, depression, panic and demotivation. The crisis of the new economy was provoked in a large part by a crisis of motivations, by a fall the artificial euphoria of the 1990s. This has led to effects of disinvestment and in part even to a reduction of consumption. In general, unhappiness functions as a stimulus to consume: buying is a suspension of anxiety, an antidote to loneliness, but only up to a certain point. Beyond this certain point, suffering becomes a demotivating factor for purchasing. There is therefore an elaboration of conflicting strategies.

As the stratum of the info-sphere becomes progressively denser, the informational stimuli invade every atom of human attention. Cyberspace grows in an unlimited fashion, yet mental time is not infinite. The subjective nucleus of cybertime follows the slow rhythm of organic matter. We can increase the time of exposure of the organism to information, but experience cannot be intensified beyond certain limits. Beyond these limits, the acceleration of experience provokes a reduced consciousness of stimulus, a loss of intensity which concerns the aesthetic sphere, that of sensibility, and importantly also the sphere of ethics. The experience of the other is rendered banal; the other becomes part of an uninterrupted and frenetic stimulus, and loses its singularity and intensity and beauty.

Thus we experience less curiosity, less surprise; more stress, aggressiveness, anxiety, and fear. The acceleration produces an impoverishment of experience, because we are exposed to a growing mass of stimuli that we cannot elaborate upon, according to the intensive modalities of pleasure and knowledge. The basic pathogenic picture emerging from the era of the first connective generation is characterized by the hypermobilizing of nervous energies, by informational overload, by a constant straining of our attention faculties. A particular aspect and an important consequence of this nervous hyper-mobilization is the rarity of bodily contact, the physical and psychical solitude of the info-spheric individual. Within this condition, we have to study depression as a secondary epidemic phenomenon, perfectly integrated in the psychotic-panic etiology of the first connective generation.

The singularity of psychogenesis is central in the schizoanalytic vision of Guattari. This implies also the singularity of the therapeutic process: 'It's not simply matter of remodeling a patient's subjectivity – as it existed before a psychotic crisis – but of a production sui generis … these complexes actually offer people diverse possibilities for recomposing their existential corporeality, to get out of their repetitive impasses and, in a certain way to resingularize themselves' (Chaosmosis, 1995: 6-7). These few lines must be read, in my opinion, not just as a psychotherapeutic manifesto but as a political manifesto as well.

Only if we are able to disentangle the future (the perception of the future, the concept of the future, and the very production of the future) from the traps of growth and investment will we find a way out of the vicious subjugation of life, wealth, and pleasure to the financial abstraction of semiocapital. The key to this disentanglement can be found in a new form of wisdom: harmonizing with exhaustion.

Exhaustion is a cursed word in the frame of modern culture, which is based on the cult of energy and the cult of male aggressiveness. But energy is fading in the postmodern world for many reasons that are easy to detect. Demographic trends reveal that, as life expectancy increases and birth rate decreases, mankind as a whole is growing old. This process of general aging produces a sense of exhaustion, and what was once considered a blessing—increased life expectancy—may become a misfortune if the myth of energy is not restrained and replaced with a myth of solidarity and compassion. Energy is fading also because basic physical resources such as oil are doomed to extinction or dramatic depletion. And energy is fading because competition is stupid in the age of the general intellect. The general intellect is not based on juvenile impulse and male aggressiveness, on fighting, winning, and appropriation. It is based on cooperation and sharing.

This is why the future is over. We are living in a space that is beyond the future. What strategies will the collective organism follow in order to escape this fabric of unhappiness?

Is it possible to imagine a strategy of deceleration, of complexity-reduction? I don't believe so. In human society, potentialities cannot be definitively canceled out, even when they are revealed to be lethal for the individual and probably even for the species. These potentials become regulated and kept under control for as long as possible, but in the end are inevitably used as happened (and will happen again) with the atomic bomb.

A strategy of subtraction is possible, distancing from the vortex. But this is a type of strategy that only small communities can follow, constituting spheres of existential, economic, and informational autonomy with respect to the economic world.

Only by reactivating a dynamic of slow affectivity, of freedom from work, the collective organism will be able to regain its sensibility and rationality, its ability to live in peace. If we come to terms with this post-futuristic condition, we can renounce accumulation and growth and be happy sharing the wealth that comes from past industrial labor and present collective intelligence.

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FRACKING
BRETT NEILSON

Fracking is a technology that enables continued extraction under conditions of depletion. Most notoriously it refers to the technique of hydraulic fracturing by which fossil fuels such as petroleum or natural gas are released from rock shelves by the pumping of pressurized liquids beneath the earth's surface. The controversy surrounding this means of extraction has centered on its capacity to pollute the water table. Opponents point to over one thousand documented cases of water contamination. The presence of chemicals such as benzene and formaldehyde in the fracking solution used to fracture rocks and release hydrocarbons has insidious effects. Not surprisingly the mining industry has invested much energy and research in talking down the possibility of such toxic leakages. There is too much money at stake, let alone the attractions of pushing past the limits and peaks imposed by the carbon economy. It is an old story. Human technology defeats nature. Yet here it is reasserted, violently and profitably, just at the point when nature seemed to be exacting its revenge. Fracking should give us pause.

To understand the stakes of the conflict that surrounds it we have to mine its symbolic as well as its material dimensions. What does it mean to extract beyond the point of depletion: to pump, to pressurize, to crack, and then to harvest? The scenario is not restricted to small town U.S.A. where fracking has brought jobs as well as contaminants. Nor can it be confined to the farmlands of Australia, the river basins of Ireland's County Fermanagh, the bogs of Denmark's Jutland, the hills of New Zealand's Eastern Taranaki, the Polish voivodeship of Pomerania, or China's earthquake-prone Shaanxi province. These are some of the places where fracking has issued in a material frenzy of prospecting, drilling, injecting, and siphoning. But as a means of prolonging the boom mentality of the carbon age beyond its declining curves, fracking is symptomatic of a more general tendency of capital. We might call this extraction beyond exhaustion.

"Every limit appears as a barrier to be overcome," wrote Marx in the *Grundrisse*. Including the limits imposed by depletion, we can now add. With fracking there is always something more to squeeze, whatever the demands of scarcity or the toxic aftershocks. Whether it derives from the natural commons of earth, fire, air, and water or the networked commons of human cooperation, fracking creates an excess that can be tapped. Frack the earth! Frack the worker! With the 24/7 pace of labor brought by mobile and internet technologies, rest never comes. Beyond the labor contract or the performance measure, there is always more to do. Fracking is extraction when it seems that there is nothing left to take. It enables accumulation that moves beyond the ethos of post-Fordist flexibility to hit up against the hard rock of energy depletion. The solution is to fracture, to crack.

"Of course all life is a process of breaking down," wrote F. Scott Fitzgerald in his story 'The Crack Up,' "but the blows that do the dramatic side of the work - the big sudden blows that come, or seem to come, from outside - the ones you remember and blame things on and, in moments of weakness, tell your friends about, don't show their effect all at once." Fitzgerald was registering

the experience of nervous breakdown. His was a clarion call from a front line of psychosocial experience that would continue to colonize human souls under the expansive logic of the twentieth century carbon economy. In the twilight of this era, the fractured lives of contemporary capitalism are registered in a variety of ways. These range from the neurochemical balm of psycho-pharmaceuticals to the trope of vulnerability that runs like a coal seam through current political theory. Fracking is a practice that increases pressure in order to unearth reserves for extraction. Its side-effects ripple through our lives like so many contaminants in the water table. The consequences of this seepage may not always be immediately apparent but slowly and surely the blows take their toll.

If fracking has a human face it is that of Mike Markham, the Colorado man who appears in Josh Fox's 2010 film *Gasland*. To demonstrate the lethal side-effects of fracking, Markham ignites his kitchen tap water with a cigarette lighter. The stunt became the subject of much controversy when regulators claimed that the methane in Markham's water had been present for years and was unrelated to fracking. But studies in New York and Pennsylvania have confirmed an increased presence of methane in water sources close to active fracking sites. In any case, the claims and counterclaims surrounding the deleterious effects of fracking have reached fever pitch. France has unilaterally banned the practice. And everywhere that fracking advances a wave of protest follows.

Like most forms of activism these days anti-fracking is an internet-driven game. Films like *Gasland* have circulated globally as downloads, sparking protest for instance in Germany where Exxon had begun drilling shale wells in 2008. Digital visualisations showing chemicals seeping into the water table abound. For the industry this is so much alarmism. The proponents of fracking claim it can be accomplished in a controlled and isolated manner. For them the notion that it is a toxic practice is particularly injurious, since they prospect above all for natural gas coming from shale wells. It is, they profess, the cleanest of carbon fuels. They see themselves as the saviours not only of economies struggling to recover from the carbon slump and financial crises but of the biosphere itself.

In his *State of the Union* address of 2012, U.S. President Obama embraced fracking without even mentioning it. "We have a supply of natural gas that can last America nearly 100 years", he told his audience. "And my administration will take every possible action to safely develop this energy". At stake in Obama's promise is something more than the supply of affordable energy. A whole way of living and of being political is on the line.

"Fossil fuels", writes Timothy Mitchell, "helped create both the possibility of twentieth century democracy and its limits". To understand these limits, Mitchell suggests, we need to follow the carbon. In the case of fracking, this means paying attention to the way the gas flows, from underground where it is released from rock fissures opened by hydraulic pressuring, through pipes, plants, meters and flames, and then into the earth's atmosphere where it is released as carbon. If the burning of fossil fuels enabled the emergence of mass democratic politics, fracking marks the attempt of this kind of politics to maintain its twentieth century forms when its limits are marked not only by the proliferation of extra-representational forms of political activity and but also by the depletion of hydrocarbons.

The control of carbon channels, Mitchell argues, has been vital to the assertion of economic and political power for over a century. Points of vulnerability, such as pipelines, refineries, railways, docks, and shipping lanes have supplied key points where movements have organized and applied pressure. The history of the twentieth century, the grandeur of its struggles between labor and capital, has been carried by carbon-burning infrastructures. This is no less so in the latest wave of capitalist globalisation which has been enabled largely by informatics and logistical technologies. The software infrastructures that program, design, structure, and heterogenize contemporary global space and time cannot function without their hardware shadows.

This was a point made clearly in a 2010 installation by artists Graham Harwood and Matsuko Yokokoji (YoHa) entitled *Coal-Fired Computers*. The display featured computers directly powered with coal via a steam engine. The exhaust from the engine was pumped into a pig's lung that slowly blackened while the computers searched the internet for data on coal related deaths. The piece exposes the mystification involved in the notion that computing sustains a cleanly efficient and immaterial kind of labor. As Harwood states in an interview with Anthony Iles:

> *Coal Fired Computers* burns coal for its own sake, it is not outside the process. It is a self-induced crisis bringing those diseased humans, their activism into proximity with the engines that transformed them, linking to the conceptual engines, (databases, computers) that transform us as the steam engine transformed the Victorians to Empire.

Chasing down the energy chain, whether it leads to coal, oil, or gas, is a means of discerning the shifts in power and technology that transforms the production of subjects and the making of the eras in which they live. Fracking is a putatively clean, or less dirty, source of hydrocarbon energy. But the circuits of pipes, pumps, plants, labor, expertise, and finance that support it want to exist in isolation from the toxins it leaks into the environment. They also want to cut loose from the political actions of its opponents, which manifest themselves in electronic circuits and conceptual engines that at this point cannot exist without carbon energy. The relations that constituted the oil era have begun to shift. Fracking is the fantasy that the end of oil does not mean the end of carbon.

Fracking is an end-game. It is the continuation of the carbon economy and carbon politics beyond its point of exhaustion. If it was the protagonist of a twentieth century novel, it would be Beckett's Murphy: "I can't go on. I'll go on". It asserts its demise with all the promise of a new beginning. The rhetoric of futurity that pervades the fracking boom should not be dismissed too lightly.

Fracking is a form of primitive accumulation and to this extent it carries the burden of origin. But it is unlike the primitive accumulation explored by Marx, which enables the emergence of capitalism from feudalism. Nor can it be easily equated with what David Harvey calls 'accumulation by dispossession', which involves the replacement of an older form of capitalism by a more advanced one. Fracking enables an accumulation that sustains an older capitalist experience beyond its use-by date. Its flawed engineering is signal of the impasses confronted by carbon dependency. Fracking is not only design for depletion. It is also depleted design.

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GREY ECOLOGY
DREW S. BURK

Paul Virilio, growing up in the aftermath of World War II, has declared on many occasions that "war was my university". Beginning his aesthetic career as an artist helping Henri Matisse make stained-glass windows for churches in France, he would switch his interests to architectural design and the relationship between speed and military technologies. Grey ecology is one of his latest concepts concerning techno-scientific advancement. As with the pollution of the natural world, Virilio sees today's techno-scientific progress as carrying within it, its own pollution. In such books as *Open Sky, The Information Bomb, The University of Disaster, The City of Panic*, along with his text and workshop, entitled *Grey Ecology,* one can begin to see the development of his concept for an ecology of the man-made world of the dromosphere (the sphere of acceleration which produces the accident).

Primer

Today, within a world of instantaneous communication, we have arrived at a position where the concepts of distance, of near and far, have been completely obliterated. Today, when an accident happens *here* it also happens *there*. Time/space, whether within the external landscape of place, or within the internal landscape of the mind, has been pushed to a position of temporality which Virilio names intemporal. As with the war-machine and its uncontrollable push towards a mechanism of colonialization, today, we must begin to understand that there is no evil dictator behind it all, no regime, but our own relationship to technologies of instantaneity. One need only think of the handing over of the stock-markets to the immediate calculations of nano-bot traders to see the potential disasters of this landscape. The synchronized networks and the algorithmic excesses have begun to demand a necessity of thinking the world after the world within the world. Since the acceleration of reality leaves little time for reflection in a world where both the inner and outer landscapes are perpetually being colonized, we must begin to have the courage of a grey ecology of instantaneity.

Within a sphere where knowledge has been passed over for the novelty of information gathering, filtering, and collecting, we all live within the rubble of information pollution. Grey ecology would be predicated on sustainable design strategies of mental and social living within a dromospheric landscape which feeds off the accident. How does one design novel aesthetic and technological productions within a sphere where we no longer have the luxury of foreseeing its potentially hazardous uses and effects? This is the question grey ecology asks. What would a grey ecological architecture of the inner and outer landscape look like? As we begin to become aware of the tremors within the wake of real-time optics, where the screen and its immediacy reign we must take into consideration its relationship to the body. As Virilio has stated in illuminating essays such as *War and Cinema* as well as The *Vision Machine* the body is always the primal territory to be colonized. With the invention of cinema and its collective trances of the masses, the imaginary began to be projected onto a screen, where it was no longer individuated but networked within the cinema hall. The viewers of the 1903 film, *The Great Train Robbery*, were so unsettled and

caught within the hallucinatory cinematic energy, they thought the train was coming straight for them, smashing through the screen and heading right into the real. As Virilio has stated, cinema is not "I am seeing" but "I am flying".

With the "vision machine" he discusses the modernization of city architecture. One where, as Paris became the "city of lights", allowing for commerce and police to see those who wandered the cobblestone within the haunted darkness, where seemingly only nefarious activities took place, a new world was formed. No longer was the day based solely around the light hours of the sun, the artificial electric lighting would provide for the enjoyment and architecture of night culture.

Today, within a globalized, networked horizon, we all have moved from the "city of lights" to the "city of the instant", where we must begin to think the architecture of a temporality that is no longer night or day, but global and whose architecture is that of the screen. The internet and the globalized circuits do not run on the concept of "open and closed" of a.m. and p.m. They never stop. When we move from night and day, from the past, present, future, to an eternal present of real-time, we must begin to strive to distinguish the "blurring of all the colors into grey". For within this grey landscape, within the digital sphere of acceleration, we have long since seen the effects of a blurring of the virtual and the real. But as we begin to inhabit real-time, we can no longer take this hallucinatory visual field for granted. And there is no better place to examine this real-time illumination and its pollution than the war-machine.

As the bombardier in World War Two found himself with the technologies of a radar and a screen, to drop a bomb from 30,000 feet, providing a position of disembodiment between himself and the destruction on the ground, our acceleration of reality, leaves all of us within a position of interacting from a site of disembodiment where immediacy reigns, and where we have no orientation or reflection to gauge the "information bombs" and their pollution within the future-present. As a tweet gets sent out, as a colleague synchronizes their emotional state with one's own from 10,000 kilometers away, we can also say that we are engaging a novel position of flight. Within the networked social sphere, we all become satellites orbiting within the instant. And this virtual-real landscape demands an innovative awareness of the dividing line between the real-time blurring of the virtual and the real. Architectural design must provide new structures for distinguishing reality and fiction within this real-time world where the acceleration and immediacy of this so-called radical illumination allow for both manipulation and liberation within a polluted data-landscape of entangled confusion.

The new bombardier sits in front of a screen and manipulates drone-fighters from a desktop. Flying missions overseas from an office space, the war zone leaves real space and finds itself spread all over the digital horizon. Whiplash transition is the name given to the traumatic effect caused by a continual hovering within and without a blurred field between the virtual and the real. Recent studies (Salentin 2008) have shown that pilots flying drones within a game-like architecture are having more post-traumatic stress than their counter-parts on the ground. The hallucinatory undecideability and disembodiment of the dromosphere runs on a destructive mechanics of immediate forgetting and induces a trauma of never precisely having a chance to forget. Here, one can encounter a "whiplash transition". A recent story in South Korea speaks to a couple who left their child at home in order to spend their days raising a virtual one within a gaming café

The virtual-gaming architecture was more hallucinatory than the real. There real infant was found dead and became the collateral damage for her parents mental pollution.

The designers of the innovative architectures of the future-present must have the courage and take on the responsibility to think architectures of deceleration, of mental, bodily, and emotional sustainability to allow for humanity to maintain the humane.

How would one authentically act in response to this ethico-aesthetic challenge which would require invention but would necessitate an awareness of its own accidental and potentially disastrous nature? For the artist, the use of the accident has been part of the creative process for quite some time. As we plow ahead into the city of the instant, we find ourselves navigating within a field of vision of the stereo-real. Stereo-reality is the name Paul Virilio gives for the new aesthetic relief of real-time which comes after the position of hyper-reality. Stereo-reality is constructed via a novel reverberation between the artifice of real-time and the actuality of the real. It provides a novel depth perception not unlike that which can be seen with the creation of the quattrocento by Italian artists of the renaissance. We begin to detect the nano-metric rate of the movement image, finding ourselves within a hallucinatory, metaleptic space where the blurring of the real and virtual provides for a novel relief of perspective.

The stereo-realists will have, as a starting point, this grey ecological backdrop from which to begin their ethico-aesthetic projects. Their artistic endeavors must be predicated on an anticipatory methodology which constantly questions its own progression. As the designs themselves can be blue-printed and implemented at light speed, we must be aware of their potentially disastrous effects, being created at a rate which is beyond our understanding and control. For if we can begin to understand a landscape of sustainability within the world of immediacy, ubiquity, and instantaneity, where temporality itself becomes dilated, we must anticipate aesthetically within a future-present. The stereo-realists would attempt to take on a vision which would allow for a becoming at light speed. If we have learned anything from other advances in technology, it is that designers must learn to accept these new visions of revealing as potentialities and possibilities within the given field of vision. A grey ecology of design would ask those creating the new blueprints to accept this challenge of anticipatory reflection. It is precisely their reflection itself which will determine the environment we inhabit.

This novel ecosystem, while being constructed by man, has now begun to construct us. We must have the courage and the delight to search out all of its beauty, wonder, frightening novelty, and its regenerative and destructive power. Echoing Virilio: the time of revolution is over and we must embrace the revelation, the revealing of this new ecosphere and with it, an ecosophia perhaps not unlike the one to which Felix Guattari strived to articulate some 25 years ago: “It seems to me that a novel type of ecosophia, practical and at the same time speculative, ethico-politcal, and aesthetic must replace the old forms of political, religious and associative engagement …” (2008: 70, my translation). The debate is not whether we are heading towards an apocalypse in the sense of the end of the world, but concerns the revealing that we have indeed entered into a new life-world. If we can take any of our past historical knowledge with us into this new digital environment, it would perhaps be that of the great explorers, those first to encounter new beings, vegetation, creatures, and spirituality. If we can attempt to learn from their misguided efforts, it

would be perhaps in taking into account the philosophical position of Aristotelian prudence. One where not-knowing is perhaps more important than knowing. Within an accelerated landscape with many more dimensions of which we have not yet become aware, we must re-think and re-member the accidents, the humanitarian accomplishments and destructions of not only the past but the future-present. Grey ecology functions within an open-ended ecosystem predicated on a temporal acceleration beyond man's understanding. Indeed it is precisely its improbable, incalculable position which makes it beyond our so-called grasp. We must learn to design at this precise incalculable position that no longer thinks within a linear dynamics, or temporality. We must begin to think in non-linear, cinematic (light speed) modes. But we must nonetheless strive to have the courage to perpetually critique, question, and reflect in a manner which takes into consideration an ecology and ecosystem where answers are no longer what is most necessary, but perhaps now more than ever, more questions and self-interrogations. If we are to provide an upgraded ethics for a life-world that we once constructed and which now is constructing us at the pace of real-time, we must begin to grind the novel ethical lenses for light speed.

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HACKERSPACE
JOHANNES GRENZFURTHNER, FRANK A. SCHNEIDER

A critical acclaim of what was, is and could be a hackerspace (or hacklab, for that matter).

The history of so-called hackerspaces expands back to when the counter culture movement was about to make a serious statement. In the decade after the hippies attempted to establish new ways of social, political, economical, and ecological relationships, a lot of experiments were carried out concerning the construction of new spaces to live and to work in.

These were considered niches to relieve and rescue people from the monotonous way in which bourgeois society directed civic spaces from kindergartens to cemeteries to be exactly the same and to reproduce its patriarchal and economic order. The politics of establishing open spaces were meant as explicit statements confronting a capitalist (and in the East: an authoritarian communist) society whose very structure, purpose and operating mode were broadly considered to "alienate humans", to take control of and to modify their basic human needs and relationships.

Thus, the failed revolt of the sixties survived and flourished in the shadows of a ubiquitous bourgeois lifestyle. And the idea of change was conjured up from nebulous lysergic dreams and pathetic speeches to get one's dreams and/or feet back on solid ground - to be dis-obamaized, if you like.

This conversion gained its popularity because macro-political hippie dreaming ("I had too much to dream last night" as the title of a classical psych pop tune by 'The Electric Prunes' put it) had completely deteriorated. The hippies learnt that social and political change demanded more than just repeating the mantras of posters, pop songs and drug fantasies that were promoting it. The real world was way too tough to be impressed by a bunch of filthy bourgeois drop-outs mantraing about change. The capitalist imperative of the real world was way too effective to really be changed.

And yet, when it all was over in 1972, some of the people involved were not ready to give in and give themselves over to the system and fade into integration - hence the launching of micro-political tactics. Instead of trying to transfer the old world into a new one, people started to build up tiny new worlds within the old world. They created open spaces were people could come together and try out different forms of living, working, maybe loving and whatever people do when they want to do something.

It is necessary look at the historical development of political movements and their relationship to spaces and geography: the students' revolt of 1969 was driven by the idea of taking back places and establishing a different psychogeography within the maze of the city through détournement. Likewise, the autonomia movement of the late 1970s that came to life in Italy and later influenced people in German-speaking countries and the Netherlands was about the appropriation of spaces, be it for autonomous youth centres or appropriation of the airwaves for pirate radio.

Thus, the first hackerspaces fit best into a countercultural topography consisting of squat houses, alternative cafes, farming cooperatives, collectively run businesses, communes, non-authoritarian childcare centers, and so on. All of these established a tight network for an alternative lifestyle within the heart of bourgeois darkness.

Hackerspaces provided room where people could go and work in laid-back, cool and non-repressive environments (well, as far as any kind of space or environment embedded into a capitalist society can be called laid-back, cool and non-repressive).

In sociological terms, "third spaces" are spaces that break the dualistic scheme of bourgeois spatial structure with places to live and places to work (plus places for spare time activities). They represent an integrative way that refuses to accept a lifestyle which is formed through such a structure. This means they allow cooperative and non-repressive ways of working on e.g. technical problems that may result in new and innovative solutions.

And that's exactly where Adorno's "Wrong Life" could slip in too. The Capitalist system is a highly adaptable entity. And so it is not surprising that alternative spaces and forms of living provided interesting ideas that could be milked and marketed. So certain structural features of these "indie" movement outputs were suddenly highly acclaimed, applied and copy-pasted into capitalist developing laboratories. These qualities fit best into the tendency in which - by the end of the seventies - bourgeois society started to update and re-launch using the experiences gained through countercultural projects. Mainstream harvested the knowledge that was won in these projects and used it. Normalizing dissent. Uh yeah.

Thus, the sixties revolt and all the micro-revolutions that followed turned out to be a kind of periodical refreshment. As a system, capitalism is always interested in getting rid of some of its old-fashioned oppressive traits that might block its overall evolution and perfection. As an example: eco-capitalism became trendy, and it was quite effective in generating capitalist "good wealth" and "good feelings".

Hackerspaces today function differently than they did initially. When the first hackerspaces were formed, there were always clear distinctions (an "antagonism") between "us" (the people resisting) and "them" (the people controlling). Certain people did not want to live and toil within the classical bourgeois working scheme and refused to be part of its ideological and political project for some pretty good reasons.

The otherness of the spaces back then was determined by the consistency of a bourgeois mainstream culture on the basis of a dualistic cold war world order. Here again they proved to be third spaces of a different kind: neither state nor free trade capitalism. Being structurally and ideologically different had been an important political statement and stance. In a society easily distinguished into mainstream and underground categories, each activity carried out within the open space of such an underground was a step from the wrong direction.

The very practice of making personal use of alternative structures came with assurance of being on the good side. But post-cold war society established a different order that deeply affected the

position of hackerspaces. While it became harder and more repressive, the system (a clever one!) learned to tolerate things that are different (in the pipeline of integrating or assimilating them) and to understand that new substance grows always grows at the edges of normality. Milking covert culture.

Before that, the open intolerance and often brutal oppression carried out against countercultural spaces only made them stronger and their necessity more evident (at least where society didn't succeed in crushing them).

Thus, alternative life forms were applied ideally as a rejuvenation of what was old, boring, conservative and impotent to progress and adapt in an ever changing bourgeois present. New ways to solve technical (and aesthetic) problems were cooked up in the underground, and bourgeois talent scouts watched closely to occasionally pick this or that, just as it happened in the field of pop music with the so-called alternative rock of the nineties. Alternative mainstream, ahoi!

On the other hand, the nineties marked the triumph of liberal democracy, as Slavoj Žižek writes: "The fall of the Berlin Wall on 9 November 1989 marked the beginning of the 'happy 1990s'. According to Francis Fukuyama, liberal democracy had, in principle, won. The era is generally seen as having come to an end on 9/11. However, it seems that the utopia had to die twice: the collapse of the liberal-democratic political utopia on 9/11 did not affect the economic utopia of global market capitalism, which has now come to an end." It is thus highly ironic that geeks and nerds, while watching the death of liberal democracy in its political form (civil liberties granted to keep the social peace) as well as its economic form (crisis) turn to become liberal-democratic defenders of an ideology that had already failed.

Without the political demarcation lines of a cold war society, hackerspaces changed sometimes without even noticing it. The political agenda was overgrown with individual problems that techno nerds tried to solve in nice fearless atmospheres, non-aggressive states where the aggressiveness of the market was suspended; where one could discuss technical and creative problems and challenges politely with likeminded people.

As such, the political approach faded away *en route* to tiny geeky workshop paradises. The micro-politics failed on the same scale and to the same extent as older macro-political projects got pulverized through the irreversibility of capitalism. The idea of having a revolution (of whatever kind) was domesticated into good clean reformism, and the only revolutions that lay ahead were the technological semi-revolutions of the internet and its social web sprouts.

Without their former political agendas, hackerspaces turned into small places that did not really make fundamental differences, now comparable to the fall of squat houses becoming legal in status and turning into new bourgeois housing projects where the cool urban bohemians live their lives commuting steadily between art world, underground, IT-business and advertisement agencies.

This may not be the case for all the hackerspaces out there today, but it should be noted that most have travelled along the same paths. And while for a long time the macro-political scheme

had worked quite well to provide the inherent difference that had been attached to all of the activities carried out in hackerspaces (even to things as trivial as soldering, pottery lessons or juggling trainings), it is missing now. And due to this deficiency, hackerspaces can no longer be shaped and politicized on a broader scale. And that clearly means that whatever we might do: our hackerspace communities remain constricted; nothing more than nutrient fluid for breeding human resources. (Soylent Google is made of people!)

So what can be done about this? Actually, it is not very hard to find something to protest against. Surveillance, whatever. It's no problem to use the prefix "anti". Use rule 76 - as long as you can think about it, you can be against it. But that's just too simple. Never before in the history of bourgeois society has everything been as fucked up as it is right now. But what is lacking amongst all the practising going on in hackerspaces is a concise theory of what bourgeois society is like and what should be attacked by us building and running open spaces within that society.

The lovely alternative approach we share should be grounded in such a theory, which is to be read: a political agenda that lends some revolutionary glam to what we are doing on a daily basis making technical gadgets, networking through the world, or utilizing our technological and programming skills.

To get there we really need a more explicit sense and understanding of the history of what we are doing, of the political approaches and demands that went into it long ago and that still are there, hidden in what we do right now.

So to start off we would like to organize some workshops in the hackerspaces where we can learn about the philosophical, historical and other items that we need to get back in our lives. Theory is a toolkit to analyze and deconstruct the world.

Plus, we need to reflect and understand that the hackerspaces of today are under the "benevolent" control of a certain group of mostly white and male techno handicraft working nerds. And that they shape a practise of their own which destines most of the hackerspaces of today. It is hard to understand that there are hackerspaces in certain parts of the US that don't have a single African-American or Latino member. But we'd like to keep our European smugness to ourselves. We have to look at our oh-so-multicultural hacker scene in Europe and ask ourselves if hackers with a migrant background from Turkey or North-African states are represented in numbers one would expect in relation to their percentage of the population. Or simply count your women representation and see if they make 50% of your members.

As such, we find today's hackerspaces excluding a lot of ethnic and social groups that don't seem to fit in or maybe feel so and are scared by the white male nerd dominance, their (maybe) sexist or exclusionist jokes or whatever else might contribute to such exclusion. Or perhaps they don't have the proper skills to communicate and/or cooperate with the packs of geeky guys (or at least they might think so).

What is needed is the non-repressive inclusion of all the groups marginalized by a bourgeois society, just as it had been the intention of the first hackerspaces in countercultural history. If

we accept the Marxian idea that the very nature of politics is always in the interest of those acting, hackerspace politics are for now in the interest of white middle-class males. This needs to change.

Well, that's all for the moment. Let's start to work on this and see what would happen if we change the somehow boring hackerspaces of the present into some glamorous factories of an unpredictable freedom for all of us, even those who do not fit into the classical nerd scheme. Change the nerds. Make them a better space. For you and for me and the entire human race.

INFORMATION BOMB
SEAN SMITH

Three Bombs

Following his decisive role in the birth of the Manhattan Project and the subsequent American military effort to develop an atomic capacity during World War II, Albert Einstein suggested that in the future the world would need to reckon with three imminent threats: the nuclear bomb, the information bomb and the population bomb. The first had already been detonated as a wartime weapon with the bombings of Hiroshima and Nagasaki in 1945; the second concerned computer technologies such as the *Colossus, Z3* and *ENIAC*, used not only to develop the applied mathematics of quantum theory but also as part of the effort to code and decode encrypted military messages; the third forecasted an exponential explosion of demographic growth worldwide, emerging from an expansionist vision of globalized political economy. Einstein's hypothesis has become a motif woven insistently into Paul Virilio's analysis of contemporary society and his war model of urban change. It is an astute conceptual choice for Virilio, since it was in the twentieth century that the implications of light speed and the theory of relativity continually unfolded to reshape social relations from the local community level to that of global geopolitics, punctuated most resoundingly by the twin detonations of *Little Boy* and *Fat Man* in 1945, and those of the Twin Towers in 2001.

Traces of these three bombs have dominated Virilio's thought in various ways for the better part of his life. A self-described child of "Fortress Europe" who grew up near the German bunkers that dotted the coast of France during the WWII occupation, he has consistently been interested in how the architectures of war organize space and—particularly since the rise of ubiquitous computing and light-speed connectivity during the past few decades—time. Indeed, for Virilio the questions of speed and time are at the heart of the information bomb and his understanding of its detonation, which we may describe broadly at the outset as those changes in social and political economy wrought by contemporary media and communication technology. According to Virilio, these produce and demand a sort of accelerated and generalized climate of *interactivity*, analogous to the *radioactivity* of the nuclear bomb.

Time is key. Virilio's position vis-à-vis the temporality of the information bomb is doubled. On the one hand he views the information bomb as an enduring condition of contemporary telematic societies, with the speed and interactivity of optoelectronic technologies having evoked a radical ontological and epistemological shift in the latter half of the twentieth century that continues today (and in this sense is more consonant with his thoughts on "grey ecology"). On the other hand he describes the information bomb more in the traditional terms of an explosion—that is, as a finite event, even if this event may not be precisely located along the timeline of history.

By way of contrast, when the artist Tom Sherman also speaks of an information bomb, or I-Bomb, he does so in a way that blends both of Virilio's approaches: as a qualitative shift in behavioural, social and commercial patterns emerging from changes in information technology that "exploded"

specifically during the 1990s. Using a language of "before" and "after," Sherman appears to bracket the explosion within the temporal parameters of the popular introduction of the WWW protocol and graphical web browser. Virilio ranges further, meanwhile, entertaining not only more complex genealogies of photography and electric technology, but also, for example, Quattrocento perspective in painting, science fiction-inspired futures scenarios, and Ancient Greek considerations of accidental properties in his critical analyses. The latter is where we shall begin to tease matters further apart, in the precarious middle of a detonation that is ongoing.

That said, the seductiveness of the bomb as motif proves problematic at times since Virilio himself weaves between the traditional understanding of a weapon and his true interest, which is the idea of bomb as a metaphor for the accident that is located within the substance of any technology—the information bomb being the accident of accidents, or the Integral Accident. Semantically fusing the weapon with the accident obscures those aspects of intent and agency required to instrumentalize properties of the latter for creating and detonating a bomb of the former type, which requires a certain degree of pulling apart wires to understand more fully (and hopefully taking care not to inadvertently cut the wrong one).

Dromology and the Integral Accident

Virilio's oeuvre revolves primarily around a "war model" of urban change, driven primarily by questions of speed and a proliferation of visioning technologies inscribed in apparatuses of power and movement. His emphasis on "dromology" (from the Greek *dromos*, for race or running) is not only concerned with the extreme phenomena of absolute speed in modern societies (Olympic world records, supersonic air travel, fibre optic telecommunications), but also with relative speeds and slownesses understood as thresholds of tempo. In this latter sense we find a resonance with Gilles Deleuze and Félix Guattari's interest in fluxes of movement-intensity as they emerge within processes of deterritorialization and reterritorialization: the control of tempo itself becomes the key qualifier of power and agency in assemblages of bodies, technologies, information-flows and other forms of materiality—as well as the affects they produce. In his war model of change, Virilio offers not only blitzkrieg tank warfare as an example of relative speed's potential contra the sheer accumulation of armoured materiel, but also the invention of aerial photography in WWI, which extended the optical gaze to new geographies for reconnaissance purposes.

Already we see the emergence of what Virilio terms the "logistics of perception," or the capacity to arrange a (primarily visual) field of sensory experience to produce strategic outcomes, which in combination with the control of tempo described earlier may alter the complexion of armed conflict. And as with the introduction of aerial photography providing intelligence to remote military decision-makers, this logistics of perception increasingly implies strategic action-from-a-distance, manifest at ever-quicker temporal intervals. With the invention of ARPAnet as a distributed communication network following the detonation of the nuclear bomb and the rise of a persistent nuclear threat between Cold War superpowers, the conditions of possibility for a militarized and decentralized global infrastructure began to germinate. In the introduction to his interview with Virilio and Friedrich Kittler titled "The Information Bomb," John Armitage suggests that the genesis of this military effort has (at least publicly) been supplanted by multinational corporations and their forces of monopolization, for whom connectivity, bandwidth, databases and accelerated rates of information transfer have become drivers of the contemporary economy. Together with

military and political actors, this increasingly connected economy has reached a density such that "an unhindered chain reaction occurs around the globe," a condition ecological insofar as it forces a complete recalibration of space and time—which is to say the environments of dwelling and commerce—for every body (and animal and object) connected to the flows of interactivity.

Virilio's analysis of the rise and spread of optoelectronic technologies figures as a sort of media archaeology of the past half century: television remote control, low-orbit satellite, surveillance drone, videogames, internet, etc.—all demand a certain interactivity that allows messages to travel in multiple directions (contra a one-way broadcast model). When speeds of information transfer accelerate beyond certain thresholds or when vast volumes of data demand ready analysis, however, pressure mounts on cognitive attention spans to perpetuate electronic discourse, shrinking response times to reflex times at the expense of measured reflection. The logistics of perception take a qualitative turn and cede to automated systems. Though Virilio describes the Integral Accident as "an accident which is no longer local and precisely situated, but global and generalized," we witness its *global* connectivity and accelerated, automated decision-making become manifest in systemic accidents such as the notorious Black Monday stock market crash of 1987.

These speeds compose not only the material body in its relation to the world, but also the psychic makeup of any individual whose imagined representations are born of lived movement: one's mental picture of Paris, for example, will be much different having walked the city on foot rather than driven in a car. Once we are describing the globalized real-time speed of electronic communication the psychic condition becomes a hyperaccelerated blur (what Kittler might refer to as "eyewash") that permits no time for sustained reflection. Rather, we become collectively responsive to affects, whether the "joys" of everyday consumption or the numbing traumas of everyday news. Brian Massumi, for example, suggests that with the 2011 Fukushima nuclear disaster we have become psychically raw with trauma, as globalized interconnectivity spreads trauma much further than would otherwise be possible with the local accident. While the earthquake, tsunami and failed nuclear reactor have had very significant catastrophic effects on a localized basis in Japan, the trauma has radiated worldwide with the ubiquity of electronic communications, and that there is perhaps a "half-life" of decay to the affective tone it spreads on this global basis. In this we get a vivid example of Virilio's dictum that interactivity is to the information bomb what radioactivity is to the nuclear bomb.

Bomb as Accident-Weapon

But what to make of Virilio's choice of the term "bomb" (also in the original French, which reads "la bombe informatique")? Does this deference to the Integral Accident that is the information bomb not absolve or obscure the elements of intent and agency that foster the design and execution of what we would traditionally consider to be bomb-like? Certainly Virilio does not intend to eliminate intent, but in his articulation of "accident-weapons" the logic becomes a little fuzzy, and so the remainder of this entry will simultaneously attempt to make sense of his words while suggesting original interpretations of the accident-weapon.

While there are certainly naturally-occurring processes that morphogenetically potentiate themselves in the exponential power of the explosion (volcanic eruptions, etc.), the linguistic choice of the term "bomb" implies a modern technoscientific (and decidedly human) agency at work—in

other words, the explicit attempt to control and weaponize the accident laying dormant within the science. A bomb is created to be detonated, even if ultimately this detonation remains in potential, as with the case of nuclear "deterrence" scenarios. In this sense, the information bomb becomes a question of design woven together with the complex threads of contingency.

It is important to note that, for Virilio, the accident-weapon is less concerned with the destruction of concrete substances, as with more traditional mortar artillery. Rather, it is meant to be *productive*, specifically producing the simulacrum of an accident. He offers the example of the graphite bomb, detonated in Serbia during the Kosovo War, which was designed to create an electromagnetic pulse that would render telecommunication capacity inoperable while leaving everything else relatively intact. For Virilio, the Integral Accident of the exploding information bomb is such that the bomb-as-accident-weapon would be indistinguishable from the local accident of an electrical blackout.

Jean Baudrillard's postmodern read of the World Trade Center post-September 11, 2001 views the twin towers under the semiotic of closure: representative of American-style neoliberal capitalism, each turned only to face the other unchallenged on the Manhattan skyline. But the introduction of cameras to this assemblage irrevocably pried the closure open to new intensities and vectors of significance. Indeed, it is precisely because of this dual nature that we can speak of an information bomb rather than simply an event which had been archived. Once the camera is introduced to the architectural form—and most in the 9/11 audience had never seen the World Trade Center in person—any such semiotic closure is opened anew, dromologically-speaking, by the *instant replay.* The caveat here is that the visual dynamics were reversed: instead of a mediated replay serving to illustrate the preceding live event, we had an anterior replay of a plane hitting a building better preparing us to witness the live event of the second plane making explosive contact. The local accident ("did that plane just hit the tower by mistake?") shifted to a more globalized accident (Virilio reports many TV viewers who believed they were watching a disaster movie until flipping channels to see the same images on every station), which shifted to the dawning horror of the reality of the terrorist attack.

It was the *slowness* of the planes that made them a particularly useful weapon that day. As opposed to the truck bombs used at the World Trade Center in 1993, which exploded so fast that television *was only able to capture the damage done*, the slowness of the airliners on 9/11 allowed one to position a personal videocamera in time to view the plane striking the tower—in other words, *to witness the actual event taking place*. It was only at this point of supercritical mass that speed accelerated to the absolute real-time of the kinematic image, the nuclear-style information detonation delivering an experience far more tactile and visceral than seeing the rubble after the fact. … Just as we opened our discussion with Einstein's hypothesis of three bombs (nuclear, information and population), we close with a hypothesis of multiple potential information bombs and their differing shockwaves of interactivity: within the overarching detonation of the Integral Accident, an accident-weapon resembling a nuclear blast and perhaps others, such as the contagion-style transmissions of computer viruses. While Virilio has (perhaps fairly) been accused of retaining threads of an antiquated humanism in his analysis of contemporary society, his explicit focus on questions of tempo and underlying concern with responsibility remains relevant for emerging ecological thinking, even as these brave new networks threaten to accelerate beyond our control.

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NATURAL HISTORY
JENNIFER GABRYS

Since at least the days of the Club of Rome - that 1970s exercise in projecting the moment of planetary environmental and social collapse - environmental discourse has often worked with the guiding notion that we are up against the 'limits of nature'. Within these and related discourses, the planet has circulated as a figure of fragile beauty and imminent exhaustion, a blue-and-green cipher that ought to be managed more carefully in order to avoid depletion. While the language of the limits of nature is inevitably accompanied by a set of practices for managing those limits, this notion perhaps also signals the exhaustion of the concept of nature as a raw material resource that we come up against.

The perception of the limits of nature and the practices with which it is entangled are interesting references from which to pause and consider how the material-semiotic understandings of nature, with a big N or little n, circulate along with practical conditions and relations within environments. The concept of 'depletion' raises this question of what we understand to be used up or limited - is it 'nature' that is depleted, or the practices and concepts that we have built up to articulate particular conditions of environmental damage?

I use this example as a starting point since in an extended study of electronic waste, *Digital Rubbish: A Natural History of Electronics*, I have sought to develop a concept and practice of 'natural history' that accounts for these changing deployments of nature in order to develop an alternative approach to the materiality of digital media.

Electronic waste is one of the fastest growing waste streams worldwide, and the volumes of e-waste generated are estimated to be around 35 million tons per year (and rising). Electronic waste is hazardous and difficult to recycle at end-of-life—lead, mercury and brominated flame-retardants are just a few of the harmful chemical-material components that make up electronic devices. Electronics also generate hazardous waste products during their manufacture, and the working conditions of electronics production are typically deleterious to human health. Yet there is a widespread sense that digital media are relatively resource-free devices, and that they may even promote a green lifestyle by using fewer resources than analog equivalents.

To discuss electronic waste as an environmental issue, it is then necessary to include the complex material cultures of new technologies, including the apparently virtual or immaterial qualities of those technologies, the environmental health and unfair working conditions that are a part of their manufacture, the digital economies that revolve around increasing rates of electronics consumerism and obsolescence, and the accumulation of discards and environmental fallout that comes with the decay of these devices at end of life.

In many ways, these electronics-related issues make evident the ways in which new technologies are sites where political-material conditions sediment. Donna Haraway has articulated how the

'artifactual collective called nature' is continually built up through these complex natural-cultural relations. Yet technologies often appear to be free-floating, 'sunshine' machines that do not bear the traces of the labor and resources that are integral to their functioning.

Natural-cultural relations are mobilized through and sedimented within the devices and sites of electronic waste, and by attending to the material processes that contribute to the making and breaking of these devices it may be possible to recover the material politics with which they are bound up.

From the perspective of a natural history of electronics, electronic waste is not an issue approached through the limits of nature or the contamination that humans bring to 'natural systems'. Instead, a natural history method engages with the more heterogeneous material, political, temporal and imaginary registers of electronics as techno-natural sedimentations.

Fossils

This use of natural history draws on Walter Benjamin's related material investigations, where he developed a unique natural history method by reflecting on the fossilized commodities in the obsolete arcades of nineteenth-century Paris. Outdated or disused objects lapsed into a kind of prehistory for Benjamin, and this material-temporal displacement created the conditions for encountering commodities as apparently natural forms that carried the traces of their former lives. From these disused objects, it might be possible to speculate about and understand the economic and material forces that contributed to their sedimentation and decay.

Adapting this natural history method, I work with the notion of fossils to consider how electronic waste can be studied as the natural-cultural residues of technological materialities, politics and imaginaries. Outmoded electronics are a type of fossil—not those trilobites of paleontological distinction, but rather technological and material residues that bear the traces of cultural, economic and political events. The remains or fossils of electronics can be key sites from which to consider how our material lives are located and resourced, and the new natures and material politics that emerge through these processes.

Fossils, as artifacts of study within a natural history method, also reveal distinct insights as to what may be 'depleted'. For Benjamin, fossils demonstrated how progress narratives were the exhausted forces that, while they propelled economies and commodities onward, did so only through repeated cycles of novelty and transience.

Electronic devices and the networks that are essential to their functioning are guided by the logic of the 'upgrade'. Technological progress, which is often narrated as a tale of evolution, is dependent upon ever newer versions and iterations of devices, platforms and applications that are bound into rapid cycles of obsolescence and the use and disposal of resources. The materialities of technological progress involve more than raw resources converted to devices, however, but have an even wider set of effects. The materiality of apparently dematerialized digital media unfolds not just through minerals, chemicals, bodies, soil, water, and environment. This materiality also encompasses the economic, cultural and political processes of which these technologies are a part. These complex material processes and relations are as constitutive of the materiality—or natural history—of electronics as are silicon, transistors, glass or gold.

One way to describe these material processes might be as 'network ecologies,' another term that runs throughout this collection, to indicate how digital media and their networks are in fact resource-intensive infrastructures that also depend upon networks of precarious labor. Natural history as a concept and practice complements this approach, for as Benjamin has noted, natural history is a way not to accept naturalized histories, but to draw attention to the political and situated character of materialities, which include progress narratives and material enactments of history and nature.

Natural history is a way to reflect on progress narratives, and the ways in which particular economic trajectories (e.g., growth) can become naturalized. Rather than understand nature as an originary ground against and through which cultural processes are read, Benjamin's natural-historical investigations draw out the politics of how and why particular designations of nature may be mobilized. If progress narratives in relation to economies and technologies are understood to be exhausted, how might this give rise to alternative natural histories and material-practical engagements?

From this perspective, the material leftovers of electronics are not simply human discards that we ought to denounce, or matter out-of-place to be simply cleaned up and cleared away. Instead, these fossils are provocations for how to think through and rework practices of material politics that may be less exploitative within our natural-cultural relationships.

Depletion Design and Rematerializing the Digital

As the concept and practice of natural history signals these extended material practices and politics of digital media, it then also suggests strategies for *rematerializing* electronics.

Taking into account the network ecologies of electronic waste, it might be possible to rematerialize electronics not just through devices, but also to encompass the landscapes of labor, resources, politics and imaginings that are bundled into these machines.

Returning to the questions raised at the beginning of this discussion, a natural history concept and method as articulated here points not toward the limits of nature or toward managing resources, but instead attends to our entanglements with shifting materialities.

Since this is not a question of the scarcity, purity or ultimate collapse of nature, but of working with and through these entanglements with responsibility to their effects, different forms of practice or depletion design emerge.

Some of these design practices might not even register as 'design'—but in many ways they count as attempts to redistribute the material conditions of making, and so are forms of depletion design, even if (or because) they are not focused on rarefied objects as the ideal outcome. Depletion design, in this sense, attends as much to the need for generating new forms of political participation and imagining as part of our extended materialities.

In this sense, the conditions for making electronics are as important as the devices made. I would suggest that the practice of natural history I am developing here has implications for how

depletion design might incorporate these expanded understandings of practice. Design in such a context cannot consist just of making compelling objects without also attending to questions of how these objects are made, what resources they require, who they are available to, how they connect up, and what practices they might enable.

What role is there for depletion design in rematerializing the working conditions for making electronics, for instance? The Good Electronics project is an example of an initiative that seeks to work with and transform the conditions for the manufacture of electronics. An international network of workers, NGOs and researchers have assembled a forum for exchanging information and to facilitate changes in the electronics industry. The elements of design here focus on building capacity and making 'common demands' to improve workers' rights.

In addition to these rights-based initiatives, numerous design projects have emerged that work at the intersections of digital media, network ecologies, and the politics of participation, whether through social media, open source software, open hardware, or DIY-citizenship.

Social media and participatory mapping projects are now re-orienting the strategies of citizen engagement for mapping the transparency of electronics production or for reporting on particular environmental abuses. For instance, the initial manufacture of microchips in Silicon Valley in the 1960s and 1970s has left behind a number of Superfund Sites. The mapping application 'Your Superfund' makes these and other Superfund Sites visible, and makes accessible Environmental Protection Agency (EPA) information on the sources of contamination and cleanup, if any, as well as ongoing hazards from the contamination that will remain over future decades. Other mapping applications track the global flows of electronics, from manufacture to disposal, and make evident the resource and supply chains that contribute to the production of individual devices such as a laptop.

These platforms make greater levels of information available, whether through mapping, tracking or reporting. But such tools also raise questions about the relationship between information and sustainable network ecologies. Monitoring and making information available are practices that social media might enable, but other questions emerge as to how to make that information actionable in order to develop alternative material politics. At the same time, while social media are increasingly galvanizing new forms of democratic participation, the material, environmental and political effects of these machines cannot be overlooked.

In addition to these social media projects that focus on citizen-sensing or DIY-type applications, there are a number of participatory projects emerging that re-locate the sites of electronic design, development and use. A long list of depletion design strategies could be drawn up from these events, including e-waste workshops, open hardware summits, scrap yard challenges, and recycling projects that repurpose electronics for new devices. As forms of depletion design, these projects one the one hand work with and repurpose disposed electronics in order to make use of obsolete hardware. On the other hand, open hardware projects also attempt to find ways of making the design of electronics less proprietary, but instead open to further adaptation.

In what ways could the objectives of open hardware meet with the citizen-focused and worker-

engaged practices above? Perhaps another aspect of these depletion design strategies might be to join up these emerging network ecologies to develop thoroughgoing and new arrangements of digital practice.

Furtherfield's project to 'do-it-with-others', or DIWO, a riff on DIY, reminds us that networks are social and collaborative spaces, and that the more joined-up these strategies of depletion design are, the more effective they will be in articulating alternative socio-political engagements.

The possible modes of engagement with an issue such as electronic waste expand beyond making information available or ensuring that manufacturing or recycling processes are transparent. They also extend to rethinking the modes of hardware design and manufacture, the collaborative networks for working in and through these devices, and the common resources that are gathered and sustained to carry through social media projects.

These approaches begin to come together through a more natural-historical understanding of digital media, as technologies that are not necessarily libratory tools or devices for upgrading away from our current dilemmas, but rather as situated material processes. From the remains of exhausted technological narratives, we might then find alternative practices for articulating new configurations of materiality and technology, nature and culture, politics and poetics.

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Recommended Initiatives (in the order they were mentioned):

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'Your Superfund,' http://macwright.org/superfund/.

'Laptop Computer' on 'Source Map,' http://www.sourcemap.com/view/744.

'E-waste Workshop,' http://www.ewasteworkshop.com/.

Open Hardware Summit, http://www.openhardwaresummit.org/.

'Scrapyard Challenge Workshops,' http://www.scrapyardchallenge.com/.

'Hack a Day,' http://hackaday.com/tag/recycling/.

'The Medium and the Mayhem,' http://themediumandthemayhem.net/2011/01/02/hardware-hacking-circuit-bending-electronics-recycling-in-brazil/.

Access Space, http://access-space.org/doku.php?id=getinvolved:recycle.

PERSISTENCE
BOYAN MANCHEV

Yes, we are tired of the simple 'post-modern' rhetoric of fluidity; we are tired of all sorts of negative rhetoric, glorifying the weakness, the softness and the flexibility and are suspicious of any affirmative force, demonized over the last few decades. Today we need to react to the global tendency of *desistence*, as well as to the over-exploitation of the category of *resistance* as a tool of discursive self-legitimization, especially in the field in contemporary art, over-exploitation, which risks reducing the idea of resistance to an empty performative formula. In fact, contemporary art could be seen as an exemplum of what I call *medialization* transformation. Its mainstream very well fits the ideal of 'creative capitalism,' exalting mobility, flexibility, plasticity, alternative forms of subjectivation, the onto-*medialization* – new media, new relations, new network cultures and life styles. It appears as an exemplary field for the absorption of the modes of subjectivation by today's hegemonic regimes of production, exchange and consumption.

Hence, the question of *persistence* matters in a world of a globalized liquidity, of a bio-capitalized transformability, the world of the bio-capitalist appropriation and production of the forms of life. In other words, in a world where everything is supposed to change and to insist on change, it is urgent to ask the question what remains unchanged. How to *persist* in the permanent movement – how to persist in the current of biopolitical fluidity and absorption of life – without abolishing the possibility of the event of freedom? It *matters* to critically ask this question in order to re-affirm something, and the thing to reaffirm cannot be anything else but the thing, which does not change and which could not be consumed as change. And what could not be consumed as change is nothing but change itself. Thus, this question is the question of a radical materialism to come.

Hence, there is a critical urgency to relate the concept of *resistance* to that of *persistence*. The question of persistence is the crucial question today. Persistence is the duration of metamorphosis not as flexible flux but as stasis. It is the coincidence of transformation and event. Eventfulness of transformation and transformation of the event.

We need some terminological and conceptual precautions. Let us be attentive to the semantic potential and the immanent power of the concepts, these cores of complex and polemic intensities. What does it mean to per-sist? The word per-sist comes form the Latin verb sistere [come to stand], corresponding to the Greek histanai, histemi [to stand, to place, to stand up] from which stasis, the Greek word for revolt or civil war is derive,; the stasis which haunts the polis and possesses the Greeks. The verbs histemi and sistere are crucial semantic cores in both Greek and Latin, from which a series of fundamental concepts is derived, from insistence and consistence to resistance and existence.

Stasis

Stasis therefore not only means to be stationary, but also to stay, or persist on place: the radical division of places, which doesn't lead to a distributiv «krisis», but conducts a war within the con-

fines of the polis-model. The controversy continuum, the continuum of Heraclitean fire which is at war with itself, which separates from itself, is as such a stasis. It persists in itself, while flooding the place of the former forms within the same format: it stumbles, while persisting. A metamorphic continuum can only be built through persistence, by a polemical accumulation of forms, which progresses, metaphorically, only upwards, and physically, on the same place, repeated or reproduced by a kind of versification ('versification', from the lat. *versus* - 'back'). The vector of the continuum is vertical. But it does not fall from the sky, nore does it ascend to it, it is not Messianic, there is no eternal matrix of its forms. The form that persists is an immanent matrix. This is the common dynamic that holds the fire of Heraclitus in itself. *Stasis* of the form. Or should we say *meta-stasis*? Continuum of change, metamorphosis: expression of the dynamics of stasis, of the division of persistent parts, standing-themselves. There is no new form - radical form as the one of the limit-passage and thus of the continuum - without manipulation of the immanent *stasistical* dynamics of the forms.

Persistence: For a Stasistical Mobilism

Persistence is therefore the name of the coincidence of change and event, as a time of *event-metamorphosis*. This statement is based on an ontological thesis, especially the immanence of the event to the metamorphosis, the only substance in the world. The event is what prevents the closing of the substance, which affirms the persistence of change. Trough the event, the movement is never a perfect actuality and it is through it that it still preserves some non-actualised power - non-submitted. But then, how can the event emerge as a disruptive force - that is to say, as resistance to complete the actualization?

Let us first assume this. The event or the *passage* to act (taking action) should not be considered through the logic of actualization, unless it is a paradoxical actualization, an actualization which exceeds the logic of actualization. Because this is a moment which is immanent to power, that resists actualization, a counter-actuality: a force that is opposed to the logic of substance, of sovereignty and of the individual. Yet, Aristotle tried to think of the possibility of possibility, the dunamis, to appear as a counter-power. In other words, Aristotle is the first to introduce a notion of counter-power, which anticipates what we identify here as the resistance (see Disorganisation). Therefore, taking action, the 'miraculous' beginning of the movement, is immanent to the very power - its unactualizable side immunizes it against saturation of the actuality - and without being a tautological moment, it is its immanent operator of reconstruction, the *metamorphosis* by which the future persists. And this is how the possibility of a non-reactive resistance - that is to say, event-resistance, introducing somethimg new into the world, transforming without being a negation - the possibility of a *primal* resistance emerges.

Let us talk about the metamorphosis of the event. Metamorphosis cuts across the opposition between moments as discrete entities, discontinuous, and duration as a continuum. Metamorphosis is not the succession of this opposition; it is not the synthesis of time and duration, of discontinuous and continuous. It breaks this opposition: it is the duration of the event, or its persistence. Therefore the event is the movement of metamorphosis itself: it is the movement of the movement, despite the assertion in Aristotelian metaphysics that there is no movement of the movement. Persistence: the co-incidence of event and metamorphosis.

Persistence: The Subject

The operator of immanent resistance to power: of the event-metamorphic event is called the subject, or, as I prefer to say, the body-subject. The subject is a transformation operator. The transformation by which the body-subject becomes the subject has to be a persistent transformation. The persistence of transformation clearly indicates, that it exceeds both the vertical over-determination (and therefore the messianic risk, the risk of a 'negative revolution', to use the word of Artemy Magun, over-determined in the onto-theological structure of the traditional sovereignty) and the horizontal over-determination (and therefore the risk of opportunistic plasticity of the subject in the era of governance). Persistence faces the requirement of a disruptive transformation of the ongoing per-forming transformation, a transformation that interrupts the possibilities of reducing the horizontal flowing forces of the exchanges (reversible) and the vertical systems of equivalences.

The subject is the name of the crossing point - the point of resistance and, now, persistence point: co-incidence of event and change. This is why the politcal-subject, the event-metamorphosis of the body-subjects, may also be called *multitude*. The Spinozian definition of the multitude as a plurality which persists as such could also be a model for the definition of the subject. A plurality, we might add, which persists in the metamorphosis as a metamorphosis. The subject is in this sense the duration of the event or the operator of the metamorphosis: on the one hand it is a metamorphic continuum, a permanent becoming, on the other hand it is a disruptive force - event (of justice: insurrection).

Any singular statement is a fair act; any justice is disruptive. Thus, the idea of persistence, or of transversality - and of the subject as a persistent event - breaks the political aporia of the subject, the aporia of its resistance and its affirmative action. The thought of persistence poses aporetically (com-poses) the disruptive force of the justice-event - this disruptive universal, and continuity-persistence of the struggle.

Freedom means both the possibility of changing and persisting.

Let us therefore persist. Affirming the persistence of the forms of life through transformation, affirming the metamorphosis of political subjects against the almost substantial fluidity of the almost totalitarian new powers, re-opening and re-mobilizing the transformative power of political practice, not to require again the world to change but to transform its transformation. At the moment when the reactive and perverse forces of global capitalism are continuing to absorb, in their failure, the potential for transformation in order to submit it to the imperatives of (economic) growth, which results in the alteration of 'our' world, we must affirm the persistence of forms of life through trans-formation. The persistence in movement, the persistence as movement, is our task: artistic, philosophical, political. We will not persist in the event of the body-subject unless we face its own requirement: which is the permanent revolution of metamorphosis, not an an almost messianic interruption, but an anarchic immanence - an transformative immanence that persists, digging (itself) deeper into the emptiness of the *krisis*, of the unconceivable idea of an unheard-of justice, of freedom itself.

Let's resist: let's move ahead while persisting in the movement.

PERSUASIVE DESIGN
SEBASTIAN DETERDING

A Winston Churchill quote popular among designers has it that "We shape our buildings; thereafter they shape us". Persuasive design turns this observation into a strategy: designing artifacts to steer user behaviour in an intended direction. Although the practice and study of influencing people reaches back at least to ancient rhetorics (or the Garden of Eden), the notion of persuasive *design* gained momentum only in the first decade of the 21st century, propelled by two major movements. One is persuasive technology, the use of computer technology to change attitudes or behaviours. Coined and popularized by psychologist B. J. Fogg in his 2003 book of the same title, persuasive technology is today a distinct and active branch of human-computer interaction (HCI).

The second movement energizing persuasive design is behavioral economics. Behavioral economics originally began as a somewhat rogue movement in economics that described how empirical economic behaviour often deviated from the ideal model of *homo oeconomicus*, and explained this deviance with certain systematic (and hence, predictable) cognitive heuristics, biases and weaknesses that bound our rationality. But marketing, design, and public policy soon began to read its descriptive models as prescriptive advice. Arguably the most influential thrust in this direction has been made by Richard Thaler and Cass Sunstein. Their book *Nudge* argues that instead of strong regulation, governments should 'nudge' citizens with a 'choice architecture' informed by behavioral economics, 'organizing the context in which people make decisions'. This notion has gathered considerable traction in the Anglo-American political sphere. Upon his initial inauguration in 2008, US president Barack Obama appointed Cass Sunstein as head of the Office of Information and Regulatory Affairs. The 2010 UK coalition government set up a 'Behavioral Insight Team' within the Cabinet Office, colloquially called the 'nudge unit'.

In parallel, product and interaction designers increasingly subscribe to the idea that 'behavior is our medium' (Robert Fabricant), and look to the behavioral sciences for guidance in shaping it. The approach is integrative at best and eclectic at worst, but always applied, trying to distill design methods and patterns from a vast field of disciplines: persuasive technology, value-sensitive and incentive-centered design in HCI; (neuro)marketing and behavioral economics; sustainable and critical design; health communication and persuasion research; motivational design; broad swathes of social, motivational and clinical psychology, environmental and consumer psychology in specific; sociological analyses of social networks; rhetorics – and the list is far from complete.

Underneath this apparent diversity, persuasive design is united by several shifts in focus if not philosophy:

- *from the rational actor to the social animal.* During the second half of the 20th century, the predominant model of human beings in the behavioural sciences was computational and economic; broadly speaking, humans were conceptualised as highly independent computers that rationally processed information and then formulated and executed plans which maximised

their material (or genetic) self-interest. However, this model faced the serious question why people often act against their self-interest and better knowledge, or don't follow through on their intentions. The research persuasive design builds on explains this 'intention-behaviour gap' with the power of cognitive biases, emotions, habits, social influence, and the material environment.

• *from cognition to behaviour.* As behavior was traditionally understood to be a direct consequence of rational cognition – beliefs, attitudes, and intentions –, the goal of most traditional interventions was to change these. In contrast, persuasive design usually targets behavior directly, arguably sometimes 'over-correcting' by outright ignoring the relevance of beliefs, intentions, mindfulness, or willpower.

• *from communication to design.* If behavior results from cognition driven by self-interest maximization, then 'undesired' behaviors are due either to lacking information or misaligned incentives; thus, traditional interventions were either communicating information (e.g. public awareness campaigns) or changing economic incentives through regulation (e.g. taxes and subsidies). Yet if cognition is not the issue, but emotion, habit, social influence, and the environment, then the best way to change behaviour is to appeal to emotion, (un)train habits, utilize social signaling, and design the environment to afford desired and constrain undesired behaviors directly.

• *from analog to digital.* Although persuasive design extends beyond digital technology, it still shows a strong predilection for it: Thanks to their interactivity and increasing ubiquity, digital technologies make it possible to track, analyze, display and dynamically respond to user behaviour in a fashion unthinkable with analog media or products.

Design for Sustainable Behaviour

The connection between persuasive design and ecopolitics is readily apparent. Next to health, environmental behaviours are the predominant field of application of persuasive design. (Indeed, the 'noble ends' of sustainability arguably helped legitimize the study and practice of persuasion as socially acceptable.) The usual reasoning here is that small changes in everyday behaviour multiplied by a large population equal a substantial environmental impact. For instance, it is estimated that 1.27 TWh of electricity are wasted each year in the UK alone simply because people overfill water kettles - enough energy to run all street lighting in the country. To give some concrete examples: By far the most gentle (and frequent) strategy in the field has been 'eco-feedback technology' that makes the ecological impact of a behaviour visible, ideally at a point where the user can directly change his or her behaviour in response. Examples include power cords that glow while in use to remind users of the energy consumption of appliances in stand-by mode; quantitative or more ambient, sensual meters installed in water faucets that signal water usage; all kinds of 'smart meters' that allow the tracking of household energy use to detect specifically energy-intensive habits and devices; or car dashboards that visualize the environmental friendliness of the current driving style.

In slightly more forceful applications, such feedback is laden with emotional appeals or social influence: it is given in the shape of animated faces, characters, or robots that express happiness

or sadness in reaction to users' behaviour; users are provided with information how their behaviour compares to that of their community or friends; or users' behaviour is publically displayed.

The most forceful strategies directly affect behaviour by making a desired behavior easier to perform, or by preventing undesired behaviours. Defaults are an obvious example, like presetting the most energy-efficient mode of a washing machine. Forced portioning or limits are other examples, e.g. smaller dustbins encouraging less waste production (since they create the effort of taking the rubbish out more often), or toilets that automatically cap the amount of water per flushing.

Beyond 'Design Determinism'

Shaping user behaviour by way of designing artifacts puts persuasive design in close neighbourhood with analyses in Science and Technology Studies (STS) of how (digital) artifacts play an active role in regulating and reproducing behaviours, perceptions, thoughts, norms, and values. These analyses go by many names, including 'politics of artifacts' (Winner), 'scripts' (Akrich), 'inscriptions' (Latour), 'technical code' (Feenberg), and 'code as law' (Lessig). Their unifying insight is well-summarized in Bruno Latour's dictum that 'technology is society made durable'. Yet despite their similarities, STS analyses differ from persuasive design in one important regard. The latter shows a tendency towards a 'design determinism' that fails to fully acknowledge both the agency of the user and the context-dependency of usage. In contrast, STS have long abandoned determinist views in favour of understanding artifacts and social uses as co-evolving, and paying close empirical attention to the complexities of situated action.

Another way to frame this difference is to look at 'Lewin's Equation', B=f(P,E), which proponents of persuasive design sometimes appeal to as an important forerunner. Coined by the 'father of social psychology', Kurt Lewin, the equation states that behaviour is a function of the person and its environment. In this, it provides a good philosophical Rorschach test: Persuasive design proponents tend to emphasize the second part of the equation, environment, whereas humanists might lean to the first half, person. Only few foreground the dynamic relation of both expressed in the function. Just as user experience designers have begun to acknowledge that one cannot 'design an experience', only *for* an experience, persuasive design can only ever design *for* a behaviour.

The Ethical Subconscious

From the beginning, persuasive design has been accompanied by a strong ethical discourse. The guiding principle throughout most arguments has been that of 'informed consent'; persuasive design is deemed ethical if it refrains from falsehood and coercion and is fully disclosed and agreed to by users. This arguably reflects the moral intuitions of most people towards persuasive design – that it potentially impinges on the freedom of users. It also sits at the core of the political philosophy Sunstein and Thaler offer to legitimize choice architecture, namely 'libertarian paternalism': One should preserve individuals' freedom to choose, but influence their choices 'in a way that will make the choosers better off, *as judged by themselves*'. Apart from judging what counts as coercion or proper freedom to choose, the only ethical dilemma in this framing is that any scholarly or practical advance of ethical persuasive design can afterwards be used by unethical agents.

Yet this analysis falls short in three important regards. Firstly, it doesn't pertain to persuasive design alone. There is no 'innocent' design. Just as we cannot not communicate, to paraphrase Watzlawick, we cannot not influence. Every (non)communication happens with certain intentions and structures the field of possible responses. Likewise, every designed artifact affords certain uses and experiences and constrains certain others, which can be ethically evaluated both in intention and effect.

Secondly, the moral dimension of this reaches far beyond issues of user autonomy, production and consumption (sustainability, work conditions, health effects), to virtue ethical questions of *eudaimonia* – how life should be lived. As Verbeek points out, each artifact manifests at least an implicit consent to a certain vision of what constitutes 'the good life'. At the same time, as part of the lifeworld in which moral deliberation takes place, it structures the very possibility space of ethics.

The third ethical issue is the politics and rhetorics of persuasive design itself. By definition, persuasive design locates the problem and solution of social and environmental concerns in individual behaviour. In doing so, it draws attention and energy away from more systemic questions: Is everyone driving a bit more fuel-efficiently really the issue, or is it cosmetics that distract from the root cause of sprawling cities that necessitate commuting in the first place? In summary, every artefact shapes behaviour and experiences, manifests values, mediates our moral deliberation, and puts forward an implicit theory of social problems and social change.

This 'materialized morality' (Verbeek) is the ethical subconscious of all design, and designers are responsible for it regardless of whether they intentionally shaped it or not. By making it intentional and explicit, persuasive design simply raised it to consciousness. Like the snake in the Garden of Eden, it seduced us to eat from the tree of knowledge - and that can never be undone.

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PLAYFUL TECHNOLOGIES
SEBASTIAN DETERDING

In the summer of 2009, a passer-by in Stockholm could witness the 'Bottle Bank Arcade': A traditional bottle bank equipped with sensors and an array of lights randomly flashing over each bottle hole. Its LED counter rewarded users with 100 points every time they threw a bottle into a hole while a light flashed above it, together with a satisfying, cartoony slide sound. This array was one of several prototypes shown in a viral video campaign by Volkswagen Sweden to promote their environmental brand BlueMotion. According to the video, the 'Bottle Bank Arcade' was used over a hundred times on a single day, while the regular bottle bank next to it was used only twice. The slogan of the campaign, dubbed 'The Fun Theory', aptly captures a notion driving the core idea behind an increasing number of digital technologies that utilize elements of play and games in other contexts: 'Fun is the easiest way to change behavior for the better'.

The Ludification of Culture

In parallel to the rise of digital games and technology, several scholars have observed a 'ludification' of culture: With the broad adoption and institutionalization of video games as a mass entertainment medium over the past thirty years, aspects of play and games increasingly suffuse every part of society and everyday life.

Video games have long escaped the confines of male adolescence to consume a sizable portion of the time and monetary budget of all ages and genders. The size of the global game industry today rivals that of other media. From 8-bit music to pixel art, thematic, visual and auditory tropes of video games pervade our pop culture. Video game experiences have become part of the shared reference set of our discourse, and interfaces and controllers originally developed in games are long being used in other contexts.

Some even propose that growing up with video games has cultivated a whole 'gamer generation' that brings conceptual metaphors, practices and attitudes from games to life in general. This generation supposedly shows a playful approach to media practices and identity (more experimental, provisional, non-instrumental, open to ambiguity), a decreased tolerance for delayed gratification and boredom, a more competitive and collaborative (sic) approach to work, and a shift from capitalist work ethics to an ethics of self-realization and creativity.

Leaving the outright contradictions of such 'gamer generation' analyses aside, their empirical basis is anecdotal at best. In contrast, it is hard to argue with the broad institutionalisation of video games as a cultural and economic force. Yet from the point of view of Johan Huizinga's classic study *Homo Ludens*, to call this a 'ludification of culture' is tautological to the extent that culture *originated* in play. It would be more precise to think of it as a *return* to or better yet, a returned *visibility* of play and games in our culture under the circumstances of late modernity and digital technology.

Instrumentalizing Play and Games

What does this broad cultural shift entail for ecopolitics and design? The answer lies in the *instrumentalization* of games and play for other purposes. Again, such instrumentalization is far from new. War games have been used for strategic training and simulation in the military for millennia. 'Serious games' – games for non-entertainment purposes – entered business and education from the 1960s onwards, and spilled over into counterculture in the *New Games Movement*, which used games (among other things) for environmentalist activism and teaching of systems thinking.

In the digital sphere, one can differentiate four major branches of instrumentalization: digital serious games, games with a purpose, and most recently, gamification. (Another minor branch is *advergaming*, the insertion of advertisements or fundraising campaigns into regular entertainment games.) All of them can be seen as a subset of *persuasive technologies* employed to change user attitudes and behaviours.

1. In the last decade, the commercial success of video games has propelled *digital serious games* from a niche topic into a respectable research and industry sector. In the course, numerous games were developed to educate or persuade consumers on environmental issues. Their underlying logic is usually threefold: One, as games are highly motivating or 'fun', they can supposedly make tedious learning engaging and attract demographics otherwise uninterested in or unreachable by traditional media. Two, since games are complex rule systems a user experiences in interaction, they may be better equipped to model and convey complex systemic relationships (such as ecosystems) than linear media. Three, the direct interaction with the fictional world of a game might provide a deeper, more immersive, more transformative emotional experience than other media. In recent years, this approach has been extended towards *serious gaming:* the educational use of media practices of the broader game ecology (e.g. designing levels, writing reviews, producing machinima).

2. Crowdsourcing *games with a purpose* package 'human information tasks' like pattern recognition into an entertainment game whose output is then used for real-life purposes. Such games are currently mostly used to crowdsource content curation or scientific tasks – e.g. matching DNA sequences in a puzzle game –, but could be easily turned to the mass-collaborative processing of ecopolitically relevant projects, like tracking pollutants on satellite imagery.

3. Instead of deploying full-fledged games, the third branch of instrumentalization looks to incorporate *elements* of play and games into other products or services to make a desired user behavior more pleasant and motivating. Since the early 1980s, the field of human-computer interaction has explored such *playful interactions* – often 'deriving heuristics for enjoyable interfaces from games' (Malone). Yet despite a wealth of prototypes and conceptual models, these efforts did not leave the academic sphere.

4. With the success of location-based service foursquare in 2009 the idea of engaging users by incorporating game elements caught on in the industry. Under the moniker *gamification*, a growing number of applications hopes to motivate users with giving points and virtual marks of achievement such as badges, or by spurring competition through leaderboards. Several compa-

nies already provide such elements as a 'gamification service layer'. *Game*-ification is an unintentionally apt term for these systems as they are strictly speaking not about play – the open-ended recombination of behaviours and meanings in a safe space of 'as-if' and 'what if'. Rather, they set up rigorous systems of goals, rules, and quantitative feedback loops – in a word, games.

Although customer loyalty programs and 'engagement' around media and brands constitute the majority of 'gamified' applications, there are also plenty of environmental uses. The company RecycleBank gives points for recycling materials at home or playing educational games, which can then be exchanged for real world rewards with partnering companies. The monthly reports of PowerMeter, a smart home meter by Google.org, gave badges to users who stick to recommended energy behaviors. And the information dashboard of Nissan's electric car Leaf displays how the driver ranks in terms of energy-efficiency among other Leaf drivers, again awarding virtual achievements.

Criticisms

None of these instrumentalizations of game and play have remained without critique. In the case of serious games, the major point of contention remains that despite years of research and development, they fall short of expectations.

Another long-standing critique is the 'ideology in simulation' argument. Like any other human expression, the systemic relations modeled in the rule system of a game are always claims made by someone with an agenda. Yet when we interact with the interface of a game, we might lack both the media literacy and the practical access to realize this: We don't see the source code of the game's rule model in which the designer's claims are spelled out explicitly, we only see output in reaction to input. Thus, like scientific simulations, games might blackbox their underlying model of reality.

When it comes to 'gamified' systems, this blackboxing entails even more. In the realm of social rules and laws, there is always space for ambiguity, interpretation, and negotiation. Yet codified in algorithms, a rule becomes closed to such negotiations of whether or how it is sensibly applied in a given situation.

For some critics, this is also tantamount to moral incapacitation. If users follow a certain rule because a system forces or incentivizes them to do so rather than because of personal deliberation, they cannot be said to have acted morally at all. Indeed, such systems may actually detrain our abilities of moral self-determination.

Critical theorists have been quick to point out many potential Adornian mouse traps – face value empowerments of the individual that veil an even more total subjugation. Digital creative work and crowdsourcing have long been criticized as 'free labour' (Terranova) or 'playbour' (Kücklich) – unwaged work whose exploitive nature is covered by the very fact that it lacks bodily exertion and happens voluntarily in the name of 'self-expression'. Game historian and journalist Heather Chaplin sported a similar attack against gamification: Using game elements to provide customers with the *experience* of better products (rather than providing better products), or motivating employees with the *experience* of purpose, achievement, and fun at work (rather than fair wages,

worker safety, or actual codetermination), she holds, is just such a ruse. Then there are practical concerns. Game designers like Margaret Robertson observe that current 'gamified' applications are basically 'an inadvertent con' since they mistake 'the thing that is least essential to games' – quantitative feedback and prizes – for 'the core of the experience' and oversell it as an easy fix. Even when such systems do work, there are many potential unintended drawbacks. For instance, eco-feedback dashboards in cars have reportedly motivated drivers to drive more fuel-efficiently, but also less safely.

Play between Heteronomy and Autonomy

One possible and frequent recourse has been to go meta: Critical games and art projects try to create experiences of friction so as to expose the factitiousness of games and open their rule systems up for scrutiny and interpretation. Metagames like Gamestar Mechanic or the Game-Game try to instill a 'ludoliteracy' which (hopefully) transfers into a general literacy for (broken) rule systems in everyday life. But such critical interventions are usually preaching to the converted and highly educated few.

For better or worse, the crucible of playful technologies lies in the instrumentalisation of play itself. To most scholars of play and games, from Huizinga and Caillois to Sutton-Smith and Suits, it is the very definition of play to be voluntary and non-instrumental. As James P. Carse put it: "Whoever *must* play, cannot *play*". Some consider 'play' thus standing outside of everyday life to be an artifact of modernity, bourgeois society, and their clear separation of work and leisure – just like the notion of art as the non-instrumental other. Space prohibits a deeper discussion here – play certainly has its cultures and histories –, but evidence from anthropology, ethnology, and psychology suggests that play is indeed an anthropological universal, with autonomy at its core.

The deep irony is that any attempt to instrumentalise play and games may deplete the very source it tries to tap into – the joy of autonomy in non-instrumental activity. Dozens of experimental studies in motivational psychology show that extrinsic rewards – outer purposes – undermine intrinsic motivation. When individuals feel subject to a system whose ends they don't subscribe to, 'gaming the system' is often the consequence. And these reassertions of autonomy often display playful creativity as well as 'gameful' cunning in ample measure. Of course, if one subscribes to Adorno all the way, that is but the most subtle ruse; play as a refuge *from* the world of instrumentality is always already instrumentalised as a restoration *for* that world.

But one may also take a more balanced view. Like an artistic constraint, many individuals voluntarily submit themselves to a gamified system to further their own goals, like well-being or sustainable living. As such, they are prototypical 'technologies of the self' (Foucault) that allow individuals to relate to themselves by problematizing, monitoring, and changing parts of their selves. With games and playful technologies, we lift ourselves out of given conventions by submitting to chosen others. As Goethe wrote in *Nature and Art*: 'And law only / Can give us freedom'.

Of course, every technology of the self is a Janus face with a societal 'technology of power' as its flipside. Just as they liberate-through-self-control, they control-through-self-liberation. Self-control is not only enabled, but also harnessed and utilized by modern liberal democracies. But

counter to Adorno, the bank doesn't always win here, and specific analyses of concrete empirical deployments are more useful than broad, general value judgements – because this is no earthly fall from grace, but simply how life is and always has been.

In this counterplay of autonomy and heteronomy, the 'play' in playful technologies demarcates the boundary and measure for the success of its own instrumentalization as much as an unruly element that potentially escapes it. According to anthropologist Victor Turner, in pre-modern societies, spurts of play – or the 'liminal' – were safely contained (and thus instrumentalised) in ritual to ultimately reproduce social order. Only modern societies transformed such liminal play towards the 'liminoid': activities able to temporarily step out of, reflect on, and ultimately transform society. It remains to be seen whether today's ludification of culture will domesticate liminoid play back into the liminal, or open new liminoid spaces for transformation.

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QUEER DARKNESS
ZACH BLAS

In September 2011, as the Occupy Wall Street encampment at Zuccotti Park swarmed with protesters in Guy Fawkes masks popularized by the hacktivist group Anonymous, the New York City Police Department resurrected an 1845 law that deemed two or more people wearing masks in public illegal, unless a masquerade party was being thrown. The police failed to recognize, however, that a global masquerade was already under way. From Occupy and the Arab Spring to contemporary political philosophy and artistic practice, a particular politics of appearance is playing out today focused on obfuscation, imperceptibility, invisibility, and illegibility. The common enemy is representation, here defined as state-sponsored 'legitimizing' processes conducted by techniques of recognition standardization. Simply, representation is what makes something intelligible, visible, and classifiable on the state's terms. This is why cultural theorist McKenzie Wark clearly states, "All representation is false".

In this politics of the not-identifiable, what follows after the refusal of representation is varied: While Wark's alternative is the politics of the hack, virtuality, and expression, philosopher Giorgio Agamben's abandonment of representation and identity is found in the concept of whatever singularity, which he proclaims accurately describes the coming community of political revolt. Occupy's slogan of 'No Demands' also resists representational legitimation by withdrawing from political negotiation with the state. There is the Autonomist Marxist tradition of exodus and desertion, which Michael Hardt and Antonio Negri highlight with Herman Melville's character Bartleby, whose declaration 'I would prefer not to' is read as a refusal so absolute that Bartleby is reduced to pure passivity, a generic being, that is outside of classification. The art collective Bernadette Corporation's video on 'identity-less' protest is titled after the command that Bartleby undoubtedly follows - *Get Rid of Yourself*.

Such withdrawals harken to Hakim Bey's temporary autonomous zone as well as media theorists Alexander Galloway and Eugene Thacker's technological updating of TAZ with the tactics of nonexistence. While protest tactics to evade recognition, such as the black bloc and masked protest, are visually iconic to this politics, perhaps it is the writings of The Invisible Committee and Tiqqun, described as 'ultra-left' and 'pre-terrorist' by the French government, that best capture this general sentiment. In *The Coming Insurrection*, faceless actions and fictional acronyms are encouraged; '*Flee visibility. Turn anonymity into an offensive position*,' they write. In an earlier text "How Is It to Be Done?" they state, "I need to become anonymous. In order to be present. *The more I am anonymous*, *the more I am present*." In an earlier text, "The Cybernetic Hypothesis," they succinctly claim that "fog makes revolt possible." This varied political stance, if it is united at all, demonstrates a withdrawal from forms of recognition control as well as a refusal or antagonism toward becoming perceptible and intelligible to powers of domination. What is left is a presence that strives to be illegible.

These political desires coincide with global financial crisis, multiplying uprisings, and brutal police violence. This is an age that has been called Empire, Deleuzian Capitalism, The Fourth World War,

and digital and liquid capitalism, all emphasizing rapid, neoliberal flows, fluxes, and networks of protocological control, management, and informatic capture. This is Tiqqun's cybernetic capitalism, an imperial government where all life is networked, administrated, and programmable. Similarly, Galloway and Thacker have labeled the current century as an "era of universal standards of identification" by pointing toward technologies like genomics, biometrics, real-time tracking, and collaborative filters that bind identification with locatability. "Henceforth," they write, "the lived environment will be divided into identifiable zones and nonidentifiable zones, and nonidentifiables will be the shadowy new 'criminal' classes–those that do not identify." Such statements affirm that this politics of the imperceptible is an identity politics, so for those that celebrated the collapse of such ventures at the close of the 1990s, identity--or identification--politics are back (but, of course, they were never really gone). This all suggests twists and turns for queerness, which I will attend to shortly.

Notably, the perceptual tone to this politics is darkness. A general definition of darkness is the absence of visible light; its appearance black in color. In darkness, identification and classification become difficult, if impossible. The black bloc embodies such darkness, but there is also a pervasive, multifarious darkness casting its shadow across the intellectual spectrum. In speculative realism, a strand of continental philosophy, ontological darkness and dark vitalism figure as concepts that stress the ontological obscurantism of nature, a cosmic nihilism, at once terrifying, cold, and indifferent to the human, a darkness, which, at its root, is the product of men taking pleasure in the monstrosities of H.P. Lovecraft. It is a darkness that formally denies access, just as Graham Harman's objects, in his object-oriented philosophy, forever withdrawal from the world, so that they are never fully known. In contemporary art, Gregory Sholette has adapted the concept of dark matter to describe artistic production that remains invisible to the art world proper. In media theory, Alexander Galloway has written of a "dark Deleuzianism" as the flipside to rhizomatic cyber-utopianism. In his recent essay "Black Box, Black Bloc," Galloway charts the coterminous rise of cybernetics and black box technologies with invisible revolt tactics, like the black bloc. He writes, "Today, it is no longer a question of simply the enemy's black box but the black boxing of the self." This black boxing of the self - this politics of the imperceptible, invisible, nonidentifiable - is a withdrawal that is a darkening out or making illegible as an antagonistic refusal. Here, darkness becomes the shade of being-against.

Now, queerness also has its darkness. In his 2011 book *The Queer Art of Failure*, Jack Halberstam articulates a queer darkness through the writings of Daphne Brooks and the black mirror paintings of Monica Majoli. Although queer darkness might evoke the isolation, pain, unattainability, and horror of dark vitalism, it is directly coded as cultural, political, and social; queer darkness' horror is the stuff of failure and the miserable. Queerness teaches us that darkness has gendered, sexed, and raced dimensions, and therefore aligns more with Galloway's black boxing of the self. (Importantly, postcolonial and critical race theory have much to say on darkness and blackness, but for the purposes of this essay, I will only focus on queer theory's approach to darkness.) Halberstam writes, "darkness becomes a crucial part of a queer aesthetic… an aesthetics of opacity…an interpretative strategy…as well as a way of being in the world… the queer subject as shadow and shadowed seems to cast the construction of queerness as secondary to the primacy of heterosexual arrangements of gender and relationality, but in fact it comments upon the disruptive potential of shadow worlds." Queer darkness is the refusal to

cohere, to become legible, to see like a state; it also carefully attends to the relations of darkness and blackness. Queer darkness bursts forth from colonial rage, colored struggle, dissent in US slavery, and the decolonial project. Halberstam considers queer darkness as something that forms through particular subject positions, like the colonized and the slave, but also the punk, anti-social feminist, and butch woman. These subjects, dark for specific reasons, turn darkness into an opportunity for resistance, protest, and struggle.

Yet, if the politics of illegibility is both a refusal and a withdrawal, Halberstam introduces shadow feminisms to explain the subtractive element of queer darkness. A "weapon of the weak," shadow feminisms convey passivity or inaction, the removal of qualities, unraveling - an "art of unbecoming." There is a negativity at play, connected to the anti-social turn in queer theory, that is decidedly dark and shadowed. Halberstam cites the Caribbean novelist Jamaica Kincaid and the passive masochistic performances of Yoko Ono and Marina Abramovic as examples of such shadowed refusals that are withdrawals into a negative dismantling. Queer darkness is a "startling absence," a disappearance, the refusal to be.

If, in the past, queerness has invested in gaining visibility, why the unintuitive turn to illegibility and darkness, which seemingly evokes Leo Bersani's dreaded "gay absence" once again? While Nicholas de Villiers' new work on queer opacity traces tactics of illegibility practiced by queer figures throughout the 20th century, a recent study of facial recognition and sexual orientation presents a contemporary example that engages universal standards of identification and the potential black boxing of the self. *The Journal of Experimental Social Psychology* recently published a 2008 study conducted at Tufts University that tested people's ability to identify homosexual men from photos of their faces. Ninety faces were shown to ninety participants, and those tested proved remarkably accurate in their ability to recognize faces that had been classified as homosexual, even when exposed to the face for only 50 milliseconds. Arguably, this study further confirms and scientifically validates one of the processes of homosexual stereotyping, such as fag face and gay face.

Biometric facial recognition heightens the investment in the face as a site for ethics. Philosophers from Emmanuel Levinas to Judith Butler have argued that the human face is where ethical commitment calls out. Their writings suggest that the more visible and close-up the face, the more it ethnically implores. However, communications theorist Kelly Gates argues that biometric facial capture complicates this ethics because it empowers a regime of identification complicit with neoliberal governance. Thus, instead of making the face visible to the other in political struggle, it is now cloaked, hidden, black boxed. The biometric version of fag face appears to necessitate a queer darkening, a making illegible of the face. French philosophers Gilles Deleuze and Félix Guattari taught us not so long ago: "to the point that if human beings have a destiny, it is rather to escape the face, to dismantle the face and facialisations, to become imperceptible, to become clandestine [. . .] by strange true becomings that [. . .] make faciality traits themselves finally elude the organisation of the face." Yet, knowing the organisations of the face is crucial: "Know them, know your faces; it is the only way you will be able to dismantle them and draw your lines of flight." Deleuze and Guattari have sketched nothing less than an outline for the tactical uses of faces.

If queer darkness is a weapon, as Halberstam notes, then the face can be weaponized and biometrics can be used in antagonistic ways. Queer darkness turns the face into a force of refusal. In the wake of Anonymous and the black bloc, facelessness is a threat, hence the New York City law prohibiting masks. There are many examples of weaponizing the face in recent political protest and revolt, from the Zapatistas, who hide their faces so that they may be seen, to the female freedom fighters in the 1966 film The Battle of Algiers, who perform a terrorist drag by wearing their oppressors' clothes and faces in order to break into occupied territory. The artist Arthur Elsenaar has developed electro-facial choreography to liberate the expressive potentials of the face from what he views as the brain's tyrannical rule over the body. All these gestures powerfully resonate with the revolutionary fervor and name of the anarchist art group Black Mask. Weaponizing the face through obfuscation also has a queer and feminist dimension, from Latina feminist Gloria Anzaldua's writings on "making face" to the more recent pink-toned nonidentifiability of Bash Back!

In response to emerging studies that link successfully determining sexual orientation through rapid facial recognition techniques, the art group Queer Technologies is developing a *Facial Weaponization Suite*. The suite provides sets of masks for public protest, such as "collective masks" that allow you to wear the faces of many with a single mask. The Fag Face Collective Mask is generated from the biometric facial data of many gay men's faces. This facial data is gathered into a single three-dimensional surface; when brought together in 3D modelling software, the result is a mutated, alien facial mask that cannot be read or parsed by universal standards of identification. Like the black bloc, The Fag Face Collective Mask uses collectivity to evade individual detection. Although pink in color, the mask is surely dark in its refusal to abide by biometric facial identification and its simultaneous withdrawal from the being that has become all too knowable in cybernetic capitalism.

In Galloway's version of this dark politics, he states, "a practical nonexistence…[a] subtractive being…might be the only thing today that capitalism cannot eventually co-opt." For Galloway, this is "the purest form of love," a communization akin to Agamben's whatever community; for Halberstam, this is a celebration of failure. Might queer darkness be invested in both this love and failure? Does Queer Technologies' *Facial Weaponization Suite* locate the illegible, impenetrable face as a site for both? The Fag Face Collective Mask highlights both contemporary refusals of representation and the pleasure to withdrawal into a global masquerade of darkness.

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REMIX[ING] RE/APPROPRIATIONS
EDUARDO NAVAS

The 2009-10 exhibition *Re/Appropriations* at MEIAC, Badajoz, Spain, curated by Gustavo Romano, proposes that artists in networked culture find their creative potential in the appropriation, selection, and combination of pre-existing material on a meta-level - that of the re, or more specifically, Remix as a form of discourse. To this effect, Romano recontextualizes the artist as a 'redirector of information,' rather than a creator. This premise as the entry point for creative production at the beginning of the twenty-first century leads to a recurring question often posed to me on the popular awareness of Remix: "Remixing, as an act of combining material has been around for a long time, one could argue since symbolic language was conceived; so, what is so different about the elements of Remix explored during the first decades of the twenty-first century that make them unique from those in the past?"

First, it must be noted that such a question (even when framed rhetorically) is based on the assumption that the basic act of combining or recombining elements (whether it be ideas or actual forms already produced) appear to function somehow independently from, or at least able to transcend people's limitation within concrete parameters defined in material reality. In other words, when such a question is posed, it is assumed that individuals perform acts of recombination disregarding the forms of delivery (this is the inherent validity of the question posed because it presupposes that the acts of combining and recombining are conceptually and essentially the same since people developed symbolic language). There is certainly a school of thought that endorses this approach to media. Most recently Henry Jenkins argues that old media never dies, "what dies is simply the tools that we use to access media content" (2006: 13).

Upon closer reflection it becomes evident that it is the very material manifestation of cultural exchange itself that modifies how people not only perceive the world, but also how the world itself is actually reshaped based on the forms produced to represent it. Furthermore, new forms of representation implemented in media redefine the way people relate to criticality and creativity. This is possible because content is recycled in a feedback loop across all possible media. Consequently, the awareness of the growing efficiency of recycling based on emerging technologies, as it is commonly known among cultural critics who focus on postmodern thought, led to the consideration of 'originality' as a dated concept of modernism proper.

Along these lines, often cited examples in art that questioned originality by deliberately appropriating material during the first-half of the twentieth century can be found in the works of synthetic cubism, and dada, and in the second half in neo-dada, pop-art, and arte-povera among others. These movements thrived on demonstrating how cultural value already inherent in mass publications, disposable furniture, mundane objects, and a multiplicity of accessories could be recycled in direct reference to daily life, often with the purpose to create social commentary of some sort. This type of recycling eventually was a point of reaction for conceptual, performance, and video-based art during the 1960's and 70's - which stripped down the referencing of pre-existing

content from previous movements to focus in large part on ideas, process and the discourse of art itself. This tendency was global. Some well-known international examples from this period includes videos, installations, performances and conceptual works by artists such as Vito Acconci (U.S.), Laurie Anderson (U.S.), Eleanor Antin (U.S.), Willem Boshoff (ZA), Marcel Broothaers (BE), Lygia Clark (BR), León Ferrari (AR), Victor Grippo (AR), Wei Guangquing (CN), Ilya Kabakov (RU), Ana Lupas (RO), Irina Nakhova (RU), and Nam June-Paik (KR), among many others (Global Conceptualism 1999).

The growing popularity of recyclability as practiced by artists throughout the twentieth century led to considering creativity as a form of discourse among communities rather than an act by a single individual; during the last thirty years of the twentieth century, artists knew that their acknowledgment of the audience to complete the work reinvigorated art as a relevant vehicle for critical and aesthetical exploration. This shift has been literally remixed in new media practice at the beginning of the twenty-first century, very much according to how Romano deems the role of the artist as a type of 'redirector' (a remixer) of already existing elements of culture in the exhibition *Re/Appropriations*.

In brief, it is recycling of some form that is privileged in contemporary art practice and this observation is not exclusive to new media art, but affects all art specializations. Thus, it makes sense that *Re/Appropriations* is organized into five historically conscious sections that emphasize the 're' prefix as inherited from modern and postmodern practitioners. Selections under Re/Mixes are linked to collage and photomontage as well as film as defined by Eisenstein; works included in Re/Interpretations re-evaluate narratives similarly to a musician reading sheet music, thus making the specific performance (interpretation) unique; projects selected for Re/Engineering deliberately distort the content of a previous work often with the aim to create critical commentary; works in Re/Collections are contextualized in colonial terms, with the metaphor of a 'sailor' who navigates to explore and discover unknown territory with certain randomness, inevitably developing a vast archive of ever-growing information; and projects included in Re/Circulations comment on collaboration as a process of interconnectivity that repositions art practice from sequential to simultaneous, emphasizing the collapse of linearity and the rise of modularity. As evident, each section focuses on a strategy of re-cycling content to demonstrate how we function in a constant state of re-flection, of re-consideration and of Remix proper.

Romano's proposition of the artist as a type of redirector, admittedly, is specific to networked culture, and different from periods in art practice prior to the beginning of the twenty-first century because Remix as discourse enables artists to function in a state of constant information flow. Once global interconnectivity becomes possible, art practice is defined by digital and informational material that is recycled between two cultural layers of introductory and secondary implementation that, while previously in place in mass culture since the rise of modernity, were not as efficient in producing and reintroducing content. It is new media technology that makes the feedback loop between these two layers extremely efficient. I call these layers The Framework of Remix. The first layer is at play when something is introduced in culture; the second when that which is introduced attains cultural value and is then remixed and reintroduced to attain further cultural value. A historical example of this recycling is the invention of photography during the 1830's: the photo camera, in the beginning, sampled from the world. However, people did not think in

terms of recycling at this stage, but rather of taking original images from the world. Eventually a set of images was accumulated which came to be reused in the form of photomontage around the 1920's. At this point material that already had attained cultural value in terms of its original introduction was appropriated to develop social or critical commentary, based on the materials' original authority and understanding as cultural objects. In music, similarly, as recording devices were developed for consumers, sampling principles became more popular culminating in music remixes during the 1970's and 80's, specifically in the United States, but eventually spreading as a global activity. This practice currently has a major influence in digital media, arguably best encapsulated in the common use of Photoshop.

The type of recycling currently part of networked media, and the increase of the information market, then, also affects the artist's relation to creative production. In this regard, a key element of conceptual art during the 1970's was to find ways to dematerialize the object of art; in new media art practice, however, the object is already dematerialized. New media artists always begin with bits of information produced with a computer; this means that they have to strategize on how to materialize deliberately an object by acknowledging its default state as bits of information, whether it is as Internet art, gallery installations, or experimental films and videos. This is what we find in the work of artists such as Brian Mackern, who in 2003 put his laptop computer on auction, playfully calling it Maquina Podrida (Rotten Machine). The computer, which he used to produce work throughout the 1990's functions not as an actual work of art, but as the tool used to produce works of art. The art works themselves, however, were not directly sold, even though files of many of Mackern's projects are archived in the computer's hard drive. What this gesture demonstrates is the solidification in art towards constant negotiation among artists, institutions and their audience, once information-based production begins to be assimilated by art institutions. Máquina Podrida exposes how the dematerialization of the object as explored in conceptualism has become a default mode in new media practice.

The contemporary work of art's default mode informs Romano's proposition of the contemporary artist as a type of 'redirector,' which means that value during modernity and after is found in the quality of choice within the mass amount of material being produced. Artists, as already alluded to above, began to act along these lines long before such attitude was adopted in popular networked culture. Perhaps the most over-cited example of this shift of redirecting how an object is perceived is the disinterested approach to art production by Marcel Duchamp, who chose a urinal with supposed indifference to be presented as a proper art object during the Armory Exhibition in 1917. Duchamp, as is commonly known in art practice, selected the mass produced object as opposed to 'creating' one with his own hands. This gesture shifted the discourse of art to focus on the selective process that informs art as a discourse on various levels: from the production by the artist in the studio to the institution that supports the artist in a highly selective capitalist market; such relations have since then become conventional.

The selections in Re/Appropriations therefore extend and reposition the Duchampian strategy to produce work that cannot be fully assimilated as a proper art object in a capitalist system. This conundrum is the reason why new media artists often find themselves unable 'to sell' (in a conventional sense) the projects to the museum; instead, they sign agreements to have the works archived as part of the museum's collection. This also marginalizes works of art such as the

ones included in Re/Appropriations from a more object based market because such works are developed celebrating the fact that no original or unique object is produced; the only validation is the discourse that the projects produce when the user is engaged. This challenge remains unresolved in art practice. More importantly, this shift in production is not exclusive to art, but is also relevant across culture, as the music, newspaper and television industries constantly struggle to find ways to monetize the legal and illegal dissemination of their content, which in networked culture take the form of constantly flowing information. In this way, the separation that in the past gave the art institution a sense of autonomy becomes openly linked to other areas of culture, because the same questions of communication and cultural exchange become relevant in the mainstream as well as elite circles. Understanding the flow between the first and second layers within the Framework of Remix as defined above is key for a critically engaged view of rapid cultural changes. From this stance, Re/Appropriations is a node - a point of entry to the complexities that support not only contemporary art practice, but also networked culture as a whole.

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There are quite a few publications at this point that trace the internationalization of art practice during the second half of the twentieth century. For an important account of this development see the corresponding catalog for the exhibition *Global Conceptualism: Points of Origins, 1950's-1980's*, organized at the Queens Museum of Art, NYC in 1999.

SALVAGE
JENNIFER GABRYS

If depletion design is a call to respond to conditions of exhaustion, from the material to the political, then it seems likely that salvage may be one of the necessary modalities of a depletion design practice.

Salvaging is a practice for engaging with the used up, the discarded, and the apparently worthless, with an eye to transforming what is exhausted and wasted into renewed resources. Salvage may consist of repurposing objects, recycling some elements and discarding others; or reinforcing materials and rescuing parts that are momentarily resonant and that operate in some way that has yet to be imagined.

Yet the process of salvage is not a simple return to making useable that which is disused. Instead, to make available and to transform is in many ways a process of engaging with the conditions that led to disrepair.

Within the context of electronic waste, a topic I have researched in depth in *Digital Rubbish: A Natural History of Electronics*, salvage practices encompass the toxic materialities, hazardous working conditions, and peripheral geographies where electronics are shipped and dismantled for redistribution. In this sense, salvage practices are not without consequence, and often salvage is a job taken up by people with less economic privilege, and for whom repairing and working with discards is a necessary strategy for survival.

Salvage as a practice is then situated within material economies and ecologies of recuperation, and so salvage practices might involve not just transforming dead technologies, but also recuperating and repurposing the material or political processes, cultural and economic arrangements, or technological imaginaries and relations that are embedded within these devices.

Remainders and the Politics of Salvage

Salvaging as a practice also raises questions about what is left behind to salvage. Electronic waste generates a whole range of remainders, from physically defunct machines, to pollution in groundwater, soil and bodies, as well as reams of inaccessible information and obsolete software.

Many of these types of remainder do not easily transform into salvaging practices. The waste that electronics leave behind may be unruly, toxic or not easily recuperated into usable form. Even with extensive attempts to salvage, recuperate, and recycle waste, remainders resurface, thereby challenging sustainable development models that hold out for the flawless reintegration of wasted materials for renewed production.

Much of the rhetoric around waste management and recycling assumes that remainders may be recuperated in some way. But electronics do not simply dissolve into raw materials ready to take on a second life. Instead, they give rise to irreversible effects and hazardous remainders.

Waste pickers who salvage the remains of dead electronics recycle these devices into various forms of raw materials and reusable parts. But in the process of salvaging, the expanded materialities of these devices become detectable in the form of contaminated environments and bodies.

Salvage practices provoke us to ask how material processes unfold, and what possibilities do they contain for ongoing recuperation and transformation. What material remainders are generative of salvage practices? What is inassimilable? Who is involved in salvage practices? And how do salvaged materials re-enter economies and ecologies of exchange?

Rather than approach salvage as a practice for ensuring the seamless reintegration of materials into future development cycles, I suggest that it might be more productive to consider the complexity of remainders within material processes. Remainders may in fact point toward the ways in which the easy recycling of materials can be complicated by the inability to return things to cycles of economic production. Does the intractability of remainders signal the exhaustion of materials, or does it suggest that exhaustion extends as much to the economic and material processes that cast objects through strange loops of materialities imagined to be free of environmental or political consequence?

Poetics of Salvage

There is a politics of salvage, a politics of remainder; but as Walter Benjamin also reminds, there is a poetics of salvage, a poetics of remainder. In addition to salvaging the material residues and peripheral geographies connected to electronic waste, for instance, it is also possible to salvage these more mythic remainders from obsolete devices.

Salvaging is at once a poetic and political activity; it rematerializes the sets of material relations that enabled the manufacture, consumption, and movement of goods in the first place. Yet it is also an act of imagining, of eliciting stories that may have been buried in the everydayness of objects.

In this context, working with remainders can never be a matter of simple recuperation. In fact, Benjamin's salvage practices made use of archives and fossils as waste from the past that could be recycled to make available unexpected narratives - a form of ragpicking. The processes of picking through and digging up, sifting and reworking remainders may be a way of transforming dead matter by generating new narratives about the life and death of these materials.

Salvage in this sense does not deal only with the apparently raw materiality of objects, but also can be a way to recast devices through alternative economies of exchange, tales of use or disuse, political encounters, or hybrid networks.

Salvage Programs

Some of the most compelling forms of depletion design then attend not simply to a material or sculptural form of remaking defunct objects, but instead consider the wider material processes and networks through which salvaged materials circulate.

In my discussion of electronic archives in Digital Rubbish, I take up Friedrich Kittler's suggestion that exhibitions may function as a kind of 'salvage program' and make a lateral suggestion that

salvage programs may be a provocative way to approach the reworking of electronic debris - in all its modalities.

Salvage is a distinctly waste-based operation. It requires sifting through and continually reevaluating the possible use and value of electronic material. But with each act of salvage, the version changes, so that translation and transformation become important operations within the salvaging of digital materialities.

In these salvage programs, electronic materials, for instance, become more thoroughly mutable. What if electronic materialities were understood this way from the beginning? What if salvage practices were built-in as openings and possibilities for adaptation within the design of devices and network ecologies? If continual refurbishment, appropriation and re-versioning were part of the materializing and re-materializing of material processes, could a more responsible set of material politics and practices emerge?

Salvage as a practice and program that works through the materialities and conditions of exhaustion indicates that there may still be much work to be done in developing new modes of depletion design that rework not just the raw matter of discarded objects, but also that recast the possibilities for salvage practices to articulate transformative relations within our material-political lives.

Recommended Readings

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SOFTWARE
LEV MANOVICH

Academics, media artists, and journalists have been writing extensively about 'new media' since the early 1990s. In many of these discussions, a single term came to stand for the whole set of new technologies, new expressive and communicative possibilities, and new forms of community and sociality which were developing around computers and internet. The term was 'digital'. It received its official seal of approval, so to speak, in 1996 when the director of MIT Media Lab Nicholas Negroponte collected his Wired columns into the book Being Digital. Fifteen years later, this term still dominates both popular and academic understanding of what new media is about. When I did Google searches for 'digital,' 'interactive,' and 'multimedia' on March 2, 2011, the first search returned 1,390,000,000 results; the other two only returned between 276,000,000 and 456,000,000 each. Doing searches on Google Scholar produced similar results: 3,830,000 for 'digital', 2,270,000 for 'interactive', 1,900,000 for 'multimedia'. Based on these numbers, Negroponte appears to be right.

I don't need to convince anybody today about the transformative effects internet, participatory media, mobile computing already had on human culture and society, including creation, sharing, and access to media artifacts. What I do want to point out is the centrality of another element of IT which until recently received less theoretical attention in defining what 'media' is. This element is *software*.

None of the new media authoring and editing techniques we associate with computers is simply a result of media 'being digital'. The new ways of media access, distribution, analysis, generation and manipulation are all due to software. Which means that are they the result of the particular choices made by individuals, companies, and consortiums who develop software. Some of these choices concern basic principles and protocols which govern modern computing environment: for instance, 'cut and paste' commands built into all software running under GUI (or newer media user interfaces such as iOS), or one-way hyperlinks as implemented in web technology. Other choices are specific to particular types of software (for instance, illustration applications) or individual software packages.

If particular software techniques or interface metaphors which appear in one particular application become popular with its users, often we would soon see them in other applications. For example, after Flickr added 'tag clouds' to its interface, they soon become a standard feature of numerous web sites. The appearance of particular techniques in applications can also be traced to the economics of software industry – for instance, when one software company buys another company, it may merge its existing package with the software from the company it bought.

All these software mutations and 'new species' of software techniques are social in a sense that they don't simply come from individual minds or from some 'essential' properties of a digital computer or a computer network. They come from software developed by groups of people and marketed to large numbers of users.

In short: the techniques and the conventions of computer metamedium and all the tools available in software applications are not the the result of a technological change from 'analog' to 'digital' media. They are the result of software which is constantly evolving and which is a subject to market forces and constraints.

This means that the terms 'digital media' and 'new media' do not capture very well the uniqueness of the 'digital revolution'. Why? Because all the new qualities of 'digital media' are not situated 'inside' the media objects. Rather, they all exist 'outside' – as commands and techniques of media viewers, email clients, animation, compositing, and editing applications, game engines, and all other software 'species'. Thus, while digital representation makes it possible for computers to work with images, text, forms, sounds and other media types in principle, it is the software which determines what we can do with them. So while we are indeed 'being digital,' the actual *forms* of this 'being' come from software.

Accepting the centrality of software puts in question a fundamental concept of modern aesthetic and media theory – that of 'properties of a medium'. What does it mean to refer to a 'digital medium' as having 'properties'? For example, is it meaningful to talk about unique properties of digital photographs, or electronic texts, or web sites, or computer games?

Or, what about the most basic media types – text, images, video, sound, maps? Obviously, these media types have different representational and expressive capabilities; they can produce different emotional effects; they are processed by different networks of neurons; and they also likely correspond to different types of mental processes and mental representations. These differences have been discussed for thousand of years – from ancient philosophy to classical aesthetic theory to modern art theory and contemporary neuroscience. For example, sound, video and animation can represent temporal processes, language can be used to specify logical relations; and so on. Software did not change much here.

What it did fundamentally change, however, is how concrete instances of such media types (and their various combinations) function in practice. The result is that any such instance lost much of its unique identity. What as users we experience as particular properties of a piece of media come from software used to create, edit, present and access this content.

On the one hand, interactive software adds a new set of capabilities shared by all these media types: editing by selecting discrete parts, separation between data structure and its display, hyperlinking, visualization, searchibility, findability, etc.) On the other hand, when we are dealing with a particular digital cultural object, its 'properties' can vary dramatically depending on the software application which we use to interact with this object.

Let's look at one example - a photograph. In the analog era, once a photograph was printed, whatever this photograph represented/expressed was contained in this print. Looking at this photograph at home or in an exhibition did not make any difference. Certainly, a photographer could produce a different print with a higher contrast and in this way change the content of the origina image – but this required creating a whole new physical object (i.e., a new photographic print). Now, lets consider a digital photograph. We can capture a photo with a dedicated digital camera

or a mobile phone, we scan it from an old magazine, we download it from an online archive, etc. – this part does not matter. In all cases we will end with a digital file which contains an array of pixel color values, and a file header which may typically specify image dimensions, information about the camera and shot conditions (such as exposure) and other metadata. In other words, we end up with what is normally called 'digital media' – a file containing numbers which mean something to us. (The actual file formats may be much more complex, but the description I provided captures the essential concepts.)

However, unless you are a programmer, you never directly deal with these numbers – instead, you interact with digital media files through some application software. And here comes the crucial part. *Depending on which software you use to access it, what you can do with the same digital file can change dramatically.* Email software on your phone may simply display this photo – and nothing else. Free media viewers/players which runs on desktops or over the web usually give you more functions. For instance, a desktop version of Google's Picasa includes crop, auto color, red eye reduction, variety of filters (soft focus, glow, etc.) and a number of other functions. It can also display the same photo as color or black and white without any changes to the file itself. It also allows you to zoom into the photo many times examining its details in way which my mobile phone software can't. Finally, if I open the same photo in professional application such as Photoshop, I can do much much more. For instance, I can instruct Photoshop to combine the photo with many others, to replace certain colors, to, make visible its linear structure by running edge detection filter, to blur it in a dozen of different ways, and so on.

As this example illustrates, depending on the software I am using, the 'properties' of a media object can change dramatically. Exactly the same file with the same contents can take on a variety of identities depending on the software used by a user.

What does this finding mean in relation to the persisting primacy of the term 'digital' in understanding new media? Let me answer this as clear and direct as I can. *There is no such thing as 'digital media'. There is only software* – as applied to media data (or 'content'.)

To rephrase: for users who can only interact with media content through application software, 'digital media' does not have any unique properties by itself. What used to be 'properties of a medium' are now operations and affordances defined by software.

If you want to escape our prison 'prison-house' of software – or at least better understand what media is today – stop downloading Apps created by others. Instead, learn to program – and teach it to your students.

SOUL WORK
FRANCO 'BIFO' BERARDI

Semiocapitalism, the production and exchange of semiotic materials for capitalist production, has always exploited the soul, as a productive force and as a market place. But the soul is much more unpredictable than the muscular workforce which was at work in the assembly line. In the years of the Prozac economy the soul was happy to be exploited. But this could not last forever. Soul troubles first appeared in the last year of the dotcom decade, when the techno-apocalypse was announced under the name of millennium bug. The social imagination was so charged with apocalyptic expectations that the myth of the global techno-crash created a thrilling wave all around the world. Nothing happened in the millennium night, but the global psyche teetered on the brink of an abyss.

As far as concerns the technical transformations introduced by the digitalization of the productive cycle, the essential point is not the lost of regularity of the labor relation, which, after all, has always been precarious notwithstanding the legal regulations, but the dissolution of the person as active productive agent, as labor power. We have to look at the cyberspace of global production as an immense expanse of deperson alized human time. Info-labor, the provision of time for the elaboration and the recom bination of segments of info-commodities, is the extreme point of arrival of the process of the abstraction from concrete activities that Marx analyzed as a tendency inscribed in the capital-labor relation.

The process of abstraction of labor has progressively stripped labor time of every concrete and individual particularity. The atom of time of which Marx speaks is the minimal unit of productive labor. But in industrial production, abstract labor time was impersonated by a physical and juridical bearer, embodied in a worker in flesh and bone, with a certified and political identity. Naturally capital did not purchase a personal disposition, but the time for which the workers were its bearers. But if capital wanted to dispose of the necessary time for its valorization, it was indispensable to hire a human being, and therefore dealing with his/her physical weaknesses, maladies, and human rights, and facing trade unions and the political demands of which the human was a bearer.

When we move into the sphere of info-labor there is no longer a need to buy the availability of a person for eight hours a day indefinitely. Capital no longer recruits people, but buys packets of time, separated from their interchangeable and occasional bearers. In the net economy, flexibility has evolved into a form of fractaliza tion of work. Fractalization means the modular and recombinant frag mentation of the time of activity. The worker no longer exists as a person. He or she is only an interchangeable producer of micro-fragments of recombinant semiosis that enter into the continuous flux of the Net.

Capital no longer pays for the availability of a worker to be exploited for a long period of time; it no longer pays a salary that covers the entire range of economic needs of a person who works. The worker (a machine endowed with a brain that can be used for fragments of time) is paid for

his or her occasional, temporary services. Work time is fragmented and cellularized. Cells of time are for sale on the Net and businesses can buy as much as they want without being obligated in any way in the social protection of the worker. Depersonalized time has become the real agent of the process of val orization, and depersonalized time has no rights, nor any demands. It can only be either available or unavailable, but the alternative is purely theoretical because the physical body despite not being a legally recognized person, still has to buy food and pay rent.

The recombining machine liquefies the time necessary to produce the info-commodity. The human machine is there, pulsating and available, like a brain-sprawl in waiting. The extension of time is meticulously cellularized: cells of productive time can be mobilized in punctual, casual and fragmentary forms. The recombination of these fragments is auto matically realized in the network. The mobile phone is the tool that makes possible the connection between the needs of semio-capital and the mobilization of the living labor of cyberspace. The ringtone of the mobile phone calls the workers to reconnect their abstract time to the reticular flux.

In this new dimension of labor people do not have any right over the time of which they are formally the propri etors, but are effectively expropriated. That time does not really belong to them, because it is separated from the social existence of the people who make it available to the recombinative cyber-productive circuit. The time of work is fractalized, reduced to minimal fragments that can be reassembled, and the fractalization makes it possible for capital to con stantly find the conditions of the minimal salary. Fractalized work can punctually rebel, but this does not set into motion any wave of struggle. For struggles to form a cycle, there must be a spatial proximity of the bodies of labor and an existential temporal continuity. Without this proximity and this continuity, we lack the conditions for the cellularized bodies to become community. Behaviors can only become a wave when there is a continuous prox imity in time that info-labor no longer allows.

Cognitive activity has always been the basis of all human production, even that of a more mechanical type. There is no process of human labor that does not imply an exercise of intelligence. But today, cognitive capacity is becoming the essential productive resource. In the sphere of industrial labor, mind was put to work as a repetitive automatism, the physiological support of muscular movement. Today the mind is at work in many varying ways, because language and relations are changing continuously. The subsumption of the mind in the process of capitalist valorization leads therefore to a true mutation. The conscious and sensitive organism is submitted to a competitive pressure, to an acceleration of stimuli, to a constant attentive stress. As a consequence, the mental atmosphere, the info-sphere in which the mind is formed and enters into relations with other minds, becomes a psychopathogenic atmosphere. To understand semio-capital's infinite game of mirrors we must outline a new disciplinary field, delimited by three aspects: the critique of political economy of connective intelligence; the semiology of linguistic-economic fluxes; the psychochemistry of the info-sphere that studying the psychopathological effects and mental exploitation and of the info-sphere acceleration.

In the connected world, the retroactive loops of general systems the ory are fused with the dynamic logic of biogenetics in a post-human vision of digital production. Human minds and flesh are integrated with digital circuits thanks to interfaces of acceleration and simplification: a model

of bio-info production is emerging that produces semiotic artifacts with the capacity for the auto-replication of living systems. Once fully operative, the digital nervous system can be rapidly installed in every form of organization. This means that only apparently companies like Microsoft concern themselves with software, products and services. In reality, the hidden finality of software production is the wiring of the human mind into a network continuum of the cybernetic type, destined to structure the fluxes of dig ital information by means of the nervous system of all the key institutions of contemporary life. Cybernetics finally becomes life.

Neoliberal culture has injected into the social brain a constant stimulus towards competition and the technical system of the digital network has rendered possible an intensification of info-stimuli, transmitted from the social brain to individual brains. This acceleration of stimuli is a pathogenic factor that has wide ranging effects in society. Economic competition and digital intensification of info-stimuli, combined together, induce a state of permanent electrocution that flows into a wide spread pathology which manifests itself either in the panic syndrome or in attention disorders.

Mapping the psychopathology of social relations is crucial if we want to understand the semio-capital as a process encompassing economy, finance and language. The social mind is invested by semiotic fluxes that follow an extra-semiotic principle: the principle of economic competition, the principle of maximum development. Since capitalism is wired into the social brain, a psychotic meme of acceleration acts as pathological agent: the organism is drawn into a chaosmic spasme (le spasme chaosmique of which Guattari wrote in his las tbook, *Chaosmosis*) until collapse.

What are the consequences of this acceleration on the human mind, on the human body? Think to the capacity of conscious processing, to the capacity for affective assimilation of signs and events by conscious and sensitive organism. The digital nervous system incorporates itself progressively in the organic nervous system, in the circuit of human communication, and re-codifies it according to its operational lines and according to its own speed. But in order to fulfill this transformation, the body-mind must pass through an infernal mutation, that is now developing in the history of the world. Neither the conceptual instruments of political economy nor the instruments of techno logical analysis are sufficient to understand and analyze this process. The process of production becomes semiotic and the formation of the digital nervous system co-involves and enervates the mind, the social psyche, desires and hopes, fears and imag inings. Therefore if we want to analyze these productive transformations, we must link semiotic production, with linguistic and cognitive mutations.

Look at what is happening nowadays, look at the Great Depression 2.0. The crash in the global economy is not only the effect of the end of the financial bubble. It is also and mainly the effect of the burst of the work bubble. We have been working too much during the last five centuries. This is the simple truth. Working so much has implied an abandonment of vital functions of the social environment, has implied a commodification of language, affection, teaching, therapy and self-care. Society does not need more work, more jobs, or more competition. On the contrary, we need a huge cutback in work-time, a huge liberation of life from the social factory, in order to remake the fabric of social relationships. Ending the linkage between work and revenue will make possible a huge release of energy for social tasks that can no longer be conceived as a part of the economy and should create new forms of life.

As demand shrinks and factories close people suffer from the lack of money and cannot buy everyday necessities. This is a vicious circle that economists know very well but are completely unable to break because it is the double bind that economy is doomed to feed. The double bind of overproduction cannot be solved by economic means but only by an anthropological shift, by the abandonment of the economic framework of revenue in exchange of work. We simultaneously have an excess of value and a shrinking of demand. A process of redistribution of wealth is urgently needed. The idea that revenue has to be the reward of a performance is a dogma we must absolutely get rid of. Every person has the right to receive the amount of money that is needed for survival. And work has nothing to do with this. Salary is not a natural thing but the product of cultural moulding of the social sphere: linking survival and subordination to the process of exploitation was a necessity of capitalist growth. Now we need to allow people to unfold their knowledge, intelligence, and affect. This is the wealth of today, not compulsive useless labour. Until the majority of mankind are freed from the linkage of revenue and work, misery and war will be the rule of social relationships.

Preceding and in parallel with the movements of 1968, Italian operaismo brought to light, in an original manner through its analytic approach, this necessary inversion of perspective at the end of the 1960s (Mario Tronti, Raniero Panzieri, Toni Negri, Romano Alquati). I prefer to speak of this stream of thought as "compositionism', due to the fact that its essential theoretical contribution consists in the reformulation of the problem of political organization in terms of social composition. Compositionism abandons the Leninist notion of the Party as collective intellectual and leaves open the notion of the intellectual itself, by proposing a re-examination of the Marxian concept of 'General Intellect. At the end of the century, thanks to digital technologies and the creation of the global telematic network, the general social process is redefined by the General Intellect and the Leninist conception of the party definitively abandons the stage. Even the Gramscian notion of the organic intellectual loses coherence since it is based on the adherence of intellectuals to an ideology, while what counts now is the formation of a new social concatenation, which we can call the cognitariat, representing the social subjectivity of the General Intellect.

From Seattle onwards a movement emerged that aims at the social, epistemic and technological recomposition of cognitive labor. Is it possible to have a self-organization of scientists that is founded on the autonomy of science from power? This is no longer a concern for a small group of nuclear physicists, but for millions and millions of workers in science and technology, in administration, in education and therapy. Only the autonomy of science from power can deconstruct the chain of automatisms in which capitalism fortressed itself. This is no longer a concern for a small group of nuclear physicists, but for millions and millions of workers in science and technology, in administration, in education and therapy.

I do not think that freeware and open source are outside the sphere of capitalism. Similarly I do not think that the worker's collective strike and self-organization in the old Fordist factory was outside the sphere of capitalism. Nothing is outside the sphere of capitalism, because capitalism is not a dialectical totality suited to being overcome (aufgehoben) by a new totality like communism, but a cognitive framework of social activity, a semiotic frame embedded in the social psyche and in the human techne. Refusal of work, temporary autonomous zones, open source and freeware, all this is not the new totality, it is the dynamic recombination allowing people to

find their space of autonomy, and push capitalism towards progressive innovation. Recombining does not mean to subvert or to overthrow, nor to bring to the surface a hidden social authenticity, but rather means assembling elements of knowledge according to criteria other than those of profit and the accumulation of value. It is no longer a case of constructing forms of political representation but of giving form to processes of knowledge, and of technical and productive concatenation based on epistemological models that are autonomous of profit and instead motivated by their social utility.

THE SPAM OF THE EARTH
HITO STEYERL

Dense clusters of radio waves leave our planet every second. Our letters and snapshots, intimate and official communications, TV broadcasts and text messages drift away from earth in rings, a tectonic architecture of the desires and fears of our times (Phillips 2009). In a few hundred thousand years, extraterrestrial forms of intelligence may incredulously sift through our wireless communications. But imagine the perplexity of those creatures when they actually look at the material. Because a huge percentage of the pictures inadvertently sent off into deep space is actually spam. Any archaeologist, forensic, or historian - in this world or another - will look at it as our legacy and our likeness, a true portrait of our times and ourselves. Imagine a human reconstruction somehow made from this digital rubble. Chances are, it would look like image spam.

Image spam is one of the many dark matters of the digital world; spam tries to avoid detection by filters by presenting its message as an image file. An inordinate amount of these images floats around the globe, desperately vying for human attention. The number of spam emails sent per day is at roughly 250 billion (as per 2010). The total amount of image-spam has varied considerably over the years, but in 2007, image spam accounted for 35 percent of all spam messages and took up 70 percent of bandwidth bulge. (To avoid misunderstandings, most image spam shows text, not pictures.) They advertise pharmaceuticals, replica items, body enhancements, penny stocks, and degrees. According to the pictures dispersed via image spam, humanity consists of scantily dressed degree-holders with jolly smiles enhanced by orthodontic braces.

Image spam is our message to the future. Instead of a modernist space capsule showing a woman and man on the outside - a family of 'man' - our contemporary dispatch to the universe is image spam showing enhanced advertisement mannequins. This is similar to the golden plaques on the Pioneer space capsules launched in 1972 and 1973, which depicted a white woman and a white man, with the woman's genitals omitted. Because of the criticism directed at the relative nudity of the human figures, subsequent plaques showed only the human silhouettes. It will be at least forty thousand years until the capsule could potentially deliver this message. And this is how the universe will see us; it is perhaps even how it sees us now.

In terms of sheer quantity, image spam outnumbers the human population by far. It's formed a silent majority, indeed. But of what? Who are the people portrayed in this type of accelerated advertisement? And what could their images tell potential extraterrestrial recipients about contemporary humanity? From the perspective of image spam, people are improvable, or, as Hegel put it, perfectible. They are imagined to be potentially 'flawless,' which in this context means horny, super skinny, armed with recession-proof college degrees, and always on time for their service jobs, courtesy of their replica watches. This is the contemporary family of men and women: a bunch of people on knockoff antidepressants, fitted with enhanced body parts. They are the dream team of hyper-capitalism.

But is this how we really look? Well, no. Image spam might tell us a lot about 'ideal' humans, but not by showing actual humans: quite the contrary. The models in image spam are photochopped replicas, too improved to be true. A reserve army of digitally enhanced creatures who resemble the minor demons and angels of mystic speculation, luring, pushing and blackmailing people into the profane rapture of consumption.

Image spam is addressed to people who do not look like those in the ads: they neither are skinny nor have recession-proof degrees. They are those whose organic substance is far from perfect from a neoliberal point of view. People who might open their inboxes every day waiting for a miracle, or just a tiny sign, a rainbow at the other end of permanent crisis and hardship. Image spam is addressed to the vast majority of humankind, but it does not show them. It does not represent those who are considered expendable and superfluous - just like spam itself; it speaks to them.

The image of humanity articulated in image spam thus has actually nothing to do with it. On the contrary, it is an accurate portrayal of what humanity is actually not. It is a negative image.

Mimicry and Enchantment

Why is this? There is an obvious reason, which is too well known to elaborate on here: images trigger mimetic desires and make people want to become like the products represented in them. In this view, hegemony infiltrates everyday culture and spreads its values by way of mundane representation. Image spam is thus interpreted as a tool for the production of bodies, and ultimately ends up creating a culture stretched between bulimia, steroid overdose, and personal bankruptcy. This perspective - one of more traditional Cultural Studies - views image spam as an instrument of coercive persuasion as well as of insidious seduction, and leads to the oblivious pleasures of surrendering to both. (Or it may more likely be analyzed as partially self-defeating and contradictory.)

But what if image spam were actually much more than a tool of ideological and affective indoctrination? What if actual people - the imperfect and nonhorny ones - were not excluded from spam advertisements because of their assumed deficiencies but had actually chosen to desert this kind of portrayal? What if image spam thus became a record of a widespread refusal, a withdrawal of people from representation?

What do I mean by this? For a certain time already I have noted that many people have started actively avoiding photographic or moving-image representations, surreptitiously taking their distance from the lenses of cameras. Whether it's camera-free zones in gated communities or elitist techno clubs, someone's declining interviews, Greek anarchists smashing cameras, or looters destroying LCD TVs, people have started to actively, and passively, refuse constantly being monitored, recorded, identified, photographed, scanned, and taped. Within a fully immersive media landscape, pictorial representation - which was seen as a prerogative and a political privilege for a long time - feels more like a threat.

There are many reasons for this. The numbing presence of trash talk and game shows has led to a situation in which TV has become a medium inextricably linked to the parading and ridiculing of lower classes. Protagonists are violently made over and subjected to countless invasive ordeals,

confessions, inquiries, and assessments. Morning TV is the contemporary equivalent to a torture chamber - including the guilty pleasures of torturers, spectators, and, in many cases, also the tortured themselves.

Additionally, in mainstream media people are often caught in the act of vanishing, whether it be in life-threatening situations, extreme emergency and peril, warfare and disaster, or in the constant stream of live broadcasts from zones of conflict around the world. If people aren't trapped within natural or man-made disasters, they seem to physically vanish, as anorexic beauty standards imply. People are emaciated or made to shrink or downsize. Dieting is obviously the metonymic equivalent to an economic recession, which has become a permanent reality and caused substantial material losses. This recession is coupled with an intellectual regression, which has become a dogma within all but a very few mainstream media outlets. As intelligence doesn't simply melt away via starvation, derision and rancor largely manage to keep it away from the grounds of mainstream representation. (This applies unevenly around the world.)

Thus the zone of corporate representation is largely one of exception, which seems dangerous to enter: you may be derided, tested, stressed, or even starved or killed. Rather than representing people it exemplifies the vanishing of the people: it's gradual disappearance. And why wouldn't the people be vanishing, given the countless acts of aggression and invasion performed against them in mainstream media, but also in reality? In the 1990s, people from former Yugoslavia would say that the former anti-fascist slogan of the Second World War had be turned upside down: 'Death to fascism, freedom to the people' had been transformed by nationalists from all sides into, 'Death to the people, freedom to fascism'. Who could actually withstand such an onslaught without the desire to escape this visual territory of threat and constant exposure?

Additionally, social media and cell-phone cameras have created a zone of mutual mass-surveillance, which adds to the ubiquitous urban networks of control, such as CCTV, cell -phone GPS tracking and face-recognition software. On top of institutional surveillance, people are now also routinely surveilling each other by taking countless pictures and publishing them in almost real time. The social control associated with these practices of horizontal representation has become quite influential. Employers google reputations of job candidates; social media and blogs become halls of shame and malevolent gossip. The top-down cultural hegemony exercised by advertisement and corporate media is supplemented by a down-down regime of (mutual) self-control and visual self-disciplining, which is even harder to dislocate than earlier regimes of representation. This goes along with substantial shifts in modes of self-production. Hegemony is increasingly internalized, along with the pressure to conform and perform, as is the pressure to represent and be represented.

Warhol's prediction that everybody would be world-famous for fifteen minutes had become true long ago. Now many people want the contrary: to be invisible, if only for fifteen minutes. Even fifteen seconds would be great. We entered an era of mass-paparazzi, of the peak-o-sphere and exhibitionist voyeurism. The flare of photographic flashlights turns people into victims, celebrities, or both. As we register at cash tills, ATMs, and other checkpoints—as our cell phones reveal our slightest movements and our snapshots are tagged with GPS coordinates—we end up not exactly amused to death but represented to pieces (Massumi 2002).

Walkout

This is why many people by now walk away from visual representation. Their instincts (and their intelligence) tell them that photographic or moving images are dangerous devices of capture: of time, affect, productive forces, and subjectivity. They can jail you or shame you forever; they can trap you in hardware monopolies and conversion conundrums, and, moreover, once these images are online they will never be deleted again. Ever been photographed naked? Congratulations—you're immortal. This image will survive you and your offspring, prove more resilient than even the sturdiest of mummies, and is already traveling into deep space, waiting to greet the aliens.

The old magic fear of cameras is thus reincarnated in the world of digital natives. But in this environment, cameras do not take away your soul -digital natives replaced this with iPhones- but drain away your life. They actively make you disappear, shrink, and render you naked, in desperate need of orthodontic surgery. In fact, it is a misunderstanding that cameras are tools of representation; they are at present tools of disappearance. The more people are represented the less is left of them in reality.

To return to the example of image spam I used before; it is a negative image of its constituency, but how? It is not — as a traditional Cultural Studies approach would argue — because ideology tries to impose a forced mimicry on people, thus making them invest in their own oppression and correction in trying to reach unattainable standards of efficiency, attractiveness, and fitness. No. Lets boldly assume that image spam is a negative image of its constituency because people are also actively walking away from this kind of representation, leaving behind only enhanced crash-test dummies. Thus image spam becomes an involuntary record of a subtle strike, a walkout of the people from photographic and moving-image representation. It is a document of an almost imperceptible exodus from a field of power relations that are too extreme to be survived without major reduction and downsizing. Rather than a document of domination, image spam is the people's monument of resistance to being represented like this. They are leaving the given frame of representation.

Political and Cultural Representation

This shatters many dogmas about the relation between political and pictorial representation. For a long time my generation has been trained to think that representation was the primary site of contestation for both politics and aesthetics. The site of culture became a popular field of investigation into the 'soft' politics inherent in everyday environments. It was hoped that changes in the field of culture would hark back to the field of politics. A more nuanced realm of representation was seen to lead to more political and economical equality. But gradually it became clear that both were less linked than originally anticipated, and that the partition of goods and rights and the partition of the senses were not necessarily running parallel to each other. Ariella Azoulay's concept of photography as a form of civil contract provides a rich background to think through these ideas. If photography was a civil contract between the people who participated in it, then the current withdrawal from representation is the breaking of a social contract, having promised participation but delivered gossip, surveillance, evidence, serial narcissism, as well as occasional uprisings. (It might be necessary to think through recent facebook riots from the perspective of breaking intolerable social contracts, and not from entering or sustaining them.)

While visual representation shifted into overdrive and was popularized through digital technologies, political representation of the people slipped into a deep crisis and was overshadowed by economic interest. While every possible minority was acknowledged as a potential consumer and visually represented (to a certain extent), people's participation in the political and economic realms became more uneven. The social contract of contemporary visual representation thus somewhat resembles the ponzi schemes of the early twenty-first century, or, more precisely, participation in a game show with unpredictable consequences.

And if there ever was a link between the two, it has become very unstable in an era in which relations between signs and their referents have been further destabilized by systemic speculation and deregulation.

Both terms do not only apply to financialization and privatization; they also refer to loosened standards of public information. Professional standards of truth production in journalism have been overwhelmed by mass media production, by the cloning of rumor and its amplification on Wikipedia discussion boards. Speculation is not only a financial operation but also a process that takes place in between a sign and its referent, a sudden miraculous enhancement, or spin, that snaps apart any remaining indexical relation.

Visual representation matters, indeed, but not exactly in unison with other forms of representation. There is a serious imbalance between both. On the one hand, there is a huge number of images without referents; on the other, many people without representation. To phrase it more dramatically: A growing number of unmoored and floating images corresponds to a growing number of disenfranchized, invisible, or even disappeared and missing people. The era of the digital revolution corresponds to that of enforced mass disappearance and murder in former Yugoslavia, Rwanda, Chechnya, Algeria, Iraq, Turkey, DRC and parts of Guatemala, to list just a few

Crisis of Representation

This creates a situation that is very different from how we used to look at images: as more or less accurate representations of something or someone in public. In an age of unrepresentable people and an overpopulation of images, this relation is irrevocably altered. Image spam is an interesting symptom of the current situation because it is a representation that remains, for the most part, invisible.

Image spam circulates endlessly without ever being seen by a human eye. It is made by machines, sent by bots, and caught by spam filters, which are slowly becoming as potent as anti-immigration walls, barriers, and fences. The plastic people shown in it thus remain, to a large extent, unseen. They are treated like digital scum, and thus paradoxically end up on a similar level to that of the low-res people they appeal to. This is how it is different from any other kind of representational dummies, which inhabit the world of visibility and high-end representation. Creatures of image spam get treated as lumpen data, avatars of the conmen who are indeed behind their creation. If Jean Genet were still alive, he would have sung praise to the gorgeous hoodlums, tricksters, prostitutes, and fake dentists of image spam.

They are still not a representation of the people, because, in any case, the people are not a representation. They are an event, which might happen one day, or maybe later, in that sudden blink of an eye that is not covered by anything.

By now, however, people might have learned this, and accepted that any people can only be represented visually in negative form. This negative cannot be developed under any circumstance, since a magical process will ensure that all you are ever going to see in the positive is a bunch of populist substitutes and impostors, enhanced crash-test dummies trying to claim legitimacy. The image of the people as a nation, or culture, is precisely that: a compressed stereotype for ideological gain. Image Spam is the true avatar of the people. A negative image with absolutely no pretense to originality? An image of what the people are not as their only possible representation?

And as people are increasingly makers of images - and not their objects or subjects - they are perhaps also increasingly aware that the people might happen by jointly making an image and not by being represented in one. Any image is a shared ground for action and passion, a zone of traffic between things and intensities. As their production has become mass production, images are now increasingly res publicae, or public things. Or even pubic things, as the languages of spam fabulously romance. which states, in no uncertain terms, that pubic performance of the disc is strictly prohibited.)

This doesn't mean that who or what is being shown in images doesn't matter. This relation is far from being one-dimensional. Image spam's generic cast is not the people, and the better for it. Rather, the subjects of image spam stand in for the people as negative substitutes and absorb the flak of the limelight on their behalf. On the one hand, they embody all the vices and virtues (or, more precisely, vices-as-virtues) of the present economic paradigm. On the other, they remain more often than not invisible, because hardly anybody actually looks at them.

Who knows what the people in image spam are up to, if nobody is actually looking? Their public appearance may be just a silly face they put on to make sure we continue to not pay attention. They might carry important messages for the aliens in the meantime, about those who we stopped caring for, those excluded from shambolic 'social contracts,' or any form of participation other than morning TV; that is, the spam of the earth, the stars of CCTV and aerial infrared surveillance. Or they might temporarily share in the realm of the disappeared and invisible, made up of those who, more often than not, inhabit a shameful silence and whose relatives have to lower their eyes to their killers every day.

The image-spam people are double agents. They inhabit both the realms of over- and invisibility. This may be the reason why they are continuously smiling but not saying anything. They know that their frozen poses and vanishing features are actually providing cover for the people to go off the record in the meantime. To perhaps take a break and slowly regroup. "Go off screen" they seem to whisper. "We'll substitute for you. Let them tag and scan us in the meantime. You go off the radar and do what you have to." Whatever this is, they will not give us away, ever. And for this, they deserve our love and admiration.

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This text originated as a presentation at the 'The Human Snapshot' conference, organized by Tirdad Zolghadr and Tom Keenan at the Luma Foundation in Arles, July 2–4, 2011. It is the third part of a trilogy about spam, the first two of which are published in October, no. 138 (fall 2011), guest-edited by David Joselit. Part one is titled 'Spam and the Angel of History,' and part two 'Letter to an Unknown Woman: Romance Scams and Epistolary Affect'. The writer would like to thank Ariella Azoulay, George Baker, Phil Collins, David Joselit, Imri Kahn, Rabih Mroué, and the many others who sparked or catalyzed various ideas within the series. Thank you also to Brian, as ever.

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A QUEST OF SUSTAINABLE IMMOBILITY
ERIC KLUITENBERG

The ElectroSmog festival and the failure of the 'telepresence-ideology'

Starting from a critique of the unsustainable conditions of current systems of world-wide hypermobility that are approaching their point of crisis with exponential speed, and addressing the possible alternatives that communication and digital networking technologies could offer, the ElectroSmog Festival for Sustainable Immobility was staged in March 2010. The festival was organised in a broad international coalition of cultural and media organisations, designers, artists, theorists, environmentalists, urbanists, business representatives and activists, and explored the concept of 'sustainable immobility'. This concept was defined as follows:

> Sustainable Immobility is a quest for a lifestyle less determined by speed and constant mobility. A lifestyle that celebrates stronger links to local cultures, while at the same time deepening our connections to others across any geographical divide by means of new communication technologies instead of physical travel.

The proposition of the festival was that the unfolding crisis of mobility could only be effectively addressed by deepening our connections across geographical divides by means of new communication technologies. The festival wanted to engage the fundamental promise of the information age that communication technologies can replace the need for physical mobility, and thus both contribute to ecological stability as well as help create a more rewarding deep-local and translocal life-style. While this promise has existed since the dawn of the information age, it has never been truly realized.

Emerging material realities compelled us to critically re-examine these promises and seriously consider if they could be turned into viable choices, exploring the underlying premise that a reliance on electronic connections and local roots is self-evidently more energy efficient and more ecologically sustainable than current systems of globalised physical mobility of people and goods. There was a deep sense of unease looking back at the bold promises of the 'electronic cottage' that futurologists, most notably Alvin Toffler, spelled out for us in the early 1980s, in such books as 'The Third Wave'. Not only would, in Toffler's vision, this transformation reap great ecological benefits, but it would also initiate a grand revitalisation of the 'oikos', the household and the family unit, and thus help to restore the psychic fabric of society, which had become unravelled through the brutal forces of 'second wave' grand scale industrial modernisation. Work and life at home could now be brought into unison again.

Today, however, more than 25 years after these all bold claims, we can observe exactly the reverse trend: Never before have wo/men travelled more and farther. Not least because of their improved capabilities to keep in touch with the 'home base' from afar. With advanced communication techniques work has entered the sphere of private life and mostly diminished the space

and time for the oikos. The simultaneous exponential innovation of transport technologies and logistics, in particular in the automobile and aviation industry, have had a cataclysmic effect on this 'fatal' trajectory. The system of hypermobility has quite literally overheated itself, and seems unstoppably heading for a crash. Even more so, it seems to exhaust itself at an exponential rate.

So what is to be done? Two possible trajectories present themselves:

– One trajectory explores alternative sources of energy and alternative transportation systems and technologies. Hardly surprising this is where most attention is currently focused. However, the uneasy link between biofuels and globally rising food prices has already revealed new limitations. A recourse to nuclear energy in the overall energy politics mix presents well-known and unresolved problems. Meanwhile wind, water and solar energy systems still cannot be deployed at a sufficient (industrial) scale to offer a viable alternative for the future, according to representatives of the energy sector.
– The other alternative appears more straightforward: a radical reduction of mobility itself, to scale down wherever possible the amount and the distance of regular travel, to return in effect to a slower pace of life. This solution looks both simple and attractive. But while most people do enjoy life in the global village, few appreciate being forced to live in the local village. Furthermore the most likely mechanism to slow down the use of long-distance travel and transportation (and the only one proven to be effective) is higher pricing, which will introduce a new socio-economic segregation of mobility that is not desirable from a societal point of view.

About the ElectroSmog Festival

The ElectroSmog festival was both an exploration of the grand promise of the information age of telepresence and teleconnection without physical displacement, and a radical attempt to create a new form of public meeting across the globe in real-time. ElectroSmog tried to break with traditional conventions of staging international public festivals and conferences through two simple but nonnegotiable rules:

1 – No presenter was allowed to travel across their own regional boundaries to join in any of the public events of the festival.
2 – Each event should always be organised in two or more locations at the same time.

To enable the traditional functions of a public festival, conversation, encounter, and performance, physical meetings across geographical divides therefore had to be replaced by mediated encounters.

The festival was organised at a moment when internet-based techniques of tele-connection, video-telephony, visual multi-user on-line environments (a.o. Second Life), webcast and internet live streams, and various forms of real-time text interfaces had become available for the general public, for the first time virtually around the globe. In fact many of the connected conversations conducted during the festival could not have been realized even a year earlier.

No longer an object of futurology, ElectroSmog tried to establish new critical uses that could be developed with these every day life technologies, especially the new breeds of real-time technologies. The main question was if a new form of public assembly could emerge from the new

distributed space-time configurations that had been the object of heated debates already for so many years?

Beyond the Techno-Fetish

The festival did not simply celebrate this technological dimension. Instead we intended to start a deeply serious discussion and practical exploration of the usability of various types of remote connection technologies. The experiential dimension of the different modalities of remote connection were crucially important to us: If replacing physical mobility by remote and electronically mediated connections is to be treated as a serious proposition, such connected experiences should offer a rich and rewarding experience in themselves, more than a merely useful and practical activity, and certainly also more than a mere simulation of physical encounters.

We also called into question the apparently self-evident proposition that remote and technologically mediated real-time tele-connections automatically lead to ecologically more sustainable solutions for being and staying in contact with people afar. Contentious surveys produced as festival preparations were ongoing argued for instance that the energy demands of keeping an avatar alive in a metaverse system such as the popular Second Life on-line environment are comparable to the daily energy needs of an average citizen of Brazil. More in general the energy needs of data centres are a fiercely debated issue, as these data centres, through their excessive power consumption, put a disproportional strain both on local electricity grids, as well as the environment at large. The way how these resources are managed decisively influences how eco-friendly or disastrous these technologies can be.

Furthermore, the exponentially growing trend towards mobile, wireless and wearable media brings with it a new set of health-related and environmental concerns. Recent public debates and anxieties that flared up around the placement of UMTS transmitters near homes and in residential districts, have ignited a debate about the health-risks that might be related to electromagnetic pollution, or 'electrosmog'. This new form of environmental pollution is a direct result of the swift dissemination of these wireless technologies (mobile phones, wifi networks, GPRS, UMTS, wireless transmissions, electromagnetic power fields and more …) - hence the title of the festival.

Findings, Failure, and Necessity…

Through its radical approach the ElectroSmog festival brought the system of teleconnection and the idea of telepresence to a point of crisis. We felt that we collided head-on with the limits of the 'telepresence ideology', which in our view needs to be critically reconsidered and practically reconstituted. Important findings were that:

1 – Remote connection works excellent in an active network. In situations where connections were established between active contributors to a discussion or project, exchange was often very productive and the experience rewarding for all participants.
2 – When attempts were made to integrate a public of relatively passive observers, the traditional 'audience', the experience broke down.
3 – Remote connection did not bring people together locally.
4 – The overwhelming sense of all festival events was that in the (remote) communicative process all nodes of the network must be 'active throughout'.

5 – No real sense of co-presence between local audiences in different sites (even though they were often visible and audible to each other) developed, while locally audiences seemed little inspired to physically show up at the networks nodes to witness a process they could also follow from the comfort of their home via the webcast.

In the Amsterdam festival space at De Balie, the centre for culture and politics and the principal organizational hub for the festival, a densely cross-mediated environment had been built up, where in an informal setting people could meet for debates and discussions, while a variety of screens and projections offered direct view on other locations and participants connected in the discussion as well as visual and video presentations, talks from virtual environments and the inevitable power point presentations could be followed. However, curiously, audience attendance was only strong when many presenters were locally present in the space, while remote connection was low (generally following our at least one remote location rule). Whereas during intensely connected discussions and performances with remote participation from across the planet, the space remained conspicuously empty. I.e. exactly in those moments when the festival denied its own principal dynamic local audience participation was strongest and were it most fulfilled its promise audiences remained absent.

And while tried and tested web-interfaces for remote audience participation with comments and questions were deployed weeks before the actual festival, and people could alternatively interact via IRC channels and via the various Second Life hubs of the festivals (multiple virtual theatres had been set up running on different servers around the globe) - the remote audience participation was minimal and deeply unsatisfactory during the festival.

From this we drew the rather inevitable conclusion that the idea of a replacement of physical encounters by mediated encounters is mostly an illusion. First of all, this mediated encounter denies the unspoken subtle bodily cues that shape actual conversation. The experience of co-presence in the same space is determined by so many perceptible and sub-liminal incentives not captured by digital electronic media, that the idea of an immersive experience relies more on the phantasmatic cover of these absent cues and the curious human capacity for synaesthetic perception, than on the performative capabilities of the medium. Digital video-links do not replace these subliminal cues.

Still, more important for the ultimate failure of the telepresence ideology is that it denies the libidinal drive for encounter, belonging, and identification that is so important for a successful staging of a public event such as an arts and culture festival. There is also a sobering lesson for curators that excellent content and contributors as such do not translate into public success. The desire for sharing the space with others and with the influential in a particular social circle or figuration, is a much stronger motor it seems for public appeal. Remoteness, one of the themes in the festival, cannot be as easily transcended in the telepresence scenario as hoped.

It is this libidinal drive for connection, identification and belonging that propels the development of new media and communication technologies. These technologies are greeted with great enthusiasm as long as they are able to conjure up a phantasmatic image of connectedness that is able to cover up the lack of actual presence and (physical) contact. However, this phantasmatic

projection is never able to displace the feeling of a lack entirely, and thus a surplus desire remains that needs to be satisfied by other means. The consequence is that an intensified use of communication technology does not lead to less, but instead to an increased desire for physical encounter. This conclusion is also perfectly concurrent with findings of mobility researchers who have observed that in regions with the highest communication technology densities, physical and motorised mobility is also most intense.

Hard and Soft Telepresence

It would be irresponsible to conclude from these findings that the exploration of using communication and networking / information technologies as an alternative for physical mobility and ecologically more damaging cultural, business, economic and private practices should be abandoned. Paraphrasing an important observation of telepresence researcher Caroline Nevejan, the experiences that current and near future telepresence technologies may offer can be seen as unsatisfactory, they will however, in the view of material and ecological limitations, become increasingly indispensable.

In analogy to the lessons in realism that have been absorbed in the field of Artificial Intelligence research, where a distinction is made between 'hard' and 'soft' AI, referring to the failure of 'Hard AI' to develop computational systems that can be considered an equivalent of human intelligence, a distinction between 'hard' and 'soft' telepresence could be productive. Serious AI researchers have come to understand that human intelligence is deeply connected with the specific characteristics and the unmatched complexity of the underlying human wetware, most pertinently the human brain and nervous system. Even more so, that intelligence must be considered an essentially embodied property. Machinic and computational systems do, however, outperform human intelligence in certain areas of symbolic manipulation and cognitive processing. 'Soft AI' considers these areas the object of principal focus and has long given up the adolescent dream of thinking machines. Similarly, the idea of 'hard telepresence' striving for a complete replacement of physical encounter should be given up in favour of a 'soft-telepresence' looking for ways in which telepresence technologies can provide support to human endeavours to develop a more sustainable life style in view of depleting resources.

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TERMINALITY
DAVID M. BERRY

Thinking through the problem of living in a condition of Terminality, where *ends* are clustered in and through our lives at increasing intensity and availability, I employ a method of *formal indication*, and point towards future work in this area. However, the notion of availability, or what I call the *paradigm* of *availability*, is crucially important in understanding the object-oriented frame of computationality. By *paradigm* of *availability* I mean the way in which all things are made available through computational devices.

I understand Computationality as a specific historical epoch defined by a certain set of computational knowledges, practices, methods and categories. Computationality (as an ontotheology) creates a new ontological 'epoch' as a new historical constellation of intelligibility. In other words, code/software emerges as the paradigmatic case of computationality, and presents us with an exemplar to which life itself has to conform as a *real-time* stream of identities within the sociality of digital ecologies.

I want to explore the notion that we live in *Terminal* times, what I want to call a state of *Terminality*, and here design plays a key role in contesting our new forms of life. Today, life is designed to be repeatedly *lethal* where previously it was understood to be *eternal*. That is, once we were required to translate between different worlds, the Worldly and the Spiritual, and in doing so our worldly identities (rich, female, etc.) were required to 'die', the eternal soul having passed over, leaving behind the material substrate of the body. In contrast, in computational capitalism, we translate between different *ecologies*, digital-material realities that capture digital fragments of, and so reconstruct, our 'souls' – the so-called data exhaust of 'dividuals'. Once, the moment of physical death was the passage to another world, eternity. Now, physical death signals the exit from all digital-material ecologies as an experiencing self, the remainder subsumed only as an historical actant. Within these digital-material ecologies, the experiencing self is subjected to a repeated 'death' of short-lived intensities in a continuous, exhausting and repetitive process of identity formation and destruction, predicated on notions such as life-long learning, process re-engineering, rationalization, mathematization, computational ontologies, and Late Capitalism. These I believe are linked to the emergence of *computationality* as an ontotheology.

Yet, of course, no one grieves for these lost identities, except perhaps machines, as we arise newly born, re-designed, yet *fated* only to a kind of semi-immortality as partiality in a flowing sea of *abandoned bits*. As ethical beings within a computational age, we are required to live within mediated identities, bioidentities, data-identities, personal numbers, insurance numbers, all of which we have to embrace and give-up continuously. Indeed, identity itself is increasingly mediated through the software and code controlled by the state or multinational corporations. This results in the multiple death of the self within computationality, by the week, by the day, by the hour, or even by the minute. But even here it is a death that plays by the rules, so to speak, skeptical morality disjointed and recursive. Not to mention the millisecond, microsecond, and nanosecond

deaths that must be endured endlessly and with a smiling face. And yet, whilst we die, and as we die, we must always *convalesce* ready for the next instantiation of our identity, reanimated, buttressed and supported by identity management systems, customer-relationship management (CRM) systems, and digital networks of immense complexity and global hegemony.

Therefore, we live within a temporality that is shrinking – a Being-towards-death that is unpredictable and foreshortened. Microlives lived in molecular-streams – what I want to call *microcologies*. Life that consists in assigning values to parameters and then required to methodologically determine which values assign to other values and parameters – life quantified and mathematized. Here, for example, microlabour is performed in smaller and smaller projects, delta updates to larger systems, minor contributions in computationally choreographed digital *molarcologies*. The positive remainder, often as algorithms and patterns, of specific information processing tasks, jobs and projects being the outputs of this work, rather than any notion of self expression, class identity or human flourishing. This molarcological process produces a series of objects and their active composition, and the continued conditions of this composition. Through this we might consider the practice, then, of *coolness* and skepticism manifested in the language and operation of the code and codes of digital technology, here we might consider the logic of the computational code as a moment of *judgment*:

> The programmer himself states … 'Legal' principles which permit … 'appeals', he may have only a very incomplete understanding of when and where in the course of the program's operation these procedures will call each other. And for a particular 'court', he has only a sketchy idea of some of the circumstances that will cause it to be called upon. (Marvin Minsky 1967, quoted in Weizenbaum 1984, *Computer Power and Human Reason: From Judgement to Calculation)*

I want to suggest that we can understand this basic comportment towards computational worlds as one of *hesitancy* and coolness. By *hesitancy*, I want to call attention to our desire to engage fully in a digitally mediated experience which remains *elusive* and *fleeting*, but to whose judgment and opinions one is committed nonetheless – one simply must have a Facebook profile. The self-knowledge of the individual's inability to fully capture the propensity of the digital to leak away, engenders a notional lack or emptiness in both memory and thinking – a fear of the shallows or fragmentations of the self. This is a loss of the ability to discern difference and hold an aesthetic or a political judgment, for example. By coolness, I mean to refer to the specific form of reasoning and feeling that is strictly limited by the computational frames that encapsulate and wrapper the possibility of communication through computational media – that is, computationally mediated judgment and decision-making. Here, I want to think about the heuristic value of coolness and *skepticism*, not in that they necessarily express a new idea or form of life, but that they encourage the transfer of insights and derivations from one context to another continuously. What we today might think of as negative creativity. Indeed, the education of skepticism makes beings become more unhidden, more fully available to us and, consequently, more compellingly binding in the way they appear to us.

Coolness, itself, encapsulates the principles of the relations of practices within discoverably intentional contexts or forms of life, and the available hypotheses of dominant, residual and emer-

gent culture. Norbert Weiner in another context outlined the experience of what I call coolness as the opposite of heat-death in sameness:

> We are swimming upstream against a great torrent of disorganization, which tends to reduce everything to the heat death of equilibrium and sameness … This heat death in physics had its counterpart in the ethics of Kierkegaard, who pointed out that we live in a chaotic moral universe. In this, our main obligation is to establish arbitrary enclaves of order and system … like the red queen, we cannot stay where we are without running as fast as we can. *(Weiner 1964, I Am a Mathematician: The Later Life of a Prodigy)*

By dominant, I want to point towards the notion of *hesitancy* as a condition of possibility for coolness itself. By residual, I want to point towards marginal practices, even today, which points towards experience and meanings which cannot be verified or cannot be expressed in terms of *coolness*, but are nevertheless lived and practiced on the level of the residue of previous social formations. This I call *conviction* – forms of life that remain marginal and usually ignored or ridiculed. In contrast to both *coolness* and *conviction*, I want to point towards those meanings and values, new practices, experiences and significances that are being created and lived, albeit within a minor culture, which I call *adminicularity*. Often the adminicular is a pointer to another possibility, suggestive and antagonistic, contrasted with and to the dominant experience. Adminicular refers to the idea of a document giving evidence as to the existence or contents of another, missing document – here, missing identities, cultures and practices are the 'missing document' that is signified.

Coolness does not exhaust the full range of human practice, human energy, or human intention, nonetheless it remains the dominant mode and as such operates as a conscious selection and organization method that seeks and seeks to continually *tesselate* adminicularity into the existing modes of being. This characteristic of coolness is a limiting factor, albeit experienced as frantic disorientation, disquiet, and continual upheaval in the microcologies of everyday life. Indeed, the eternal, as defined within the systems of molarcologies of Terminality, is computational and foundational. By contrast, *conviction* and *adminicularity* point towards supplements and excess, lacks and lacunae, as such that what is at stake is not scientific or technical knowledge per se, but knowledge in the broadest possible sense of that comportment that makes us distinctly human. Conviction, drawing from older experiences of Being-in-the-World, and *adminicularity* as new forms of living, lines of flight from and through the computational.

How, then, is one to live in what we might call the limited times of Terminality? What does it mean to live a good life in the philosophical sense, when not only is that life increasingly squeezed into smaller and smaller real-time streams of experience, but also when ones possibility of thinking at all is pushed to the side by the frantic disorientation of our computational age? This is where a continual passing and *casting* is *coolness* itself. This *coolness* manifests itself in a *skepticism*, a towards-which or desire for a more fully rationalized, object-oriented, controlled, and strictly computational way-of-being. Not only is this a rejection of traditional ways of doing and being, but points towards a *stillness* of mind, inasmuch as a certain possibility of feeling and acting is accepted as a basic disposition. This disposition of capitalism, not to mention postmodernity and its associated concepts and ideas, is propagated through an ahistoricism and *diffidence* to dif-

ference and depth itself – motion becomes stillness. In some sense, the red queen runs so fast that she cannot see beyond the blur of the landscape to the objects and things passing rapidly below her.

But to be clear, there is not a dialectical opposition between two terms, rather it is a contrast between *coolness* as a singular hegemonic practice and *conviction*, as a constellation of alternative marginal practices, drawn from older exhausted ways of being-towards. In contrast, a newer potential site of resistance is *adminicularity* that doesn't require a form of essential practice, as it were. Indeed, it is a practice borne from its abstraction from and as a 'pointer' toward other practices, things, and cultures that have become withdrawn, missing, or devalued. This allows *adminicularity* to be a *style* or way-of-being that references and *dereferences* things rapidly, even if the 'pointer' does not refer to a 'valid' object, as such. For example, the New Aesthetic, an art movement, which is a practice of collecting and referencing the eruption of the digital into the physical.

Thus we are in a condition of always striving to establish a particular understanding of ourselves and the world by using the identities, tools, objects, practices and possibilities made available to us within computationality. In contrast, by projecting ourselves into actions and possibilities, and comporting ourselves in ways made suggestive by conviction and adminicularity, we have the possibility to create new ways of making sense of objects and the situations we encounter. This essay, then, forms a contribution to a critique of Terminality and, perhaps, an understanding of its conditions of possibility through computational coolness, to consider how the marginal practices represented in *conviction* and *adminicularity* can be focused upon and expanded into new ways of living beyond current limitations and towards new means of judgment and politics.

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VITALISM
SEBASTIAN OLMA

Vitalism is *Lebensphilosophie*, i.e., a philosophical tradition whose roots reach back to the opposition between Heraclitus' flux and Plato's dominance of form. In this opposition, vitalism represented the camp that emphasised the primacy of morphogenesis – the process of formation – over form. The vitalist notion of life 'has always favoured an idea of *becoming* over one of *being*, of movement over stasis, of action over structure, of flow and flux' (Lash 2006: 323). The vitalist emphasis on process was predicated on the rejection of an understanding of life in terms of mechanism. To the question of what distinguishes the living from the non-living, vitalism answered with the concept of *vital force*. Vital force remained the essence of vitalist philosophies, ancient and modern: Heraclitus' *logos* and Aristotle's *entelechy* gave way to Paracelsus' *archeus* and William Blake's *energy* (Schrödinger, 1967).

The problem with these traditional vitalisms is that they try to counter the reductionism of mechanism with the dogma of life as eternal essence of being. Such a concept of life is dogmatic in so far as the vital force it advocates represents a substantive residuum that mechanistic science is unable to explain. Against a mechanistic concept of life traditional vitalism, one could say, launches a theory of myth (Burwick and Douglass, 1992). Contemporary propositions for a vitalist renewal are anxious to reject such an essentialism or mysticism (Fraser et al., 2005; Lash, 2005; 2006). Instead, they emphasise the relationality of the vital process. 'Process,' as Fraser et al. put it,

> is characterized by a radical relationality: the (social and natural) world is understood in terms of constantly shifting relations between open-ended objects. This is not to suggest that there are relations *between* pre-existing entities or objects. Instead, objects, subjects, concepts are composed of nothing more or less than relations, reciprocal enfoldings gathered together in temporary and contingent unities. Furthermore, since a relation cannot exist in isolation, all entities can be understood in relation to one another'(2005: 3, emphasis in the original).

This proposes a monist concept of life as relational process. Life is situated in an ontology assuming a pure relationality of moving forces throwing up ephemeral forms soon to be drowned again in the process.

Which is not to say that new vitalism is in denial or ignorant of the molar or the actual (forms, objects). Rather it understands these 'facts' in terms of process. Whitehead (1971), e.g., refers to 'stubborn facts' by which he means a sort of 'path-dependency' of processes. Manuel Delanda (2002), who relates the notion of vital process to Gilles Deleuze's ontology, understands relationality in terms of multiplicity. Both relationality and multiplicity are notions that articulate a dimension that allows neo-vitalism to think ontology without falling back onto an essentialism that proposes a self-identical substance as the 'motor' of being. Approaching process via multiplicity or relationality means to conceptualise morphogenesis not on the basis of the one of being but rather on the basis of the *many of becoming*.

Another distinctive dimension of the neo-vitalist notion of process is immanence: there is no outside to the process, no supplementary dimension that could transcendentally determine the multiplicity of relations. Even time and space must not be understood as external to the relations that make up the process. Process is not movement in time and space. 'Instead', as the new vitalists put it, 'time and space change according to the specificity of an event. The event makes the difference: not in space and time, but to space and time' (Fraser et al., 2005: 4). In other words, time and space are intrinsic modalities of process, determined by the changing constellations of the relational multiplicity. An event is thus constituted by the emergence of a constellation that in some sense introduces a difference into the process. Relationality and immanence converging on a process-ontology - this appears to roughly define the operational field of a renewed vitalism. Operational field in this context should not be understood as a closed conceptual territory but rather as an opening: an attempt to account for the vitality of our contemporary life-world by launching an equally vital ontology of life.

It is instructive at this point to turn to what might be called the 'modern classics' of vitalist philosophy in order to provide a brief introduction to the central figures on which the revival of vitalism draws. It should be clear, however, that all that is intended here are approximations to these philosophies in so far as they are vitalist. These are not elaborate portraits of philosophical systems but snapshots that try to capture the philosophers' relation to an ontological notion of life as process of an immanent multiplicity.

Friedrich Nietzsche

Friedrich Nietzsche's theory of life rests on a peculiar understanding of power that in the first instance is not dissimilar to the one developed by Hobbes, the other great modern philosopher of power. Here, life is understood as struggle, as *Kampf* for self-preservation. However, Nietzsche's notion of life transcends Hobbesian teleology. It is not about self-preservation but rather about self-*overcoming* (Ansell Pearson, 1991: 45 passim). Life, for Nietzsche, is the *will to power* as a creative process of excess and expenditure. The crucial characteristic of the living, Nietzsche says, is that it wants to "discharge its strength" (1999a [1886]: §13). (For reasons of historical clarity, references include the original year of publication (or, as in Nietzsche's case, the year of writing) in [brackets].)

Such an understanding of life in terms of excess also marks Nietzsche's breaking away from Schopenhauer, whose will to life was an important reference for the will to power. Schopenhauer's will to life rests on a notion of will as lack. Nietzsche's will, quite to the contrary, is immanent in so far as it is not directed toward an external object. It wills power which denotes the very essence of willing, i.e., to be overpowering. Life as the will to power is thus immanent excess or, as Heidegger has called it, 'self-overpowering', *Sichübermächtigen* (1997 [1961]: 89).

It is important to note, however, that the will to power cannot be located at the level of the individual: it is not a subjective willing. In fact, Nietzsche's understanding of life as will to power deconstructs the idea of organic unity. Organisms, in as far as they have a real existence for Nietzsche, are open rather than closed systems, made up of a multiplicity of forces – 'points of will' [*Punktationen*] (Nietzsche, 1999b [1887]: §11 [73]) as Nietzsche calls them – that are in a process of perpetual mutual adjustment (Müller-Lauter, 1971: 32 passim). This process of strug-

gle/adjustment is predicated on what Nietzsche refers to as *pathos*, i.e., the ability to affect and be affected. He proposes 'that, in order for the will to power to express itself, it needs to perceive the things that it attracts, so that it *feels* the approach of what is assimilable to it' (1999b [1887]: §14[78]). This is to say that when Nietzsche refers to the will to power as a multiplicity, what he has in mind is not the mechanics of Cartesian atomism but a multiplicity that entails a "sensibility of forces" (Deleuze, 1983: 63).

Gabriel Tarde

Such a sensibility can also be found in Gabriel Tarde's notion of multiplicity which is based on a transformed Leibnizean monadology. One could perhaps say that Tarde's entire thought moves from such a transformed Leibnizian monadology. This seems at least the perspective one finds in the current re-evaluation of Tarde's work (cf. Lazzarato, 2002). His oeuvre is approached precisely through his ontology, thus understanding him as a philosopher who productively infected social science with the virus of a philosophy of life. This is reflected not least by the sequence of Eric Alliez's new edition of Tarde's work which starts with his *Monadology and Sociology* (Tarde, 1999 [1893]). From the latter, Tarde takes the two fundamental principles, continuity and indiscernability in order to develop an ontology that makes the infinitesimal "key to the universe" again (Lazzarato, 1999). However, Tarde's monadology departs from Leibniz's when it rejects substance and identity as fundamental principles of the monads' activity. Instead of the one of being, Tarde is looking for the many of ontological association. There is no God, no pre-established harmony among Tarde's monads. Instead of postulating their mutual exteriority, he conceives them as open, reciprocally interpenetrating forces, each ceaselessly trying to absorb or conquer all other movements.

Although highly influential during his life, Tarde's thought seemed to have been eradicated from academic memory until very recently. This almost perfect erasure has to do with the fact that Tarde's work just precedes the Durkheimian constitution of French sociology. Tarde's 'pure sociology' transcends by far the disciplinary edifice erected by Durkheim. The latter's success in establishing sociology as an academic discipline led to the former's reduction to "the prestigious but irrelevant position of a mere 'precursor' – and not a very good one at that, since he had been forever branded with the sin of 'psychologism' and 'spiritualism'" (Latour, 2002: 117).

It might be worth noting, however, that Tarde has got a strong notion of basic *social fact* which is of course what his younger colleague and later 'father' of French sociology demanded to be the subject of his discipline. For Durkheim, social facts consist of "manners of acting, thinking and feeling external to the individual which are invested with a coercive power by virtue of which they exercise control over him" (1982 [1895]: 52). Tarde's notion of social facts can be read as an inversion of Durkheimian sociology. Tarde's facts are social precisely because they are not transcendentally imposed on the individual but rather immanently emerging through the individual. For Durkheim the social is external and coercive to the individual as political animal whereas for Tarde the social is 'internal' to the individual per se, or rather, it is the ontological mode of being for every object, every being.

It is in this permanent heterogeneous pulling, this everlasting expression of appetite for being that Tarde localises the 'absolute univocity of life beneath all its forms, extending into all be-

ings regardless of all discrepancy between the atomic, the vital, the mechanic, and the social' (Alliez, 1999: 15). This is the differential dimension of the 'panvitalism' (ibid.) in which Tarde finds the nonessential (nonsubstantial) substitute of Spinoza's unique substance: 'To exist that is to differ; difference, to be plain, is in a sense the substantial aspect of things' (1999 [1893]: 73). There is thus an *affective* vitalism here which, however, as Lazzarato (1999) emphasises, is immediately political as well. The sensible relationality that Nietzsche emphasises in the notion of multiplicity one finds in Tarde as pre-individual sociality, in the universal polis of the *citoyens infinitésimaux*, the infinitesimal citizens. Every actual phenomenon is understood as a society or polis: objects, phenomena as societies emerge when certain monads become dominant over others, when they are able to impose their will on other monads. Dominant wills become rules of composition or *immanent social laws* of the multiplicity (society) articulated in emerging forms.

Henri Bergson

Henri Bergson's philosophy of the vital impetus [*élan vital*] and duration [*durée*] marks another important contribution to vitalism. From his first major work*, Time and Free Will* (1910 [1889]), Bergson's quest consisted of an attempt to overcome a way of thinking purely based on matter/actuality with one that appreciates the vitality of time or duration. His philosophical contribution toward such a philosophy was the invention of the method of *intuition*: if life is first and foremost becoming (*devenir*) then intelligence alone is unable to grasp it. Intelligence, as Bergson understood it, is the human faculty directed toward the manipulation of actuality/matter whose natural mode entails the Eleatic decomposition of living movement into static instants. Intuition, by contrast, recognises the virtual as the real source of a reality that *becomes*, i.e., as it is perpetually enlivened by the *élan vital*. It does so not as the mind's access to an essential truth but as real participation in the process of things. As the supplement of intelligence, intuition both calms the human obsession with rational progress and opens up the future for a veritable passage beyond the *conditio humana*.

What made the philosopher famous, however, was his *Creative Evolution* (1998 [1907]), which developed Bergson's notion of the creative time of duration within the field of contemporary biology. Bergson argued that evolution is not just a process of change but one of invention as the forms that emerge throughout do not exist in advance. Therefore, it does not just involve the *realisation* of pre-existing possibles but rather the actualisation of the *virtual*. The latter is a truly creative process because what is actualised does not resemble the virtual. The actualisation of the virtual occurs within duration, driven by a 'vital impetus'.

Bergson understands life first and foremost in terms of duration, thus emphasising continuity and temporality. His thinking of duration, however, always implicates in a rather complex manner the thought of multiplicity. This multiplicity is a virtual, continuous multiplicity that evolves through perpetual dissociation into an actual, discrete multiplicity. There are hence two multiplicities for Bergson, one virtual the other actual. It is the movement between these two multiplicities that characterises creative becoming, throwing up new forms of life in divergent evolutionary lines while something of the vital impetus permeates all the divergent lines, permanently pushing them toward the new in the process of life (Ansell Pearson, 2002: 71 passim).

Alfred North Whitehead

One finds a similar emphasis on process in the philosophy of Alfred North Whitehead who was a contemporary of Bergson. Indeed, the first principle of his philosophy is called the 'principle of process'. Process is *dynamis* and *kinesis* and as such represents the vitalist manoeuvre that once again dethrones the principle of substance that was inherent in classical ontology. Already in *The Concept of Nature* (1971 [1919]) Whitehead develops his understanding of nature as process in an attempt to bring physical reality back to life by liberating it from the deadly grip of positivism. Thus, in a fashion not dissimilar to Bergson, Whitehead proposes an anti-essentialist ontology from the perspective of qualitative, living movement, in a word: process.

Simultaneously – and here Whitehead is close to both Tarde and Nietzsche – he conceives the 'actual world' as organism. This is to say that reality is made up of interdependent 'actual entities' as a unity of connected multiplicities. This organism of interdependent actual entities, however, is consequently understood in terms of process. The emergence of an actual entity is the temporary outcome of a self-constituting movement termed 'prehension'. Prehension can perhaps be best understood as grasping, as the movement of a 'concrescent' becoming. This grasping, and this is crucial for Whitehead, is without the need for a grasping (Cartesian) subject the operations of an organism are directed towards the organism as a 'superject', and are not directed from an organism as a 'subject'. The operations of an organism are directed from antecedent organisms and to the immediate organism. They are vectors in that they convey the many things into the constitution of the single superject' (1985 [1929]: 151).

It is here that life manifests itself as 'absolute, individual self-enjoyment' in the process of creative 'transformation of the potential into the actual' that is selected by this particular concrescence from the boundless wealth of potential alternatives (1934: 58, 60).

Gilles Deleuze

The contemporary philosopher to whom neo-vitalism has to acknowledge its greatest debt is Gilles Deleuze. Deleuze never hesitated to affirm the vitalist character of his philosophy: 'Everything I have written is vitalistic, at least I hope it is' (1995: 143). In the end, it was him who gave a new turn to the project of a vitalism. In Deleuze's work, the trajectories of diverse philosophical attempts to think life converge on a radical, superior empiricism. Alliez (1998) for instance refers to Deleuze's 'vitalist triangle' consisting of Spinoza, Bergson and Nietzsche. For an illuminating comment on Deleuze's (and Guattari's) pragmatism (which is what the notion of 'superior empiricism' aims at) see the recent intervention by Stengers (2005). As Deleuze's philosophy of the virtual unfolds, he modifies and radicalises the vital impetus as well as the notion of multiplicity by proposing an ontology of difference that completely disposes of identity. Deleuze's *difference* is incorporeal, yet real-material (contra Hegel), unfolding between the virtual and the actual, between intensity and extensity. Difference is that which makes being dynamic, transforms being into becoming.

Life pervades the process not in its moments, but in its mean-times [*des entre-temps*]. Life is what happens in between two infinitesimal intervals and makes them different. This is the space, or rather the non-space, where there is a play of pure potentialities, a pure plane of immanence (Deleuze and Guattari, 1994). In the last published text before his death Deleuze says: 'Pure

immanence is A LIFE, and nothing else. It is not immanence to life, but the immanent that is in nothing is itself a life. A life is the immanence of immanence, absolute immanence: it is the sheer power, utter beatitude' (1997: 5). This rather mysterious passage can be elucidated with reference to Bergson. According to him, life inserts *indetermination* into matter (Bergson, 1998 [1907]:126), an indetermination that is neither empirical nor due to a lack of knowledge (to be discovered in the future). Deleuze's notion of pure immanence turns the Bergsonian notion of life into one in which 'a life' *indetermines process* by providing it with *determinability*.

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WICKED PROBLEMS
SONIA MATOS

Initially proposed by Rittel and Webber in 'Dilemmas in a General Theory of Planning' (1973), the idea of 'wicked problems' would soon imprint the development of design beyond the materialization of artifacts of industrial production. This movement was accompanied by the expansion of new interdisciplinary fields of research, inspired by the idea of 'complexity' within studies of cognition, cybernetics, biology, systems theory and organizational sciences. Taking into account current ecological, social and economic instability – now considered inseparable due to their inherent entanglements –, the idea of 'wicked problems' appears as a pertinent framework when attempting to work with various challenges. Whether we consider the depletion of resources, the exploitation of labor in the production of various gadgets or the monopolization of trends and patterns of production, the idea of working with 'wicked problems' questions the ultimate role of design as a promoter of material 'progress'.

In fact, some designers and technologists would rather see their work as a response to questions of interconnection, sustainability, openness and community participation. This is visible in the work of designers such as Natalie Jeremijenko, the 'Open Sailing' project, the 'AfriGadget' grassroots report, the collaborative architectures of the 'Urban Prescriptions' group, or the work of the 'Preemptive Media' group. These designers, collectives and projects and the challenges they carry are not only relevant to those involved in forms of craft-based, industrial and post-industrial production. They also call into question the nature of knowledge produced by those who design as well as the role of education, research and the structure of art/design education more broadly. As a consequence, this entry proposes that 'wicked problems' instigate the development of research agendas that require new concepts, potentiating the generation of novel design practices and figurations of multiple arrays of design knowledge.

Writing on the topic of 'depletion design' will require a train of thought that goes to the core of the small word 'design' and the challenges that are presented to this field of practice in all its manifestations (e.g.: industrial design, environmental graphic design, interaction & media design, etc.). The intention is not to provide any prescription to those involved in the conceptualization of artifacts but to discuss some of the dimensions and significance of the topic proposed in this issue. Whether one focuses on the exhaustion of raw materials or the ever-expanding notion of 'network ecology', one is immediately caught-up with the multi-various ways in which every single design – from the microchip to the extensions of social media – matters. They 'matter' not only because there is a source of precious material substance at stake – minute as it might be – but also since each blueprint underlies a range of entanglements – environmental, social, economic and political.

In 'A Cautious Prometheus? A Few Steps Toward a Philosophy of Design' (2008), the science and technology studies (STS) scholar Bruno Latour elucidates this point: 'the typically modernist divide between materiality on the one hand and design on the other is slowly dissolved away. The more objects are turned into things – that is, the more matters of fact are turned into matters

of concern – the more they are rendered into objects of design through and through' (p.2). This supports the claim that the artifacts that compose our contemporary material culture are not only thought alongside the industrial ethos of efficiency but also for the ways in which they bear specific forms of power and authority (Winner 1986:19). This polarization goes to the root of Latour's distinction between 'matters of fact' and 'matters of concern'. While the first one is most often related to the analysis of artifacts devoid of context (e.g.: the machine's blueprint), 'matters of concern' allow us to assemble an artifact out of pieces that are culturally and ethically diverse, as well as historically situated. When using this lens in the analysis of the technosphere we recognize that it is 'thick' (Latour 2005:2) with complex artifacts that are not only efficient but also instigate diverse forms of communication, reunion, ignorance, exploitation, just to name a few possible synergies. In fact, this transition from 'matters of fact' to 'matters of concern' renders the idea of 'design' as a helpful concept, one that allows us to 'draw' things together: '(…) to think of artifacts in terms of design means conceiving them (…) as complex assemblies of contradictory issues' (Latour 2008:3-4).

Within the field of design this shift from 'matters of fact' to 'matters of concern' resonates with the work developed in some industrial circles of the 1960's, particularly when designers started to challenge the linear problem-solution model that seemed to distort the workings and makings of the profession. The linear model largely draws on the 'scientific method' imbued as it was in the workings of logical positivism: the idea that reality can be coherently apprehended through 'clarification' and 'rationality' many times in detriment of actual scientific advancement (Feyerabend 1985:85). In fact, at this point in history, some designers shared the intuition that a great many 'design problems' were ill informed, and where data appeared confusing and all the agents, ranging clients, decision makers, users and others that might be drawn into the design process seemed to have conflicting values (Buchanan 1992:15). Design theorist Horst Rittel and urban designer Melvin M. Webber first proposed this shift from a determinate methodological paradigm into one of indeterminacy when attempting to define design's actual problems or research hypothesis as 'wicked' (Rittel & Webber 1973). There are ten fundamental considerations when working with 'wicked problems' and they may be summarized as follows:

1. 'there is no definitive formulation of a wicked problem';
2. 'wicked problems have no stopping rule – there are no criteria for sufficient understanding because there are no ends to the causal chains';
3. 'the solutions given can never be considered 'true' or 'false' as in other disciplines but rather as 'good' or 'bad'";
4. 'there is no immediate and ultimate test of a solution to a wicked problem';
5. 'there is no opportunity to learn by trial-and-error when dealing with wicked problems – every attempt counts';
6. 'every wicked problem can be approached from various points of enquiry';
7. 'every wicked problem is unique';
8. 'every wicked problem is part of another and at times more complex wicked problem';
9. 'the ways in which one chooses to explain a wicked problem determines the nature of its resolution';
10. 'when dealing with wicked problems the aim is not the truth but to improve some characteristic of the world' (Rittel & Webber 1973: 161-166; Buchanan 1992:16).

The 'wicked problems' approach was stimulated by the intellectual temperament of the time, influenced as it was by 'systems thinking' and its intellectual source, the cybernetic movement (Rittel & Webber 1973:159). In fact, part of the research agenda of cybernetics (particularly its 'second-order') focused on the inter-disciplinary application of concepts such as 'feedback', 'circular causality', 'self-regulation', and 'dynamic construction of reality' (von Foerster 2003) where 'subject and environment are considered as one single circuit' (Brand et al. 1976). Here, it is important to take into account the 'wicked problems' previously described, particularly: point two ('wicked problems have no stopping rule – there are no criteria for sufficient understanding because there are no ends to the causal chains'); point six ('every wicked problem can be approached from various points of enquiry') and point eight ('every wicked problem is part of another and at times more complex wicked problem'). These points emphasize the cybernetic principles described above while positioning a 'design problem' within a given dynamic system. Despite the controversial popularity of cybernetics, drawn as it was towards the design of military intelligence, one of the founders of the movement, Norbert Wiener, continuously strived to interlink these new concepts with distinct social concerns (Eglash 2000).

Designing – a Politics of Possibility

Contemporarily this approach seems worth rescuing. In fact, Rittel and Webber's 'wicked problems', 'the way in which they challenge established social values and institutional frameworks', have been commonly associated with the issue of 'climate change' (Jordan et al. 2010: 4). Today, we recognize that this topic defies a linear form of analysis or any one-directional way of solving the problem – in all its complexity – with a smooth transition through 'recycling', use of 'biodegradable materials', 'eco- friendly devices' and a motto of 'design for the developing world'. In fact, some of these buzzwords have become impregnated with contradiction (Starr 2011) acquainted as they are with the challenges of projects such as the 'LifeStraw'. This mobile purification tool that appeared on the cover of the Cooper-Hewitt's exhibition 'Design for the Other 90%', has been simultaneously involved in a carbon trading polemic (ibid.). Where, and 'through the magic of carbon credits', since the Lifestraw company has found a way to exchange 'carbon for water' while donating 'LifeStraws' in Kenya and in exchange receiving credits that have a premium value since the technology is distributed in the 'third world' (ibid.).

In this example, one can witness the way in which the issue of 'climate change' has undergone a transition from a 'matter of fact' to a 'matter of concern'. In fact, the idea that the climate actually changes and that this might impact our life is no longer thought as a unique environmental problem but also as a cultural and political issue (Ross 1991) – one that is transforming the way we conceptualize mankind, our collective efforts and our relation to the planet at large (Hulme 2009). This has also opened a debate concerning our romanticization of a pristine 'nature' at the same time challenging environmentalists to abandon their technophobias. As suggested by ecologist Erle Ellis in 'Stop Trying to Save the Planet' (2009): our spaceship Earth is a used one, transformed as it is by our ancestors down to the Zinjanthropus (my own emphasis). According to French archaeologist, paleontologist and anthropologist Leroi Gourhan (1993:116), it was the capacity of our ancestors to place themselves outside their condition as a zoological species that truly marked the 'human' revolution. This revolution can only be reconsidered through the discovery of the Zinjanthropus in 1959 (ibid.). This being, not 'human' or primate was contradictory to all the beliefs of the time a toolmaker. Interesting enough, this 'being' had quite a small

brain, placing less importance on this organ in our expansion from our zoological conditioning and more on our capacity to communicate and transform 'nature'. In this sense – and here using Ellis' own humorous words – "the environmental crises is no longer about recycling garbage, it is about making something good out of grandpa's garbage and leaving the very best garbage for your grandchildren" (Ellis 2009).

As Ellis connotes: This approach is in line with a 'post-natural environmentalism' (Ellis n.d), one that engulfs a range of researchers (Botkin 1990, Nordhaus & Shellenberger 2007) that continuously attempt to transform our limited – yet dominant – view of the natural world as something that can be isolated, objectively known and therefore kept in harmonic balance, untouched and confined to 'wilderness'. Here lies hidden a contradiction in terms as the cause of depletion – the design of the material fabrics that compose everyday life – will very probably appear as the most likely solution to the challenges we face. This takes us once again to point two: 'wicked problems have no stopping rule – there are no criteria for sufficient understanding because there are no ends to the causal chains'. Taking into consideration these causal chains and our entangled nature, finally it seems important to rescue 'design' from a complacence with 'branding and competitiveness' (Bonsiepe 2006:27). As Bruno Latour (2008) suggested, this "little word 'design'" is more powerful than that. In fact, it allows one to move from 'matters of fact' to 'matters of concern' while mobilizing a discussion that has techno- ethical dimensions.

To further illustrate this approach and always drawing on the 'wicked problems' presented earlier on, it seems relevant to present the idea of 'circular design'. And while there is much emphasis on recycling and use of salvageable material within sustainable design fields, these practices seem to simply slowdown the rate of environmental contamination and depletion as opposed to orchestrating any effective change within the current state of affairs (Braungart & McDonough 1998: 4). This process, one that interlinks with the idea of 'downcycling' (ibid.), takes into consideration that when we salvage a plastic bottle lid, melt and mix it with other plastics in order to produce a new material designers are only lowering the quality of the initial cap as it is mixed with other hazardous components. The second-life that is given to this material will very probably be the last one and the product will inevitably end-up in a landfill as useless and dangerous waste.

Thus, the difference between our ancestors, who were also toolmakers and technological beings, and us is that their waste could be delivered back to the system. This relates to the concept of 'originary technicity', characteristic of current discourse within the field of philosophy of technology and that can be understood through a close reading of Adrian Mackenzie (2002). Utilizing the work of Jacques Derrida and Bernard Stiegler, amongst others, MacKenzie further emphasizes the main thesis of Derrida: "The natural, originary body does not exist: technology has not simply added itself, from outside or after the fact, as a foreign body" (p.5), And further adds: "One tack we could take on this quasi- concept of originary technicity is to say that it concerns the status of the body as a body. It may not be possible to think of a body as such because bodies are already technical and therefore in some sense not self-identical or self-contained" (p.6).

On the contrary, contemporarily, we find that our waste, natural and technical, cannot be fully 'metabolized' (ibid.). Advanced around the same time as Rittel and Webber's 'wicked problems', this idea is in debt to the work of Swiss architect Walter Stahel and his sketch of a 'cradle-to-cradle'

design. With beneficial consequences for resource management, job creation and a construction of a healthy economy, this approach was further developed by German chemist Michael Braungart and architect William McDonough. In their framework, design is guided by a systemic approach, one that envisions the transformation of designed products on various scales – from material composition and all the way to industrial processes of fabrication. Drawing a dynamic that is similar to the cybernetic ouroboros, this design pattern sustains the idea that products are like nutrients that have to be maintained within their technical cycles thus forming a circular loop (ibid.). The ouroboros or uroborus is a mythical figure that is usually depicted as a serpent that nurtures itself by feeding on its own tail. Referring to ideas of self-reflexivity, and circular thinking, this image is often applied to the analysis of a system that has potential to constantly re-create itself. This idea was popularized amongst the members of the second-order cybernetic movement. (Combs et al. 2002: 31-47). In the case of a computational device, the hazardous materials that compose these objects (such as lead, mercury, chlorinated plastics and brominated flame retardants) (Unhelkar 2010) should be substituted whenever possible or maintained as 'products of service'. As the word indicates, these products should be lent at the same time inviting users to deliver them to the initial manufacturer once obsolete. A more radical example is Braungart and McDonough's proposal of eco-intelligent packaging that dissolves into a biosafe liquid, delivering nutrients to the soil (Newcorn 2003) or, in line with the idea of 'product service' described above, a 'fifth-class' postage system used solely for the purpose of delivering packaging to manufacturers (ibid.). With these examples in mind, the cradle-to-cradle design model urges designers to rethink the issue of resource depletion in far more radical ways than those that are guided by a motto of 'reduce, reuse, recycle' (the three R's); one that has potential to alter our artifacts on various scales from the design of synthetic materials, to manufacturing processes and the economy at large.

This circular way of thinking is not devoid of its contradictions. The 'Cradle to Cradle' framework has been appropriated by Braungart and McDonough and converted into a trademark – this raises obvious ethical questions. Even though some critics see this step as a crucial one in the maintenance of a certain degree of control and certification within a transitional phase in the design and fabrication of various artifacts, it seem fair to recognize that this framework should be converted into an independent norm such as ISO (EMF 2010). However, what is most important to retain, is that this mode of thought challenges a dominant view of design as an activity that deliverers goods that are 'ephemeral, fashionable, disposable, aesthetical, and playful' in opposition to an initial conception of the field as 'intelligent problem solving' (Bonsiepe 2006:28). It allows one to move beyond the idea of sustainability in a way that salvages design's potential. Here it is important to take into account that the idea of sustainability can be misleading. In fact, one can practice sustainability while 'reducing, reusing and recycling' materials and still 'sustain' the same system of depletion that seems insupportable. What Braungart (2008) proposes is 'design as opposed to sustainability' since 'what we need is to provide nutrients as opposed to simply minimize waste'.

This transformation connects with point nine: 'the ways in which one chooses to explain a wicked problem determines the nature of its resolution'. In face of a world so overwhelmingly planned and fabricated, delivering back design, its potential to create 'self-reflexive' systems while accounting for all degrees of 'wickedness', allows one to move beyond a numbing-state of 'less

intervention'. In fact, this state follows the pessimistic tendency to understand the environmental crises, its devastating cultural and socio-economic impacts, as rather too 'complex' and therefore impossible to resolve. Or, on the other hand, as a consequence of our 'demonizing' capacity to alter 'nature' to our own consent. It is true that current environmental affairs are in debt to the over-depletion of environmental resources, however, this relation is not unidirectional but rather intricate, varied, ever changing and full of contradictions. As a response: it seems that we have to continue designing, now with even more care than ever before.

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Depletion Design: A Glossary of Network Ecologies
Depletion Design suggests that ideas of exhaustion cut across cultural, environmentalist, and political idioms and offers ways to explore the emergence of new material assemblages.

We, or so we are told, are running out of time, of time to develop alternatives to a new politics of emergency, as constant crisis has exhausted the means of a politics of representation too slow for the state of exception, too ignorant of the distribution of political agency, too focused on the governability of financial architectures. But new forms of individual and collective agency already emerge, as we learn to live, love, work within the horizon of depletion, to ask what it means to sustain ourselves, each other, again. Of these and other knowledges so created, there can no longer be an encyclopedia; a glossary, perhaps.

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