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Contagion and Repetition: On the Viral Logic of Network Culture

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abstract The article analyzes the diagrammatic logic of the viral in network capitalism. Combining strands from post-Fordist philosophy, meme theory, and computer virus technology, the text aims to provide tentative ideas of the infectious quality of the network object in digital culture. Instead of merely analyzing the virality of subjectivity in control societies, we also need cultural analyses of the infectious object. Instead of analyzing virality in actualized terms of negativity or the automatic force of rhizomatic resistance, the article points towards a parasitic media analysis that focuses on relations – *in medias res*. This means studying the dynamics of network culture in terms of the excluded-thirds, the parasites, and offering new ideas for approaching the status of objects in the age of digital reproduction and contagion.

> The commodity has become an abstraction. Once escaped from the hand of the producer and divested of its real particularity, it ceases to be a product and to be ruled over by human beings. It has acquired a 'ghostly objectivity' and leads a life of its own. 'A commodity appears, at first sight, to be a trivial and easily understood thing. Our analysis shows that, in reality, it is a vexed and complicated thing, abounding in metaphysical subtleties and theological niceties.' Cut off from the will of man, it aligns itself in a mysterious hierarchy, develops or declines exchangeability, and, in accordance with its own peculiar laws, performs as an actor on a phantom stage. […] Things have gained autonomy, and they take on human features…[1]
>
> The age of globalization is the age of universal contagion.[2]

Disease and Capitalism

Since the 1970s and 1980s, contagious diseases spread as a cultural object across various media. AIDS cultivated political paranoia and the fears of the fragile body in the 1980s,[3] these having more recently been perpetuated by EBOLA, SARS, Asian Bird Flu and various other vectors of contagion. The movement of disease seemed to reveal

1 Benjamin, W. (1999) *The Arcades Project*. Cambridge, MA: The Belknap Press of Harvard University Press, 181 (G5, 1). Benjamin quotes Marx here.

2 Hardt, M. and A. Negri (2000) *Empire*. Cambridge, MA: Harvard University Press, 136.

3 Sontag, S. (2002) *Illness as Metaphor and Aids and Its Metaphors*. London: Penguin.

the paranoid interconnected vectors of globalization. Not merely a biological matter of fact, contagions became objects of cultural analysis where the aim was to contextualize, explain and interpret the spread of figures of disease.

The reanimation of disease was linked to phases of capitalism as well. Whereas plague was seen to correspond to the archaic and tuberculosis to the industrial phase of capitalism, cancer resonated with consumerist capitalism, as Susan Sontag noted:

> Early capitalism assumes the necessity of regulated spending, saving, accounting, discipline – an economy that depends on the rational limitation of desire. TB is described in images that sum the negative behavior of nineteenth century *homo economicus*: consumption; wasting; squandering of vitality. Advanced capitalism requires expansion, speculation, the creation of new needs (the problem of satisfaction and dissatisfaction); buying on credit; mobility – an economy that depends on the irrational indulgence of desire. Cancer is described in images that sum up the negative behavior of twentieth century *homo economicus*: abnormal growth; repression of energy, that is, refusal to consume or spend.[4]

Contagions were not just diseases in the ordinary sense of the word but exhibited key traits of a cultural logic deterritorialized far beyond biological bodies. In a similar vein one can decipher the importance of anomalies in contemporary capitalist technological culture. One of the key figurations of such anomalies has been the virus, whether digital, biological or linguistic. It can be seen as a diagrammatic figure that expresses such key tendencies of network culture as communication, self-reproduction, transmission and de- and reterritorializing movement. The virus has imposed itself as a powerful trope, but its logic is not reducible to one of a metaphoric play of language. Instead, we can regard the viral as a specific mode of action, as a logic of contagion and repetition that can be used for questioning issues of assemblages of the object and the complex ontology of contemporary capitalist culture. This logic can be seen to apply both to distribution of 'goods' (such as commercial products and consumer objects) as well as 'bads' (such as computer viruses, terrorists or bird flu.)[5] In addition, the viral can be seen as a mode of action inherently connected to the complex, non-linear order of network society marked by transversal infections and parasitical relationships.

Contagion as a logic connected to the mathematics of epidemics and network organization theories presents itself as a key tactic in commercial, security and technological contexts.[6] Virulent objects are not encountered merely as objects to be

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4 Sontag, S. (2002) *Illness as Metaphor and Aids and Its Metaphors*. London: Penguin, 64–65. For Thierry Bardini the virus is a postmodern form of capitalist organization, even though I would here connect the issue with post-Fordist capital in general, not making a distinction between capitalism of control societies and postmodern capitalism. Bardini does, however, note how, for example, Dawkins' theory of memes is a product "of the same period, the second oil crisis of international capitalism in the mid 1970s." Bardini, T. (2006) 'Hypervirus: A Clinical Report', *CTheory*, 02/02/2006 [http://www.ctheory.net/articles.aspx?id=504].

5 See Van Loon, J. (2002) *Risk and Technological Culture: Towards a Sociology of Virulence*. London: Routledge. The tools of social network analysis may be seen to apply to phenomena ranging from contagions to terrorists and on to organization management. See, for example, 'Inflow – Social Network Software' at http://www.orgnet.com/inflow3.html [site visited 22/01/2007].

6 See Thacker, E. (2005) 'Living dead networks', *Fibreculture*, 4 [http://journal.fibreculture.org/issue4/issue4_thacker.html].

contained, as with common accounts of viral outbreaks such as in Michael Crichton's *Andromeda Strain* (1969) – one of the earlier virus descriptions from the 1960s.[7]

Viruses and the viral logic are cultivated in such a manner that the exponential mathematical logic of the viral is used as a powerful model of calculation and distribution. Mathematical epidemical analysis is in general based on factors such as reproduction capabilities, the proportion of susceptible carriers of disease and the possibilities these carriers can act as vectors for reproduction. Also, epidemics are seen in essence to be about mathematical series in relation to various environments, intervals, frequencies and probabilities.[8] Mathematical patterns thus offer evolutionary models of networks and contagion that feed on themselves in a recurring fashion. Epidemics can be seen as a problem of mathematical simulation, as, for instance, in such basic visual examples as the Nrich.math.org-website where you can model various kinds of epidemics in a population grid. You can alter the length of an illness, the probabilities of death and infection and, for example, the immune responses.[9] Epidemic analysis has traditionally been one of 'counting and observation', and it is in this sense 'natural' that the contemporary culture of digitality, based on the Turing machines of countable operations, also demonstrates an infatuation with contagious numbers as algorithms (ranging from digitally packed cultural products to network operations concerning security). In scientific uses, viruses are not objects to be expurgated but (also) valuable indices of the environment they occupy, revealing information about the population structure they inhabit. Similarly, as pathogens they can be used to get details of human migration patterns; examining viruses is seen to assist in tracking down interactions, movements and spatial distributions of wild animals, for instance.[10] Viruses, then, are seen also as a kind of a memory of their environment and the ethology of their hosts. What they reveal are movements and connections.

In his *Connected, or What it Means to Live in the Network Society* Steven Shaviro maps the ontology of connectivity of the network age. For Shaviro, drawing from Deleuze and William S. Burroughs, viruses (and related concepts like memes) are paradigmatic of our network age. Selfhood is increasingly depicted as an information pattern, where the 'individual' becomes merely a host of parasitic invasion by information capitalist patterns of repetition:

I may describe this process that subtends my consciousness in several ways: as embryonic infolding, as fractal self-similarity, or as viral, cancerous proliferation. But the difference between these alternatives is just a matter of degree. The crucial point is

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7 For an analysis of killer virus novels as emblematic of the bodily crisis in late capitalism, see Dougherty, S. (2001) 'The biopolitics of the killer virus novel', *Cultural Critique*, 48 (Spring 2001): 1–29.

8 See for instance Bailey, N.T.J. (1957) *The Mathematical Theory of Epidemics*. London: Charles Griffin and Company Limited.

9 Nrich.math.org-website [http://www.nrich.maths.org/public/viewer.php?obj_id=4489&part=index&refpage=monthindex.php. Site accessed 17/01/2007].

10 Biek, R., A.J. Drummond and M. Poss (2006) 'A virus reveals population structure and recent demographic history of its carnivore host', *Science*, 311(27 January): 538–541.

that the network induces mass replication on a miniaturized scale and that I myself am only an effect of this miniaturizing process.[11]

Nonetheless, one can approach the issue from the viewpoint of the object: what is a viral ontology of the consumer object? Mass replication was deemed as the key characteristic of Fordist (cultural) industry already, and now such replicator processes are increasingly supplemented with the characteristics of contagion and the epidemic. This essay provides a tentative analysis towards such an ontology of the viral in contemporary capitalist technological culture. Whilst the body and the subject have had a fair amount of analysis in relation to post-Fordist capitalism, we also need thorough analyses of the nature of the *object* in distributed networks. The viral object is one that is found across various fields, from mathematics to biology, and on to technological platforms and conceptual analysis. My aim is to give a synthetic perspective that looks at the issue through the workings of abstract machines, or diagrammatics. Viral objects have spread from one defining context (originating in biological virology) across the whole social field. Diagrams are transversal movements across institutions, contexts, scales, and act as piloting machines for more concrete assemblages. They can be considered as displaying relations of force and mapping relations and intensities. Diagrams are not structures or frameworks or any kind of stable 'background figures', and in that sense they are not a priori of the concrete assemblages. Instead, they are wholly immanent to the actualizations, a peculiar mode of local phenomena stretching transversally in excess of that locality. The abstract diagrams are completely real and act as "non-unifying immanent cause[s]" within the concrete assemblages, '"not above', but within the very tissue of the assemblages they produce."[12]

I will here turn particularly to technological and informational bodies that exhibit contagious behaviour. This implies a focus on the material dynamics of such bodies, and a view to affects of non-human nature. In another context, I have called this approach media-ecology in order to emphasize that there are dynamic, active ecologies of various kinds that overlap and 'parasite' on each other.[13] As Rosi Braidotti notes, the task of critical ecological analysis is to draw transversal links between various ecologies (psychical, social, media, etc.) in order to grasp the complexities of capitalist production of the real (with its objects, subjects, and relationships).[14]

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11 Shaviro, S. (2003) *Connected, or What it Means to Live in the Network Society*. Minneapolis: University of Minnesota Press, 13.

12 Deleuze, G. (1998) *Foucault*, trans. Seán Hand. Minneapolis: University of Minnesota Press, 37. See also Thacker, E. (2005) 'Living dead networks', *Fibreculture*, 4, [http://journal.fibreculture.org/issue4/issue4_thacker.html].

13 See Parikka, J. (2005) 'The universal viral machine: Bits, parasites, and the media ecology of network computing', *Ctheory*, 15/12/2005 [http://www.ctheory.net/articles.aspx?id=500]. Guattari, F. (2000) *The Three Ecologies*, trans. Ian Pindar and Paul Sutton. London: Athlone. Cf. Fuller, M. (2005) *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge, MA: MIT Press. Whilst the term 'media-ecology' is of course used already by the so-called Toronto school of media ecology, e.g. Marshall McLuhan and Neil Postman, my analysis is more akin to Matthew Fuller's use of the term.

14 Braidotti, R. (2006) *Transpositions*: *On Nomadic Ethics*. Cambridge: Polity, 125–127.

Memes: Contagious Consumer Objects

In *Empire*, Michael Hardt and Antonio Negri provide a very powerful analysis of the parasitical nature of the global capitalist Empire, which lives on the force of the multitude. In their take, the viral is seen in terms of the parasite, which is interpreted as a negative figure of leech-like quality. Their parasitical (abstract) machine can be characterized as an autopoietic machine that inverts even contradictory flows to benefit and maintain the system. The Empire is a parasite of sorts that draws from the vitality of the multitude, the active force, in a similar manner as a virus is often thought to take over the host and use its energies to produce further copies of itself:

> Imperial power is the negative residue, the fallback of the operation of the multitude; it is a parasite that draws its vitality from the multitude's capacity to create ever new sources of energy and value. A parasite that saps the strength of its host, however, can endanger its own existence.[15]

The viral should not, however, be reduced to the negative figure of the parasite. Following Luciana Parisi, Hardt and Negri's ideas of the parasitical autopoietic machine of capital are in danger of succumbing to a mode of transcendence distinguishing the logic of Empire as a binary pair of the multitude. According to Parisi, Hardt and Negri assume distinctions of life and death, inorganic and organic in their notion of the open-ended system of parasitical capitalism. Parisi writes how

> Hardt and Negri's critique of the Empire – the informatic structure of transnational capitalism – as a parasitic organism sucking and neutralizing the vital energies of the multitude – problematically recalls the Freudian thermodynamic cycle of death and life drives. Rather than engaging with molecular mutations, Negri and Hardt characterize capitalism through the negative qualities of destruction and parasitism as opposed to the striving, living qualities of the multitude. Empire misses the fluctuating coexistence of information trading and monopoly, markets and anti-markets. It reimposes the binarism between organic and inorganic, life and death, closed and open systems on multifaceted compositions.[16]

In this light, I want to emphasize a slightly different position to that introduced in *Empire*. Instead of seeing Empire as parasitical, negative and viral, I want to propose a more thorough look at the abstract machine of virality, or, in other terms, the diagrams of contagion that characterize not merely the anti-force of capitalism, but more generally, the key organizational models of action in a network society. The age of universal contagion, then, is not restricted to a negative notion of a vampire or a hostile virus, but rests on the notion that viral patterns of movement characterize the turbulent spaces of networks as a very primary logic.[17] As Hardt and Negri themselves write in

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15 Hardt, M. and A. Negri (2000) *Empire*. Cambridge, MA: Harvard University Press, 361. I use the terms 'parasite' and 'virus' throughout this article. I analyze viruses as the key objects of network culture, whereas the term 'parasite' is discussed in two modes: I try to move from the negative formulation offered by Hardt and Negri towards a more comprehensive look at parasitism as more a general systems characteristic as offered by, for example, Michel Serres. Parasites are no accidental feature of systems, but, rather, every system has them. Parasites are best understood as 'relations', meaning that priority should be given to analyzing systems through their parasites, their relations.

16 Parisi, L. (2004) *Abstract Sex: Philosophy, Bio-Technology and the Mutations of Desire*. London: Continuum, 145.

17 Terranova, T. (2004) *Network Culture: Politics for the Information Age*. London: Pluto Press, 67-68. Fuller refers to the abstract machine of replication "whose activity can be recognized across a range

Multitude, "the distributed network form […] is typical of immaterial production"[18], which begs the question of what kinds of forms of life does this specific mode of organization promote? In this text, the agenda is articulated first in terms of meme theory, followed up with digital objects, with concluding remarks on distributed networks and parasitism. All concrete assemblages also have distinct modes of operation, and I cannot claim to be completely comprehensive in their empirical analysis in this article. Instead, I want to point out the fruitfulness in a method of abstractification (which does not mean that the object of analysis would be any less real than a concrete object). Societies are composed also of abstract connections, and diagrammatic lines are a good example of those. I will return to this point as a method of parasitic media analysis (an analysis of relationships, starting from the middle, *in medias res*) at the end of my article.

Viruses jumped to the forefront of biological research in the 1950s. Soon, theories of cultural ideas and affects behaving like contagious actors followed. Richard Dawkins introduced his theory of the memetic nature of culture in 1976. According to Dawkins and his *The Selfish Gene*, memes were to be considered as cultural genes of a sort. Memes functioned as an explanatory aid to thinking units of cultural information, which could refer basically to anything from thoughts, affects, emotions and ideas to songs, audiovisions, texts, and phrases. Memes were seen especially as transmission units, and Dawkins' meme theory tried to shed light on how cultural themes propagate and survive.[19]

According to the idea, culture is based on copying and imitation, which are governed by a process analogical to natural selection. As the term 'survive' implies, the theory has, since Dawkins, been underlined by a powerful neo-Darwinian emphasis on struggle and competition, which are seen as the basic forces of evolutionary differentiation. This resonates with neoliberal economics. Culture is a battle of individual units, where the least equipped drop out, and the most adaptable work through fidelity, fecundity and longevity of the replicator function.[20] Genes, as well as memes, work as selfish replicators. Neo-Darwinist views however dismiss cooperative behaviour and symbiosis, and produce a very negative path of memetic replication. Replication becomes too easily understood as competition of individuals for limited resources, which neglects the more subtle interactions between organisms and the environment.[21]

If we bracket Dawkins' troubling Platonic and Neo-Darwinian undercurrent, the interesting point in meme theory is how it historically participates (although carrying

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of material instantiations." Fuller, M. (2005) *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge, MA: MIT Press, 111.

18 Hardt, M. and A. Negri (2004) *Multitude: War and Democracy in the Age of Empire*. New York: Penguin, 115.

19 Dawkins, R. (1976) *The Selfish Gene*. Oxford: Oxford University Press.

20 Fuller, M. (2005) *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge, MA: The MIT Press, 112.

21 See also Speidel, M. (2000) 'The parasitic host: Symbiosis *contra* Neo-Darwinism', *Pli: The Warwick Journal of Philosophy*, 9: 119-138 [http://www.warwick.ac.uk/philosophy/pli_journal/pdfs/speidel_pli_9.pdf].

very different political undertones) in the same discussion as recent years of post-Fordist philosophy. *The Selfish Gene* and the attempt to find explanatory tools to conceptualise cultural ideas and practices in an informational fashion resonates deeply with the turn towards post-Fordist production of affects and ideas. Interestingly, memes can be seen as objectifications of immaterial labour packaged as consumer-products – of the digital cultural industry, to be more precise. In Dawkins' example, memes can be "tunes, ideas, catch-phrases, clothes, fashions, ways of making pots or of building arches",[22] – where most of these examples given are consumer objects – or participate in the control capitalism of marketing and incorporeal transformations.[23] In addition, the politics of governing and control are removed from the evolutionary patterns of meme theories, which highlights its resonance with neo-liberal notions of self-governing and the emerging consumer sphere.

In general, consumer products work here as epidemic objects, or processes, where this is understood as having a connection to its ancient Greek roots: *epi-demos*, upon the people, as Marc Guillaume notes. Epidemics work on the social bond, and circulate via the communication channels of everyday nature:

> Returning to the abstract model of *epidemia*, it becomes evident that this model can be applied to phenomena that have nothing to do with disease: the circulation of objects, money, customs, or the propagation of affects and information. Fashion, the circulation of violence and even rumours, those contagions passing from mouth to ear, are all epidemics.[24]

Contagions, memetic processes, are at the centre of a media society of knowledge. The idea of general intellect adopted from Marx's *Grundrisse* states the idea, cultivated by Italian autonomists since the 1970s, of how knowledge becomes the principal productive force and thrust of post-industrial capitalism.[25] This is closely related to the idea of immaterial labour, which tries to grasp the change towards valuing affective, intellectual and other previously neglected forms of labour as key processes of knowledge society.[26] Hardt and Negri emphasise in *Empire* how science, communication and language are incorporated as production powers of the Empire leading to a new biopolitical or biopower agenda of capitalism.[27] As often noted in contemporary discussions, these ways of creating forms of life in the age of immaterial labour and post-Fordist capitalism adhere, then, to a logic of networks, which furthermore accentuates the need for analysis of what happens in such networks, and what kinds of logics of (inter)action the networks promote. In addition, one should note that these modes of life are not restricted to humans or the organic strata of the world, but increasingly address flows of non-organic life – the dynamics in matter and energy

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22 Dawkins, R. (1977) *The Selfish Gene. Corrected reprint*. Oxford: Oxford University Press, 206.

23 Cf. Lazzarato, M. (2004) 'From capital-labour to capital-life', *ephemera: theory & politics in organization*, 4(3): 187-208.

24 Guillaume, M. (1987) 'The metamorphoses of epidemia', in M. Feher and S. Kwinter (eds.) *Zone 1–2: The Contemporary City*. Cambridge, MA: The MIT Press, 60.

25 Virno, P. (2004) *A Grammar of the Multitude: For an Analysis of Contemporary Forms of Life*. Los Angeles: Semiotext(e), 100–101.

26 Terranova, T. (2004) *Network Culture: Politics for the Information Age*. London: Pluto Press, 82–83.

27 Hardt, M. and A. Negri (2000) *Empire*. Cambridge, MA: Harvard University Press, 364–365.

of, for example, the computer mechanosphere.[28] The network is not a stable structure, but can be seen as an active principle of individuation, of assembling actors, which do not have to be constituted of humans but of various and varying agencies, as Bruno Latour has argued.[29]

In any event, the term 'network' is in danger of remaining too elusive if not addressed more exactly. There are various kinds of networks, some more hierarchical, some more rhizomatic. Networks can be centralized, decentralized and distributed. It cannot be taken for granted that networks are democratic and politically radical. As Eugene Thacker notes, even though the contemporary body politic can be articulated in the resonating terms of networks (the technological model), swarms (the biological model) and multitude (the political model), networks are not directly translated as platforms for radical politics of the multitude.[30] As Thacker warns, it would be 'ludicrous' to suggest that there is a direct relation between, for instance, technological networks and genetic networks or between the mass-phenomena of the multitude and biological swarms. Instead of a direct causal link, Thacker points towards non-linear topological layerings where, for example, biological networks participate in transportation networks and communication networks and so forth. Not every network abides by the same rules, but still they are continuously connected and re-connected on various levels.

I will follow a narrower path here and look at how immaterial labour expresses itself in network objects of a contagious kind, a particular form of the contemporary logic of (non-organic) life as well, to use Virno's phrasing. My focus here is on informational communication networks, and especially on how contagions and their vectors are increasingly immersed in informational calculus. This mode of networking, which will be more closely elaborated on later, does, however, continuously borrow from various other spheres, and also layers on various scales and topologies of networks. As a specific form of cultural industry, intellectual and affectual packages have achieved a certain life (a semi-autonomous mode of operation) of their own as distinct entities at

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28 See DeLanda, M. (1992) 'Nonorganic Life', in Crary, J. and Kwinter, S. (eds.) *Incorporations*. New York: Zone Books.

29 Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.

30 Thacker, E. (2004) 'Networks, swarms, multitudes', *CTheory*, 05/18/2004 [http://www.ctheory.net/articles.aspx?id=422]. According to Latour, the concept of network is used in its technical meaning to refer to electricity, sewage systems, the Internet, and so forth, but also as a term in the sociology of organization to refer to the different models of gathering organizations, markets and states. According to Latour, in Manuel Castells' use of the term the meanings are unfortunately blurred when "network becomes a privileged mode of organization thanks to the very extension of information technology." In a similar sense writers have seen the network as a key mode of contemporary capitalist production. Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press, 129. Felix Stalder, however, argues that Castells' view on networks is more complex. Stalder highlights Castells' closeness to Maturana and Varela's autopoietic theories and complexity theories, which underline how systems are formed as a continuous process of coupling. The topology of network society promotes heterogeneous scales of space and time instead of the linear homogeneous rhythm of modern society. Stalder also argues that Latour and Castells have several affinities in their theories of networks. Stalder, F. (2006) *Manuel Castells: The Theory of the Network Society*. Cambridge: Polity, 167–198.

least since Thomas A. Edison, who inaugurated the conveying of images, sounds, energy and affects into "measurable and distributable commodities."[31]

In addition, this amounts not merely to the production but increasingly also to the effective *circulation* of such objects turned into units of information. Now, the fact that consumer production is intimately tied to the circulation of objects is nothing new. Instead, what is interesting is the emergence of what could be called 'contagious modes of circulation' where objects cling to and seek their consumers. Reading post-Fordist analyses of network production together with meme theory produces a key insight. Meme theory was born on the same epistemic layer as ideas of network society in the 1960s and 1970s, and shares also the implications towards non-human informational units that roam across networks in a contagious fashion. Conceptualising affective and intellectual 'information units' as the base monads of culture also provides an effective tool for capturing these processes as valuable units of production of value. More importantly, these units are endowed with a certain level of self-organization, an a-human level of complexity 'ruled' by a contagious ontology. What meme theory actually achieves is a viral theory of the consumer object and post-Fordist networks. As Maurizio Lazzarato notes, contemporary capitalism "arrives with words, signs, and images", which precede factories and also machines of war – and more accurately these words, signs and images are contagious by nature.[32] What is interesting in, for example, Dawkins' take on culture as memetic is the key share allocated to replication; there is for Dawkins a basic 'soup of human culture' of ideas and immaterial brain objects that spread and evolve via imitation.

This field of memetic objects should be approached as a historically specific scientific way of capturing objects of incorporeal nature, and making them into standard objects for cultivation (which is done in the cultural industry in the form of consumer products.) Meme theory thus incorporates one key transformation of diseases or contagious processes into standard objects. It exemplifies well how, since the 1970s, contagions have not referred only to diseases and anomalies as such, but constitute a key standard object of network culture.[33] Such contagious objects as viruses and memes illustrate how metastability is not a system anomaly but something that can be considered a composite part of network culture. The power of memes is not valorized *despite* the fact that they are contagious, metastable and disease-like, but precisely because of these traits. In a similar vein to Dawkins, Susan Blackmore sees media technologies from photocopiers to the Internet (and viruses, to be more precise) as examples of meme evolution towards more efficient means of propagation, but we could more specifically and historically see this 'evolution' as also contributing towards more efficient consumer products that have such ideas of meme as their backbone.[34] Instead of seeing post-Fordist cultural objects as an evolved form of universal meme ontology, we could

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31 Crary, J. (2001) *Suspensions of Perception: Attention, Spectacle, and Modern Culture.* Cambridge, MA and London: MIT Press, 31.

32 Lazzarato, M. (2004) 'From capital-labour to capital-life', *ephemera: theory & politics in organization*, 4(3): 190.

33 On standard objects, see Fuller, M. (2005) *Media Ecologies: Materialist Energies in Art and Technoculture*. Cambridge, MA: MIT Press, 103-105.

34 Blackmore, S. (2000) *The Meme Machine*. Oxford: Oxford University Press, 204–218.

analyze how cultural products and memes share the cultural space towards contagious processes and work as part of the same abstract machine of viral networking.

Contagious processes can, then, be intimately linked to the shifts in capitalist production. Contagions and contagious objects as metastable entities are characteristic of non-linear systems and ways of action, which connect intimately with how post-Fordist society of immaterial labour or knowledge production has been characterised. Instead of imposing strictly defined homeostatic models to patch up flows deemed dangerous (like contagions), this mode of capitalism taps into the creative modulations and variations.[35] This is why 'the virus' is a perfect model of such systems that can be characterized as symbiotic (a difference from meme theory's neo-Darwinist undertones) and as turbulent. Yet, in a very relevant manner, Dawkins' meme theory purports to be read as a culturally and historically apposite idea of post-Fordist culture, where the shift is towards informational units of viral, evolving quality, a certain self-organizing level of consumer units of seemingly non-material nature. In other words, despite the informational nature of contagious objects of network culture, their roots can be found already in earlier modes of analysis of capitalist objects. Such an analysis resonates with Marx's notion of a phantom-like, self-sufficient consumer object, which 'leads its own life.' Aptly, such ideas from the age of the industrial machine find their target especially in contemporary forms of dynamic networks.

Viral Business Machines

Walter Benjamin analysed these ideas of Marx and connected them to his own pioneering theories of the object world of capitalist technological culture. In a way, Benjamin can be depicted as a key theorist of repetition, capitalism and technology, articulating the changing nature of the ontology of the object. Following Benjamin's writings from the 1930s, technical reproduction and the shift from human mimesis to artefacts copying artefacts show how the modern world began to be filled with technically reproducing images, sounds and texts.[36] Whereas 'mimicry' had remained so far a deeply human quality – even Benjamin reserved humans a special place as mimetic actors – now machines seemed to achieve a certain new level of self-reproducibility. Even if Immanuel Kant had argued during the early days of modern automata that there are no watches that make watches,[37] the changing episteme of

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35 Parisi, L. (2004) *Abstract Sex: Philosophy, Bio-Technology and the Mutations of Desire*. London: Continuum, 134. The theme of metastability comes to Parisi's work largely from Gilbert Simondon. Simondon analyzed metastable systems in terms of individuation and change. In his *Du mode d´existence des object techniques*, Simondon argued against the fashion of seeing technical objects as self-contained, and proposed to read them in terms of milieus and potential becomings. Also technical objects and systems can be metastable and open to future fluctuations. Simondon, G. (1958) *Du mode d´existence des object techniques*. Paris: Méot.

36 Benjamin, W. (1969) 'The work of art in the age of mechanical reproduction', in *Illuminations*. New York: Shocken. Cf. Benjamin, W. (2002) 'Über das mimetische Vermögen', in *Medienästhetische Schriften*. Frankfurt am Main: Suhrkamp, 123–126.

37 Canguilhem, G. (1992) 'Machine and organism', in J. Crary and S. Kwinter (eds.) *Incorporations*. New York: Zone Books, 60.

technology (and of course, after Benjamin the Turing machines and Von Neumann architectures of computers) showed an opposite tendency. Machines do reproduce machines, and furthermore, artefacts seem to reproduce by themselves. Turing introduced in the 1930s his formal plans of the Turing machine that would continue processing data (and its own outputs) if no special halting-sequence was imposed, and Von Neumann turned in the late 1940s towards theories of self-reproducing automata. The ideas were continuously cultivated in various computer labs and research centres since the 1960s in the form of experiments with cellular automata, games of life and so forth.[38]

Benjamin saw this new dream world in terms of surrealist images of kitsch, where the world of near autonomous objects lives by repetition and contagion.[39] Objects gained a life of their own, a theme that was used in various early cinematic experiments and surrealist art. While Leibniz had already imagined a machine that allows numbers themselves to do the counting, such images were re-addressed with automation and computerization. Such depictions produce a recurring theme of the twentieth century, already before computers. Manuel DeLanda sees this automation of tasks from the human to the machine as a key culmination in the birth of software, placing the focal point in Jacquard's loom and subsequently Babbage's interests in analytical machines and the transfer of control to machines.[40] Hence, in addition to surrealist art, modern work processes seemed also to incorporate a sense of uncanny automatism. In 1922, *Scientific American* prophesied how "strips of paper", that is, machines programmed with perforated punch cards would be taking control: "The time is coming when workmen will be largely supplanted by such strips of paper; when a walk through a factory will disclose hundreds of machines in operation with a mere handful of attendants fussing about. *In some uncanny way, things will seem to be running themselves* […]."[41]

If this quotation marks a key passage concerning the age of mechanical machines (a logical supplement to the epigraph by Marx), then William S. Burroughs can be considered as the key writer of the virality of the control society. More accurately expressed, Burroughs defined the characteristics of language and communication in terms of virality. Burroughs, a relative of the founder of Burroughs Adding Machine-company, expressed the ontology of post-Fordist immaterial labour in terms of contagion:

> My general theory since 1971 has been that the Word is literally a virus, and that it has not been recognized as such because it has achieved a state of relatively stable symbiosis with its human host; that is to say, the Word Virus (the Other Half) has established itself so firmly as an accepted part of the human organism that it can now sneer at gangster viruses like smallpox and turn them

38 These themes are elaborated in my forthcoming study, Parikka, J. (2007) *Digital Contagions: A Media Archaeology of Computer Viruses*. New York: Peter Lang.

39 See for example the essays Benjamin, W. (1969) 'The work of art in the age of mechanical reproduction', in *Illuminations*. New York: Shocken and 'Traumkitsch', in *Gesammelte Werke* II.2, 620–622.

40 DeLanda, M. (1991) *War In the Age of Intelligent Machines*. Cambridge, MA: MIT Press, 167-173.

41 *Scientific American* (1922) 'When perforated paper goes to work: How strips of paper can endow inanimate machines with brains of their own', December: 394, my emphasis.

> in to the Pasteur Institute. But the Word clearly bears the single identifying feature of virus: it is an organism with no internal function other than to replicate itself.[42]

In Burroughs' world, media act virally, and without content. Both the Word and the virus are defined by external relationships, not internal substance (meaning or signified). For Burroughs, the idea of the medial virus stems from audiotapes that had entered the Western media sphere in the 1950s. They presented for Burroughs uncanny possibilities of mechanical (re)production and distribution of Words, which were acquiring viral-like capacities. This was the horror of pre-recordings as organisms that entered the bodies and brains as 'the Other half'. Here words *are* things: language functions as a material force, which enters the body-as-a-recorder "regulated by the principles that govern magnetic tape in its reproduction, erasure, and reconfiguration",[43] as N. Katherine Hayles writes. With this schizophrenic move, Burroughs was able to illustrate how modern technical media imposed themselves as material viruses, reproduction machines that were much more uncanny than the consumer cultural industry that, for example, Adorno and the Frankfurt School introduced.

Aptly, Burroughs' literary experiments were partly made possible by his family's fortune gained in early computers, and he himself became one of the key writers of network capitalism, of post-Fordist objects of contagious nature. Reading Burroughs in this context emphasises yet another key idea of the 1970s: language and general intellect as production forces are contagious entities that express themselves in a certain level of material self-organization – a Benjaminian sphere of objects breeding objects.

Yet, if Benjamin provided us with a theory of the state of objects in the age of mechanical reproduction, we need to develop concepts to grasp network objects, which act contagiously – they stick (or are addictive, another theme characteristic of Burroughs' texts). Language is merely one form of media, and it can be supplemented with a cultural analysis of other contagious media as well.

In the context of digital culture, network analysis software does, for instance, map the epidemic paths of sociality. From terrorists to contagious disease, from 'Leadership Development' practices to 'Network Vulnerability Assessment' such techniques provide ways to capture the complex flows of information in various registers and scales.[44] The issue of 'control' is underlined on the website of Inflow-software, which gives advice how "The best method to control something is to understand how it works."[45] Despite the incongruence of various networks from biology to company

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42 Burroughs, W.S. (1985) *The Adding Machine: Collected Essays*. London: John Calder, 48.

43 Hayles, N.K. (1999) *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: University of Chicago Press, 213–214.

44 See 'Inflow – Social Network Software' [http://www.orgnet.com/inflow3.html, site visited 16.1.2007]. Most of these are commercial tools, but there is in addition, for instance, the Covgom Issue Crawler. See [http://www.govcom.org/, site visited 22.5.2006]. As Latour notes, information technologies can be used to trace the vectors of social forces by making visible such forces that resided virtual before. Latour argues, how this opens up new possibilities for Tarde's quantitive sociology of mapping. Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press, 207-208. Exemplary in this sense is Rogers, R. (2005) *Information Politics on the Web*. Cambridge, MA: MIT Press.

45 'Inflow – Social Network Software' [http://www.orgnet.com/inflow3.html, site visited 16/01/2007].

structure or terrorist movements, these are all handled *as if* they all were at least isomorphic in their patterns. Networks and their objects are opened up to informational tracing, which is believed to give the best tools for predicting (standardizing) environments of action, whether military, corporate or human corporeal. What we are dealing here with are not anomalies in the traditional sense (as entities without series) but a new mode of serialization based on contagious metastable objects, working actively as network creators.

Put rather bluntly, capitalist production is increasingly able to capture such viral processes. As Lazzarato writes, this mode of production is not, primarily, as focused on creating objects *per se*, as in creating worlds that propagate consumer objects. Drawing on Gabriel Tarde, Lazzarato notes the nature of contemporary production of reality as one of creating worlds for objects and subjectivities – a very mundane event that happens when turning on the radio or the television, walking on the street in the midst of advertisements Such events entwine the body with incitements and invitations towards certain habits and ways of life (certain patterns of repetition).[46] Lazzarato points to a crucial aspect of this contagious capitalism that infects the body (epidemic in the meaning used by Guillaume) to advertising and publicity:

> Publicity constitutes the spiritual dimension of the simulacrum 'event' which the companies and advertising agencies invent and which has to be realised in the body. The material dimension of this pseudo-event, its realisation, takes place when the ways of living, eating, having a body, dressing, inhabiting a place, etc. get incarnated in the body: materially, we live among goods and services that we buy, in houses, among furniture, with objects and services that we have grabbed as 'possible' in the flows of information and communication within which we are immersed. We go to bed, we get busy, we do this or that whilst these codes continue to circulate (they 'insist') in Hertzian flows, telematic networks and newspapers etc. They double up our world and our existence as a 'possible' which is already, in reality, an order, a command, authoritarian word even if expressed as seduction.[47]

Lazzarato describes here the machinic production of bodies of control society, where Hertzian waves pierce and capture bodies (as with Judge Schreber in the early twentieth century) in a contagious fashion. Reminiscent of Burroughs, this idea depicts the telematic, informational language of consumer products as clinging to the human host and insisting on it. This means a contagious doubling of the existence of the body, as Deleuze noted in his Post-Script to Control Societies.[48]

These ideas can also be read from the cybernetic basis of control society. Not reducible to technological platforms, this virtual logic of doubling and repetition flourishes, however, in the Turing machine context of potentially infinite copying possibilities: The

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46 Lazzarato, M. (2004) 'From capital-labour to capital-life', *ephemera: theory & politics in organization*, 4(3): 189. It would also be worthwhile to dig into Gabriel Tarde for early notions of epidemic social relations, working via imitation and repetition. See Tarde, G. (2000) *Social Laws: An Outline of Sociology*. Kitchener: Batoche Books. For a short intro on the theme of Tarde and memetics, see Marsden, P. (2000) 'Forefathers of memetics: Gabriel Tarde and the laws of imitation', *Journal of Memetics: Evolutionary Models of Information Transmission*, 4 [http://jom-emit.cfpm.org/2000/vol4/ marsden_p.html].

47 Lazzarato, M. (2004) 'From capital-labour to capital-life', *ephemera: theory & politics in organization*, 4(3): 190.

48 Deleuze, G. (1990) *Pourparlers 1972–1990*. Paris: Minuit, 240–247.

Turing machine as an imitation machine. The Turing Machine, the formal model of every computer since 1936 when Alan Turing explicated his ideas in "On computable numbers, with an application to the *Entscheidungsproblem*", is then a key diagrammatic link to this idea of viral ontology. Turing machines are actually also memetic devices, devised for simulating and copying other machines and functions. Like viruses, they are potentially able to stick to heterogeneous forms of life and create a simulacrum of those processes they cling to. In its ability to compute any computable sequence, the universal machine is then in itself potentially any machine – hence the name universal. This was meant by Turing to be achieved via feeding the instructions of any sequence that is expressible in real numbers and calculable by finite means. In this sense it can be conceptualised as a universal copy machine that can metamorphose according to its host, its desired function: a perfect post-Fordist machine in its ubiquitous flexibility, viral-like metamorphosis.

For Deleuze, the cybernetic machine was also accompanied by the viral. Deleuze sees the virus as providing potential for resisting communication, in a similar way that strikes and sabotage were earlier. Deleuze's short passage can be, however, supplemented with a more thorough analysis showing that, actually, this virality is not merely a description of the forces of resistance (a logic of becoming and non-communication) but can be stretched to encompass the more general abstract machine governing a wider field of capitalist Empire. Instead of the stuttering resistance of the viral, we have also Viral Business Machines. This is not however strictly the same thing as the capitalist parasites Hardt and Negri formulate in their take. Parasitism does not assume only the negative forms of 'vampirism' but is to be seen as a more systematic quality of individuation, of turbulence that can be taken in different directions.

Viral Digital Code

Even though the logic of the viral is not reducible to its manifestations in any particular substance, whether biological or technological, a concrete example illustrates well the functioning of the viral logic. Even though there is a diagrammatic piloting working on various levels, this abstract machination works through concrete assemblages. Similarly, as Benjamin was keen on deciphering the contours of the modern technological culture from very mundane objects such as headdress fashion, wall posters or architectural details, we can approach viral organization from equally mundane objects of network culture. A computer virus is a specific class of computer software that often consists of three parts (or affects): 1) the copying routine which controls the self-reproduction of a virus; 2) a trigger, which triggers the viral code into active mode. This can be, as for instance with earlier viruses, a certain date or a certain number of computer boot sequences; 3) a payload, which is often the level users perceive. A payload can be something as malicious as reformatting the hard drive, or something less harmful, such as playing a tune or printing a piece of text, as the well-known PEACE-virus from 1988:

> Richard Brandow, publisher of the MacMag, and its entire staff would like to take this opportunity to convey their universal message of peace to all Macintosh users around the world.[49]

As I have analysed elsewhere, computer viruses have since the 1980s been dubbed as the key danger to information capitalism, presented as based on otherwise frictionless flows of information.[50] Especially since the end of the decade, viruses became mythical monsters that demonstrated potentials for "making banks sick"[51] and annihilating the infrastructural basics of organized society.[52] The intensity of the danger felt was due to the increasing importance placed on network technologies and digital computers. Technologies of knowledge and networking were being hailed from the 1960s on as the next key form of production of added value, but especially the 1980s with new personal computers, local-area-networks and, for example, the first versions of the 'user-friendly' operating systems promised that these ideas would not remain only the ideas of visionaries and computer scientists.[53]

Yet, as demonstrated since the early 1990s, the so-called-malicious virus was captured as part of the heterogeneous machine of information capitalism. Unfortunately most popular reports of viruses and other more or less contagious malware programs shifted the attention from the *modus operandi* of self-reproductive software and emphasised the metaphoristics of the phenomenon. On a more fundamental level, there happened once again a translation and metamorphosis (not metaphorics) of viral modes of operation from anomalies into standard objects. This deterritorializing movement characteristic of capitalism worked through a conjugation of contradictory, minoritarian, disruptive and even potentially revolutionary constellations into a new body reterritorialized on capital and capitalist software production. 'Bads' were quickly turned to 'goods' as computer viruses were captured as productive anti-virus products, security services, and the use of such anxieties recycled into media circulation as infotainment.

This reminds one of the joke of 'politically correct viruses' that do not call themselves 'viruses', but insist on being referred to as 'electronic micro organisms'. In another fashion, the definitions blur when we consider the role played by e-mail virus warnings, which can also act as disturbing viral messages. With these, the virality is not coded into the software but more accurately emerges from the social dimension coupled with the network communication potentials. In other words, virality does not have to designate only the characteristics that are part of the viral program but can be seen as a more systematic element.

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49 Virus Bulletin (1993) *Survivor's Guide to Computer Viruses*. Abingdon: Virus Bulletin, 26.

50 Parikka, J. (2005) 'Digital monsters, binary aliens: Computer viruses, capitalism, and the flow of information', *Fibreculture*, 4 [http://journal.fibreculture.org/issue4/issue4_parikka.html].

51 Rosenthal, B.E. (1988) 'Computer viruses can make your bank sick', *Bankers Monthly*, October: 55–58.

52 See Cohen, F. (1984) 'Computer Viruses – Theory and Experiments.' DOD/NBS 7th Conference on Computer Security, originally in IFIP-sec 84, also as an invited paper in IFIP-TC11, 'Computers and Security', V6 (1. Jan. 1987), 22-35 [http://www.all.net/books/virus/index.html. Site accessed 16/01/2007].

53 One early example prophesying national and world-wide network grids is Bagrit, L. (1965) *The Age of Automation*. Middlesex: Penguin, 33-34.

The hype concept of viral marketing is of course one obvious example of how contagious network processes work in the context of immaterial labour and capitalist production. Using social networks, this specific form of clandestine marketing is technologically most at home with Internet based applications. As marketers themselves define this practice:

> [v]iral marketing describes any strategy that encourages individuals to pass on a marketing message to others, creating the potential for exponential growth in the message's exposure and influence. Like viruses, such strategies take advantage of rapid multiplication to explode the message to thousands, to millions.[54]

For example, Hotmail's self-advertising in outgoing e-mails, originating from the end of the 1990s, has been listed as one of the early examples of marketing that clings parasitically to non-commercial e-mails in order to extract potential profit from them. Similarly one can decipher web, e-mail, instant messaging and other communication technologies as susceptible to attaching commercial info as a nearly unnoticed part of other communication practices.

On an organizational level, viral marketing is based on the same logic as computer viruses in its ability to attach itself as part of the communication packets sent over digital networks. It is a perfect example of how turbulent systems (metastability) are taken advantage of for commercial purposes. The difference between the two is that the piece of information viral marketing adds to the message is supposed to bring in added value as well. Interestingly, several examples of such strategies employ forms of social networking. As the company ZN.be, for example, demonstrates in their Ecampaign tactics, viral marketing is about mapping the environment (social and technological, such as the Internet) and tapping into "what people are talking about on the web (newsgroups, communities, blogs, websites, magazines)".[55] This marketing strategy excerpt demonstrates how digital contagions also work effectively as social contagions – that is, they get their force from the qualities of interaction that takes place with communication networks – yet not being reducible to the technical qualities.

Another recent relevant example of viral software capitalism includes the Sony BMG incident (2005). Sony launched its new XCP copy protection software that actually used virus-like techniques and installed itself on a computer without the user knowing of it. The Root Kit routine of the XCP attached itself to the user's computer in order to keep track of copying processes but it could also be used to track consumer behaviour in a spyware-fashion.[56] This is an apt example of how parasitic routines are part and parcel of so-called 'normal' programs as well, making the issue dependent on a complex field where the ability to define material program routines remains a key issue. Again, the viral logic is identified as an efficient semi-autonomous process or a routine that is not reducible to any clear-cut idea of vandalism but demonstrates the powers in the idea of a universal viral machine, perhaps a new model for infectious media. To follow Nigel

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54 Wilson, R.F. (2000/2005) 'The six simple principles of viral marketing', *Web Marketing Today*, [http://www.wilsonweb.com/wmt5/viral-principles.htm, site visited 16/01/2007].

55 ZN.be Zeitgeistnet [http://www.zn.be/, site visited 18/05/2006].

56 See, for example, the Electronic Frontier Foundation (EFF) open letter to Sony-BMG [http://www.eff.org/IP/DRM/Sony-BMG/?f=open-letter-2005-11-14.html, site visited 16/01/2007].

Clark: "Computer viruses are predisposed to escape the jurisdiction of their creators, dispersed by integrated circuitry, capable of utilizing previously accumulated signifying material for their own explosive replication, and in these senses might be seen as the archetype of the superconductive event."[57]

Superconductive capitalism: the capitalist mode of production and marketing has recognized how networks can be utilized as dynamic systems, which work on contagion and transversal, non-linear and multi-scalar vectors.[58] Hence, the movement of ideas and affects (the above mentioned memetic quality of general intellect) is reminiscent of viral patterns. Cultural products are increasingly efficiently linked and contagious, as for example the Matrix-product family with its films, video games, action figure-toys, soundtrack-music, Internet pages and so forth. Cultural products are able to endure as they double their rhymes and copy their existence in various forms across technological platforms and social categories.

Sounds, images and texts are not merely broadly sowed in search of the user/consumer (as perhaps with the Fordist broadcast-model) but they actively seek their targets. As the epigraph from Marx suggested, consumer products seem to live an uncanny life of their own which is furthermore emphasised in the age of self-directing computer programs. Virality, as its roots in Latin suggest, is a vector of both poison but also force and virility. It is not merely a form of sabotage and non-communication but also a key concept with which to grasp the qualities of network capitalism. Virality demonstrates the ability of transversal connections that move in intervals, between stable states. It is hence a molecular vector that increasingly describes the functioning of societies of control (perhaps even more accurately than a snake). As Parisi notes, control and capitalism do not operate by aiming at homeostasis but by cultivating turbulence and differential becomings, "by following the metastable equilibrium of parallel networks of communication".[59] Parisi relates her analysis especially to biocapitalism, but such organizational observations are pertinent in contexts of digital media ecologies as well, where ideas of symbiosis and parasitism are more accurate descriptions of the nature of such ecology than e.g. a (Neo)Darwinian focus on individual entities. This is of course the relative weakness of memetic theories of culture. Instead of individual competition, the network topology should be seen as a more symbiotic assembling between (software) objects and their environments (whether protocols, operating systems, hardware, etc.).

Parasitic routines demonstrate what Tiziana Terranova has referred to as the turbulent quality of network culture. Instead of having the possibility to think of the Internet as a frictionless channel for information units, for instance, which are occasionally disturbed

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57 Clark, N. (1997) 'Panic ecology: Nature in the age of superconductivity', *Theory, Culture & Society* 14(1): 88. On universal viral machines, see Parikka, J. (2005) 'The universal viral machine: Bits, parasites, and the media ecology of network computing', *Ctheory*, 15/12/2005 [http://www.ctheory.net/articles.aspx?id=500].

58 See Sampson, T. (2007) 'The accidental topology of digital culture: *How the network becomes viral*', *Transformations-online journal*, forthcoming 2007 [http://transformations.cqu.edu.au/index.shtml].

59 Parisi, L. (2004) *Abstract Sex: .Philosophy, Bio-Technology and the Mutations of Desire*. London: Continuum, 134.

by parasitical and symbiotic entities, the whole architecture is a dynamic informational space "suitable for the spread of contagion and transversal propagation of movement (from computer viruses to ideas and affects)."[60] Whereas these patterns are increasingly also used in capitalist vectors, such as advertising or the network enterprise, they also include a potential for experimentation and becoming. Hence, my argument, combining on the one hand Hardt and Negri's somewhat too negative account of parasitic Empire with Deleuze's rather optimistic and straight-forward idea of viruses as a form of resistance, is that there is an abstract machine, a diagram, of viral networks across spectra (technological, social, affects, ideas). In my view, viruses act as a marker of a network structurings, agents that roam such non-spaces (temporal processes). They are not objects in the sense of quiet, stable and self-enclosed passive matter within a container-like network, but examples of the activity inherent in technological systems. Just like technological systems should be thought of in terms of potentiality, becomings and individuation (structuration instead of structure),[61] contemporary networks susceptible to viral spread are examples of how turbulence presents itself in a system as an active force. They are ways of movement and specific packets of affects that express the qualities of the environment they are imbued in. Deterritorialized from the biological sphere they are, however, Real on this plane of consistency (where metaphors are merely secondary modulations). These contagious machines are not faint repercussions of the Real, but pilots and designs of a reality in process – a manufacturing.[62] The viruses and examples above illustrate the concrete machinic assemblages that effectuate the abstract machine of virality.[63] These are the concrete movements of non-organic actors, or objects, across their habitat of capitalist technological culture.

Parasitic Media Analysis

There is a vast amount of media theory on networks in which they have been analysed as a form of turbulences (Terranova, 2004), as multi-scalarity (Sampson, 2007) or as 'organized networks' (as by Geert Lovink and Ned Rossiter, 2005). Interestingly, Lovink and Rossiter's take on networks places the idea of 'notworking' at the centre of the organization, noting how "[n]etworks thrive on diversity and conflict […], not on unity."[64] Lovink and Rossiter's notions refer to the potential of combining the organizational form of networking (as notworking) with the politics of the multitude, a structure of multiplicity without one defining principle, a pack of singularities.

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60 Terranova, T. (2004) *Network Culture. Politics for the Information Age*. London: Pluto Press, 67.

61 See Simondon, G. (1989, originally 1958) *Du mode d´existence des objets techniques*. Paris: Aubier, 155.

62 Deleuze, G. and F. Guattari (1987) *A Thousand Plateaus*, trans. B. Massumi. Minneapolis: Minnesota University Press, 141–148.

63 *Ibid.*, pp. 69–71.

64 Lovink, G. and N. Rossiter (2005) 'Dawn of the organised networks', *Fibreculture*, 5, [http://journal.fibreculture.org/issue5/lovink_rossiter.html]. See also Lovink, G. (2005) *The Principle of Notworking. Concepts in Critical Internet Culture*. Amsterdam: Hogeschool van Amsterdam [http://www.hva.nl/lectoraten/documenten/ol09-050224-lovink.pdf].

In another context Munster and Lovink warn of the inherent danger of succumbing to metaphorics of nature as a self-governed emerging system, a play of rhetorics which should be responded to with an analysis of the real network events that are taking place.[65] As noted above, virality refers here to very concrete and real processes of network organization where emergence is one part of the play – and cybernetic designing and capturing another one. Talking of media *ecologies* does not mean taking network cultures as law-governed nature (or any other cybernetic versions of an Invisible Hand of Capitalism). Here, nature is defined by its unnatural qualities, and its open-ended potential towards something not done before. In other words, this kind of a stance is quite the opposite of naturalizing, for example, histories of the Internet or digital culture. Contemporary networks are to be seen as assemblages of hierarchical and heterogeneous parts, where centralised networks, decentralised networks and distributed networks are intertwined in complex actual constellations.[66] This is related to what Thacker has termed a topological layering, the coexistence and co-assembling of various forms of networks from biological to the political.[67]

What is important to note, as Tony Sampson underlines, is that virality should be read in connection with its environment, that is, the network quality. Viruses do not equal heterogeneous rhizomes but often they bloom in aristocratic systems where the traffic is concentrated to a few highly connected nodes.[68] In other words, the viral cannot directly be translated as 'rhizomatic' or as a marker of political multitude, even though viruses as specific objects can be used to reveal hierarchies. This idea was also introduced by Albert-László Barabási in his popular science book *Linked*. According to Barabási, the model of scale-free networks is actually the most prominent example for phenomena as various as and ranging from biological viruses to distribution of 'fabs'. Contrary to ideas of distributed networks, Barabási argues that we should consider most contemporary networks as scale-free with few key nodes having most connections across the networks. Such networks are modelled according to the 80/20 ratio, where 20 % of nodes have connections with the remaining 80 %, making the network very aristocratic. Further, the Internet is – according to *Linked* – a scale-free network defined, on the Web level, by certain key nodes (key websites with the most links to them, acting as switching boards of sorts) and, on the infrastructure level, characterized by the few root servers.[69] In addition to concerning himself with the dangers involved with and the ease of bringing down aristocratic networks, Barabási has been active in developing parasite models of computing that would take advantage of the linking potentials and the collective computing power of connected computers.[70] In several

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65 Munster, A. and G. Lovink (2006) 'Theses on distributed aesthetics, or what a network is not', *Fibreculture*, 7 [http://journal.fibreculture.org/issue7/issue7_munster_lovink.html].

66 See Galloway, A. (2004) *Protocol: How Control Exists after Decentralization*. Cambridge, MA: The MIT Press, 29–35.

67 Thacker, E. (2004) 'Networks, swarms, multitudes', *CTheory*, 05/18/2004 [http://www.ctheory.net/articles.aspx?id=422].

68 Sampson, A. (2007) 'The accidental topology of digital culture: *How the network becomes viral*', *Transformations-online Journal*, forthcoming 2007 [http://transformations.cqu.edu.au/ index.shtml].

69 Barabási, A. (2003) *Linked*. New York: Plume. The internet now has thirteen root name servers that control the Domain Name System, or the translation of domain names into IP addresses.

70 *Ibid.*, 157.

regards, this is something that has already been done by the SETI-program searching for extra-terrestrial life with the aid of connected computers. One of the differences is that in Barabási's model, the consent of the computer owners would not be asked for beforehand. This is also where there risks of viral computing are most obvious.

Nonetheless, as Alex Galloway notes, viruses can be seen as tactical media tools that index homogeneous networks and proprietary systems: "Show me a computer virus and I'll show you proprietary software with a market monopoly."[71] It is here that media analysis can become viral or parasitic: it can turn itself into a mapping tool and a cartographic machine that not only picks up the *has-been* (for example the existence of aristocratic, non-democratic networks) but also the *could-bes* (the kind of radical potential turbulent networks have).

Approaching the virality of networks is an attempt to start at the middle, at the parasitical moment of turbulent network space, where symbiosis is more accurately the rule, not the exception regarding the ontological status of objects of post-Fordist culture. Whereas capitalist production is able to take advantage of the continuous production of accidents and notworking, we are also presented with a form of potentiality for network action. As theoretically noted by Simondon, Parisi and Terranova, for example, and technically by the turbulent network spaces and organisms of viral quality, metastability describes the potentiality for change of (technical) systems. This is a theme that transverses from the technicalities to something that can also be activated on the aesthetic-political level (although the actualization is not automatic, as Thacker has noted.) Here 'parasite thought' as has been outlined by Michel Serres over the years provides ways to analyze this '*in medias res*', in the middle, of turbulent systems. This marks the becoming-viral of media theory. In Serres' philosophy of systems, systems are always defined by relations attaching terms, not the other way around. Instead of a straightforward appreciation of communication and denouncing of miscommunication, Serres values the in-between elements of systems. Interference is not, bluntly put, 'bad' but rather a potential for creation. The parasite is noise, but only as a potential bifurcation point that can open up towards new systems.[72]

Instead of describing virality, parasitism or symbiosis in terms of predefined positions (resistance or capitalist conformity), it should be approached as a virtual logic of action, which actualises in various registers. Drawing on concepts such as ecology or symbiosis

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71 Galloway, A. (2004) *Protocol: How Control Exists after Decentralization*. Cambridge, MA: MIT Press, 176.

72 Brown, S.D. (2002) 'Michel Serres: Science, translation and the logic of the parasite', *Theory, Culture & Society*, 19(3): 1-27. Serres, M. (1982) *The Parasite*, trans. L.R. Schehr. Baltimore: The Johns Hopkins University Press. This emphasis on the parasite might also be seen as a deliberate confusing of the object of study (network culture) with a method (reading through relations and networks.) This is what Latour warns about, yet there is a certain sense in tracing the objects and vectors of network spaces as constituted by an ethos towards connectionism. This parasitic analysis is methodical in trying to get a grip on how objects of network capitalism function. Cf. Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press, 142. Of course, it would be another kind of a study to trace in ANT-style the networks that are continuously assembled in the grassroots of networks such as the Internet. This kind of work is perhaps done with critical software tools such as the aforementioned Govcom.org's one's. See [http://www.govcom.org], site accessed 01/11/2006.

does not necessarily (although the danger is present) succumb to a rigid systems thinking where the dynamics of socio-technical systems are seen as linear and determined like 'natural laws'. Instead there is the potential for new cultural analytical perspectives to digital culture, something that has been taken more advantage of in practical assemblages. Resonating with Deleuzian themes, various media activists and theorists have hailed the powers of the viral as potential disturbances of the networks of Empire.[73] This is, of course, a continuation of the tactical media ideas in the wake of Hakim Bey's Temporary Autonomous Zone or the interventions of the Critical Art Ensemble. One practical 'parasiting' example would be the on-going 'Google-Will-Eat-Itself' project (originating from 2005) by the 'digital actionists' Hans Bernhard, Lizvlx (both from the group UBERMORGEN.COM), Alessandro Ludovico (Neural.it) and Paolo Cirio (epidemiC). A form of digital cannibalism, or parasitism, the GWEI-project collects money by serving text advertisements to Google and uses the money to buy Google shares.[74] Of course, at the moment (mid-January 2007) it would take approximately 202.345.125,3 years before the project owns Google entirely, but instead of this simple goal, the fascinating part is how the parasitic potential is revealed by the project.

Following Terranova, such are perhaps examples of a logic of a turbulent ecology which cannot be apprehended beforehand but only by engaging in it, in the midst of these contagious objects from consumer products to viruses, to scams and junk mails: "There is no cultural experimentation with aesthetic forms or political organization, no building of alliances or elaboration of tactics that does not have to confront the turbulence of electronic space."[75] This space is also the sphere of Marx's phantom-like commodity living its own semiautonomous life, now turned viral in the age of memetics and networks, but it is also a potential space of innovation and creativity, of experimentation with virality.

Yet, as said, the issue should not be approached on the level of pre-defined terms, but of relationships. The post-Fordist network object, the contagious immaterial labour, moves on similar patterns of virality as do the media art viruses and tactical media interventions. Hence, the virtual diagram differentiates and actualises in various modes and these actualisations cannot be adequately judged beforehand. This should not, of course, be interpreted as a vanity of experimentation – on the contrary. Only through experimental practices are we able to decipher knowledge of the concrete affects of various kinds of parasites and contagious connections that roam the dynamic spaces of networks. This means a micropolitical position that starts its analysis from the middle to "pull out potentials"[76] from the midst of the parasitical relationships.

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73 A good example is the Biennale virus from 2001. See Parikka, J. (2005) 'Digital monsters, binary aliens – Computer viruses, capitalism, and the flow of information', *Fibreculture*, 4, [http://journal.fibreculture.org/issue4/issue4_parikka.html]. Figurations of a virus are also used by, e.g., VNS Matrix in their classic Cyberfeminist Manifesto. See Runme.org-website for examples of viral net art, forkbombs, etc. [http://runme.org, site accessed 08/06/2006].

74 'Google will eat itself' [http://www.gwei.org, site accessed 16/01/2007].

75 Terranova, T. (2004) *Network Culture. Politics for the Information Age*. London: Pluto Press, 68.

76 Parisi, L. (2004) 'For a schizogenesis of sexual difference', *Identities: Journal for Politics, Gender and Culture*, 3(1): 84.

Entities of post-Fordist digital network culture are intertwined with their territories, and hence act collectively and inter-dependently. Following this paradigm we are enticed also to develop viral analytics that proceed from this complex state of contagious systems to an ecological and eco*sophical* mapping of the spaces, affects and virtual potentials of the contemporary terrain of capitalist media culture. This means approaching dynamics of network culture in terms of the excluded-thirds, the parasites, and offering new ideas to think (problematize) the state of objects in the age of digital reproduction and contagion. The task is also to update Benjaminian analysis of the mundane objects of mechanical media and capitalism in the age of cybernetic control machines and networks. Multi-scalar transversal mapping connects (parasitically) from technological platforms (such as computer viruses, and Turing machines) to ideas and affects, and on to social relations (*epi-demos*) in order to engage with the complex contagions of contemporary culture. It is here, in the symbiotic objects, contagious patterns and parasitic routines that one finds the crystallized but messy objects of the abstract machine piloting the production of (nonorganic) ways of network life.

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