The strange meshing of impersonal and personal forces in technological action

Adrian MacKenzie
Institute for Cultural Research
County South College
Lancaster University, LA1 4YD, UK
a.mackenzie@lancaster.ac.uk
http://www.lancs.ac.uk/staff/mackenza

May 2006

Abstract

Many critical approaches ascribe a deficit of meaning to technology. The theory of technological action developed in the paper treats technology as an important, eventful terrain for collective life. Drawing on Michel Foucault's idea of problematization, it places contemporary technological actions in settings suffused by power relations. It finds in the work of Gilbert Simondon ways of explaining how technological action overflows social norms, forms, identities and structures. Based on analysis of processes of abstraction and concretisation in a spectrum of symptomatic examples, it contends that cultural theory should develop understandings of the potentials that give rise to technological acts as a way of being with others. The paper suggests how cultural theory can engage with the specificities of these actions.

What can critical thought learn from technology? Cultural and social theory has not often posed this question for itself. The usual question has been how to rein in modern technology in order to protect culture, meaning or signification. That framing precludes, however, any possibility of treating actions associated with technology as eventful or relevant in their own right. Few accounts available in cultural theory put technological action on a par with signification. In most cultural theory, the affectivity, passions and vicissitudes associated with technological action in contemporary collective life hardly register.

Technological action has a specificity that is difficult to grasp. Almost unavoidably
today, general framings or constructions such as ‘information’ or ‘biotechnology’ overshadow specific technological actions. Concretely, technological action appears in mundane objects and practices, ranging from TV remote controls, through various pieces of software to hardware modifications of consumer electronics to large-scale technological ensembles such as the internet. In treating mundane objects and practices as critical sites of technological action, I suggest that they offer interesting terrain for critical thought precisely because they are not fully understood, represented or symbolised. Technological action is not individual or collective. Rather it explores relations with others in technological ensembles. Technological action both abstracts from and concretises existing social relations. It generates singular intersections of historically and materially specific impersonal and personal forces. Critical thought might learn something from this. It could find ways of accompanying and relating to these forces, ways of entering into and experimenting with the other-directed power relations they precipitate.

**TV-B-Gone and 209 codes: meaning and action**

Sociologists of technology have long argued that technologies congeal or crystallise sets of social relations (see Sterne 2003 for summary). Making something technological is a deeply social process that translates, borrows or re-routes social relations through different material arrangements. Changing these arrangements materially affects social life. Although much critical thought struggles with what it regards as loss of meaning, alienation and disruption to social relations occasioned by contemporary technologies (Heidegger and Lovitt 1977; Stiegler 2003; Virilio 2000), it is actually quite easy to challenge any simple opposition between technological action and meaning. For instance, TV-B-Gone is a small gadget that turns off all televisions operating in the vicinity (Bodzin 2004). An article describing TV-B-Gone in *Wired News* describes how the device interrupts television images constantly screened in public and commercial spaces:

> The device, which looks like an automobile remote, has just one button. When activated, it spends over a minute flashing out 209 different codes to turn off televisions, the most popular brands first.

> Altman [the inventor] said he prefers to ask people to turn off TVs. The problem is places where there’s a captive audience and no one is available to respond to requests, like the Laundromat or the airport. Altman said he has turned off sets at his
local laundries and at airports around the Pacific Rim. (Bodzin 2004).

TV-B-Gone itself is not a critical representation concerning media technologies. It intervenes directly in a technological system (switching televisions off and on). As it flashes out the ‘209 different codes’ of popular television models, it acts on existing social relations congealed or crystallised around television technologies. It inflects relations between self and other. A relatively modest albeit complicated gadget disturbs, perhaps only locally and temporarily, the stasis of alterity sometimes associated with the media technology of television. When TV-B-Gone assembles and compresses a spectrum of proprietary innovations underlying television remote controls into a small key fob, it re-routes semi-stable relations between viewers and the multiplicity of television screens in public places through the hands of a pedestrian.

**Google Desktop: problematizing actions**

Cultural theory has often understood self-other relations as engendered through processes of signification. Personhood and alterity also come from technological action. *Google Desktop*, a piece of software first made available in late 2004, makes almost anything stored on the hard-drive of a personal computer searchable in the same way as the Web (Google 2005b). There is much to be critically analysed about Google as an enterprise, as a brand, as a symptomatically sprawling technical object-assemblage in early 21st-century network cultures. Across its different entanglements, the search engine has become popular and important because it has repeatedly afforded new ways of handling information on the Web. If Google became a closed, complete technology, then it would collapse into a simple instrument or tool. This is far from the case. Like many other technological projects today, Google is an ensemble of different practices, objects and actors in flux. In several respects, it subtly complicates relations between self and other, or at least begins to affect how people experience and embody information they possess. In *Google Desktop*, ‘personal’ information becomes impersonal; it becomes something an individual searches like the Web, a space populated in principle by others. Additionally, what it searches is not fixed. *Google Desktop* is constitutionally open to further development. The *Google Desktop* API (Application Programmer Interface) encourages the development of ‘plugins’ that allow different kinds of information to be searched. Whereas *Google Desktop* initially searched mainly text files, plugins added by others allow it to search other types of files that are less common (Google 2005a).
While none of this is particularly striking or singular now, it brings to the fore aspects of personhood that would have been surprising even a decade ago. That a software technology would be open to ongoing development by anyone, and that people would have so much information that they could no longer organise or control it, only search it as if it is belonged to someone else, these are elements in an as yet unresolved situation. The situation Google Desktop belongs to concerns, we could say, a problematization of information. A problematization, according to Paul Rabinow’s commentary on Michel Foucault, ‘is both a kind of general historical and social situation — saturated with power relations, as are all situations, and imbued with the relational “play of truth and falsehood”, a diacritic marking a subclass of situations—as well as a nexus of responses to that situation’ (Rabinow 2003:19). Responses to power-saturated historical-social situations inform collective representations of what is taken as real, valuable, meaningful or doable. For contemporary Westernising societies, a relation to information technologies has become a structural commitment at many different levels, ranging across popular culture, markets, State, law, individual, social, national and international identity. It is hard to think of any formation of cultural or social life that does not orient itself in some way towards information. This commitment is laden with power relations in various forms. Many different modulations of information materialize: corporate and research-driven high technologies of production, health, communication, energy and transport, alternative technologies, popular cultural practices associated with media, technologies of war, security and crime. Practices and materials move between different sites, and interfere with each other. In regulatory, ethical, political, economic and cultural contests, what counts as information technology multiplies and refracts in many different directions.

In certain respects, Google Desktop attests to the unstable dynamics of the informatic problematization. People have difficulties in maintaining a sense of where they have put information that matters to them. Yet as a technological action, Google Desktop responds to the 'general historical and social situation' of information. It brings together things that were previously apart, the personal space of a desktop computer and the impersonal collective zone of the Web. A lineage of philosophical thought associated with the French philosopher Gilbert Simondon, and later with Michel Serres and Bruno Latour (Latour 2002; Serres and Latour 1995; Simondon 1958), has the potential to illuminate how technological action brings together disparate things. Simondon understands technical objects as evolving composites of relations rather than in terms of function, use, material or form (Simondon 1958). Latour highlights the shift in perspective intrinsic to Simondon’s engagement with technological action. He writes ‘[t]echnology is everywhere, since the term applies to a regime of enunciation, or, to put it another way, to a mode of existence, a
particular form of exploring existence, a particular form of the exploration of being in the midst of many others’ (Latour 2002: 248). On this expanded reading of technological action as ‘exploration of being in the midst of others’, Google Desktop’s erosion of distinctions between what is mine and what is other, and its openness to development, folds together different times, places and others.

These accounts are relevant and important for cultural-theoretical responses to the informatic problematization because they regard technological action as challenging the prevalent ontological carve-ups of material-social realities into human-social and technological-material layers. In Simondon's work, technical objects offer a model of radical self-other relatedness:

Par l'intermédiaire de l'objet technique se crée alors une relation interhumaine qui est le modèle de la transindividualité. On peut entendre par là une relation qui ne met pas les individus en rapport au moyen de leur individualité constituée les séparant les uns des autres, ni au moyen de ce qu'il y a d’identique en tout sujet humain, par exemple les formes a priori de la sensibilité, mais au moyen de cette charge de réalité pré-individuelle, de cette charge de nature qui est conservée avec l'être individuel, et qui contient potentiels et virtualité.

Through the intermediary of the technical object, an interhuman relation that is the model of transindividuality creates itself. This can be understood as a relation which does not put individuals in relation by means of their constituted individuality, which separates the one from the other, nor by means of that which is identical in each human subject, for example, the a priori forms of sensibility, but by means of this charge of pre-individual reality, this charge of nature which is conserved with individual being, and which contains potentials and virtuality (Simondon 1958: 248).

1  ‘Through the intermediary of the technical object, an interhuman relation that is the model of transindividuality creates itself. This can be understood as a relation which does not put individuals in relation by means of their constituted individuality, which separates the one from the other, nor by means of that which is identical in each human subject, for example, the a priori forms of sensibility, but by means of this charge of pre-individual reality, this charge of nature which is conserved with individual being, and which contains potentials and virtuality.’
forms of technological reductionism. Technology is not, as State and enterprise cultures of innovation often imagine, some substance or vital force, which must be nurtured, controlled or marshalled for political or commercial ends. Very often, it becomes that, but only when enmeshed in relations that fix, limit or capitalise its potentials. Occasionally and partially, with an always-faltering step, specific technical objects and ensembles overflow existing modalities of perception and movement on many different scales. In such cases, the technical object creates an 'interhuman relation' of a particular kind that Simondon terms 'transindividual.' As Latour puts it, ‘far from primarily fulfilling a purpose, they [technologies] start by exploring heterogeneous universes that nothing, up to that point, could have foreseen and behind which trail new functions’ (Latour 2002: 250). They provisionally and intermittently generate something thoroughly contingent yet important because it cannot be reduced to existing forms of subjectivity, subjectification or socialisation.

**Botnets and RSS feeds: abstract and impersonal**

From the standpoint of cultural theory and technological disciplines such as engineering and design, contemporary technology is the epitome of regular, predictable or repeatable action. The notion that technology could give rise to something heterogeneous or unexpected seems puzzling if not paradoxical. To understand Simondon's account of technological action, we need to delineate the specificity of the relations it produces. Not all work, encounters, interactions or confrontations with technologies are technological actions. Only insofar as technologies remain ‘open’ in some way do they permit ‘exploration of heterogeneous universes’. According to Simondon, the crucial, perhaps relatively rare, openness in technological action entails a relation that links people to each other through a ‘charge of nature’ (Simondon 1958: 248) they carry with them. What is the nature of this relational openness and why does it entail a ‘charge of nature’?

Reports of ‘co-ordinated malware attacks’ (CMAs) have appeared in news and online media. Malware (software such as viruses, trojans and worms) figure heavily in the anxious ‘play of truth and falsehood’ associated with the informatic problematization. Computer security consultants warn of ‘a co-ordinated assault designed to establish a huge botnet under the control of hackers. [... A]ccess to the compromised PCs is for sale on a black market, at prices as low as five cents per PC’ (Leyden 2005). Locating potential openings in generic Windows-based computer platforms, increasingly sophisticated ‘botnets’ link millions of mass-market PCs into a co-ordinated media
machine functioning as a distributed, unregulated email spam server. Whatever the cultural, political or economic value, the technological action in such cases pivots on a movement that is typically called a ‘hack. The hack takes some indeterminate or ill-defined aspect of networked personal computers and turns it into the basis of a different relation. The media theorist McKenzie Wark elevates the hack into an action that produces relations:

To hack is to abstract. To abstract is to produce the plane upon which different things may enter into relation. It is to produce the names and numbers, the locations and trajectories of those things. It is to produce kinds of relations, and relations of relations, in which things may enter. (Wark 2004: 083)

While the notion of the hack developed by Wark (strongly influenced by Deleuze and Guattari) is not confined to technological action, it originates in it. What is abstracted when a personal computer turns into part of a distributed spam-network? From Simondon’s standpoint, technological action does not impose a form on matter. Abstraction is not to be understood here as a separation of form from matter. Nor does the production of relations and relations of relations depend on representations through which a subject orders and directs her actions on objects or others. A technological action or hack inhabits a more intimate, potentialised middle zone out of which form and matter, subject and object, self and other only precipitate retrospectively. Abstraction can occur in this middle zone, and relations arise here, precisely because forms, norms and institutions do not fully determine it.

How then does abstraction occur in technological action? Another response to the informatic problematization, similar in some ways to CMA botnets, offers a clue. The rapid development of the ‘blogosphere’ or weblogging has been widely reported and discussed. Sometimes blogging re-kindles a hope associated with the Internet and WWW in the mid-1990s that a newly vitalised public sphere could emerge because of real citizen participation (Gilmore 2004). Whether or how this public sphere develops is not central to the argument here. Blogging can bog down in the reassertion of personhood or individual expression of rights of free speech. Whatever its status in relation to contemporary identity formation, the novelty of certain practices, activities, objects and relations associated with weblogs is also somewhat impersonal. Novel arrangements have arisen in relations between blogs. In the form of RSS feeds (Rich Site Summary or, more colloquially, Really Simple Syndication; the equivocation over what RSS means is an
interesting contestation (Wikipedia 2005)), ongoing notification of web page updates flow laterally between weblogs and to a new technical object, ‘feed readers’ (or ‘news aggregators’). The abstraction in RSS is simple to understand. It comprises the provision of a tag or keyword summary of each entry of a website made available in a machine-readable (XML) form. The tags name and provide addresses for entries on the weblog that may be images, text, sounds or other information. Because websites or software can periodically scan this summary automatically, RSS acts as news feeds for the rapidly changing Web content generated by many thousands of updated weblogs. These feeds de-personalise weblogs into various categories and topics. Combining feeds in many different ways, RSS ‘vectoralizes’ (Wark 2004: 339) the weblog as expression of individual personhood.

While Euro-American innovation contexts place great value on individual and corporate personhood (Strathern 1999: 21), technological action cannot be ultimately attributed to the agency of individual or corporate persons. The establishment of relations or correlations between different parts of the Web embodied in RSS feeds is typical of technological action in re-distributing or re-defining some aspect of personhood against impersonal forces. RSS abstracts from existing arrangements something previously embedded in them. Such an abstraction can only occur when personal forces (the desire to be seen on the web, for instance) encounter impersonal forces, potentials that are not yet individuated, organised or institutionalised in social systems and functions. Abstraction in this respect is constitutionally open in a temporal sense. When he describes the temporality of action, Simondon argues against any self-enclosed circuit. Although he relies on a cybernetic account of life as a feedback system that reflects the scientific milieu in which he was writing, Simondon diverges from cybernetics’ account of agency to argue that:

Il n’y a pas d’auto-régulation purement interne, entièrement isoléé; les résultats de l’action sont des résultats non seulement en eux-mêmes mais aussi par leur rapport au milieu extérieur, à l’ensemble. [...] Le type de mémoire et le type de perception qui conviennent à cet aspect de la régulation nécessitent l’intégration, la transformation d’a posteriori en a priori que le vivant seul réalise en lui.

[t]here is no purely internal, entirely isolated auto-regulation; the results of action are results not only in themselves but also through their relation to the exterior milieu, to the ensemble. ... The type of memory and the type of perception that suits this aspect of regulation necessitates the integration or transformation of a posteriori into a
priori that the living alone realises itself (Simondon 1989a: 125).²

The transformation of what is felt or experienced (‘a posteriori) into something a priori or abstract occurs through a process specific to life itself, a kind of leap or jump (Simondon 1989a: 56). A movement of ‘retroaction’ or action of the future on the present permits the abstraction and thus produces the openness of technological action. This movement draws on ‘interior milieus’ (such as memory and imagination) whose dynamic re-organisation alters how the life-form inhabits its milieu.³ From Simondon’s standpoint, technological action as abstraction arises from a particular relation that something living creates to something external to itself, ‘the ensemble’ of technical objects. In making this relation, the technological action changes not only the ensemble, but also the form of life of its agent. Abstraction comes into being and begins to subsume or re-configure existing relations between inside and outside. Retroaction links not-yet individuated fields of potentials to existing structures, forms and matters.

**Incompatibilities: from abstract to concrete**

Technological action has a kernel of abstraction that propagates relations. ‘Abstraction’ is not a mental act, although it entails thinking. It is an embodied, corporeal and collectively energised transformation. Importantly, because the process of abstraction produces relations, it also affords, for Simondon, concretisation, a growing-together or mixing of forces. The dynamics of concretisation occurring in the informatic problematization are highly varied. ‘Case-modding’, a technique of customising certain aspects of the hardware of desktop personal computers, provides one illustration. With the exception of some specialized commercial, industrial, military and research computers, most computing hardware consists of generic, mass-produced, commodified components assembled using standardised cables, brackets and boxes. Rarely discussed, these bits and pieces make up a large chunk of the material fabric of the ‘information age’. The hardware components have generic relations to each other. They can be quickly assembled in different ways because they the relational forms of standards and protocols (Galloway 2004) abstractly link them.

---

² ‘There is no purely internal, entirely isolated auto-regulation; the results of action are results not only in themselves but also through their relation to the exterior milieu, to the ensemble. ... The type of memory and the type of perception that suits this aspect of regulation necessitates the integration or transformation of a posteriori into a priori that the living alone realises itself’. en a prior que le vivant seul réalise en lui.’

³ Much could be said about how Simondon understands life as playing out on surfaces and membranes separating adjacent interior and exterior milieus or zones of individuation.
Many of these forms mix conventions of communication (I2C, PCI, USB, SCSI, etc) with physical specificities (dimensions, spatial layout, electrical properties, etc) connect racks, printed circuit boards, brackets, plugs and sockets together. As a technical ensemble, the personal computer remains practically abstract in Simondon sense of term. Elements can be varied without the ensemble falling apart. Indeed, this is very much the formal principle of the design and production of such systems. The personal computer remains abstract to the extent that it consists of generic, commodity components linked together by the impersonal global forms of standards and protocols.

However, the deliberate maintenance of abstraction for the sake of variability introduces incompatibilities or tensions between elements in the ensemble. For instance, information processing generates increasing quantities of heat as information moves more quickly through miniaturised circuits. Contrary to the images of cool, frictionless action, computation occurs in a semiconductor environment whose ambient temperature must stay within narrow limits or else the digital quickly becomes analogue and information becomes noise. The relation between the computer and its environment (an office, a living room, a workshop, a bedroom, a server-room) is limited in that it cannot tolerate much change in temperature. What remains abstract in the personal computer makes it fragile in relation to its surrounding milieu. Commodity computing hardware maintains ambient temperature by conducting heat outwards (‘heatsinks’) and moving air across the vital components – CPU, hard drive, memory and graphics card – through fans and vents. Via feedback loops between sensor and actuator, motherboards link built-in temperature sensors for different components to speed controls on the fans. Yet fans are noisy. When the noise of the computer intrudes on work or entertainment, the desire to reduce noise but retain speed leads to interesting modifications. The cooler the system, the faster it can run. With enough cooling, it can be ‘overclocked’ (that is, run faster than the manufacturer's specifications). However, speeding up the system and making it quieter pull in opposing directions.

Practices of case-modding radicalise the use of fans and cooling equipment in reconciling these opposing vectors of information and sound. For instance, ‘Casefancasefancasefancasefancase’ (Edge 2005) is a patently absurd computer case made of nothing but cooling fans. While it keeps the circuitry very cool, it tends to be quite noisy and heavy. Like heavy tail fins on a car, it does not change the essential character of the computer. However, other case modifications do change something essential. Because noise increases as fans move more air, some case modders replace air with oil or water:
Russ Kinder, an architect in Grand Rapids, Mich., turned to a more radical approach: computer submersion. After setting up a PC that had to run day and night, he didn’t want any nocturnal buzzing. So, he says, he plunged the computer into an acrylic tank filled with mineral oil. (Forelle 2005)

An oil-filled fish tank is unlikely to be commercially practical, but it almost eliminates the noise of this computer in its domestic setting. These modifications, even the myriad trivial alterations made for ornamental purposes, alter the abstraction. The modifications carried out by case-modders are, for the most part, minor concretisations that slightly alter or refine relations between elements of the technical ensemble, of the computer. They concretise the abstract existence of information flows in relation to particular domains or properties such as sound and heat, as well as in relation to personhood or group identity. The modifications concretise the technological object by bringing different elements into relation with each other. When Simondon writes, ‘l’objet technique concret est celui qui n’est plus en lutte avec lui-même’ ‘the concrete technical object is one that is no longer in conflict with itself’ (Simondon 1989a: 34), he is suggesting that concretisation finds a solution to problems of incompatibility produced in an abstract ensemble of relations. Technological actions concretise an abstract aspect of the ensemble by altering relations between the sub-ensembles, either by adding something that diminishes their incompatibilities or inconsistencies or by re-situating technological objects in their environments. The oil moves around all the components, even through the fans themselves. Rather than trying to trade-off between the fan noise and the heat of faster computation as air-based cooling does, the oil-cooled computer moves heat silently and relatively slowly. Movement from abstract to concrete constitutes a form of change or becoming specific to technological action according to Simondon.

In Simondon’s account, both abstraction and concretisation go beyond re-fashioning of generic, commodified technological objects. A ‘multitude of forces’ (35) begin to exert themselves in relations between parts of the ensemble as it is increasingly concretised. This somehow seems to exceed the agency of the actors involved. It occurs impersonally. Maurizio Lazzarato underscores the impersonal eventfulness of technological action when he describes the openness that characterizes contemporary commodification:

> What the transformation of the product into a commodity cannot remove, then, is the *character of event*, the open process of creation that is established between

---

4 ‘the concrete technical object is one that is no longer in conflict with itself’.
immaterial labor and the public and organized by communication. (Lazzarato 1996: 145)

Lazzarato’s view of contemporary products, including the technologies we are discussing, focuses on their ongoing, intricate connection to immaterial labour. Immaterial labour makes things using cybernetic, informational and cultural strategies. Case-modding concretises abstract relations between commodified hardware components. It is only one instance in the interlinked domains of information and communication technology where technological action alters relations between object and milieu. Sophisticated, proprietary technical platforms such as computer game consoles also show signs of this rupture. In 2005, Sony Corporation recently released the PlayStationPortable (PSP), a handheld computer game console (Sony Computer Entertainment America 2005). Within several weeks

[s]ites like PSP Hacker reported that a Japanese hacker known only by the name Mr. Mirakichi had developed a program called RIN that let the PSP play software written for the original black-and-white Nintendo Game Boy system (Kohler 2005).

If RIN allows proprietary hardware to run software written for other older platforms, then the commodity-form of the technology, which relies on the production of platform-specific games, begins to break up. In this case, the circulation of software and code afforded by the Internet means that any chink in the closure of a commodity digital technology could quickly open wide. (Every attempt to date, for instance, to regulate the copying of audiovisual material on personal computers using hardware or software protection schemes has failed.) If the example of case-modding suggested that technological action often resolves material incompatibilities produced by abstraction through concretisation, the PSP software modifications suggest that similar incompatibilities also attach to cultural arrangements of property and consumption.

BitTorrent: action and normativity

---

5 This immaterial labor constitutes itself in forms that are immediately collective, and we might say that it exists only in the form of networks and flows. The organization of the cycle of production of immaterial labor (because this is exactly what it is, once we abandon our factoryrist prejudices—a cycle of production) is not obviously apparent to the eye, because it is not defined by the four walls of a factory. The location in which it operates is outside in the society at large, at a territorial level that we could call “the basin of immaterial labor” (Lazzarato 1996, 137)
Why does this impersonal eventfulness appear in some technological zones and not others? In the informatic problematization, the technical arrangements, practices, artefacts and events that disrupt and alter the structure of commodities often cut across socially constructed ties between person and thing. Paulo Virno uses Simondon to highlight the impersonal dimension of this action:

[T]he collective experience, the life of the group, is not, as we usually believe, the sphere within which the salient traits of a singular individual diminish or disappear; on the contrary, it is the terrain of a new and more radical individuation. By participating in a collective, the subject, far from surrendering the most unique individual traits, has the opportunity to individuate, at least in part, the share of pre-individual reality which all individuals carry within themselves. [...] Only within the collective, certainly not within the isolated subject, can perception, language and productive forces take on the shape of an individuated experience. (Virno 2004: 79)

Following Simondon, Virno avoids opposing an individual I to a collective We. He instead refers to something that is neither self nor other, the ‘share of pre-individual reality’ or the ‘charge of nature’ individuals carry with them. Technological action has a dimension that unfolds out of ‘pre-individual reality’ or impersonal forces. All individuation, the process of coming to be, depends on these relational potentials. Technological action, therefore, is collective yet not social or cultural in any conventional sense of those terms. It overflows subjective experience or individual control even though individual figures accompany events in the process of individuation. Hackers, for instance, are often represented as isolated criminal figures. The mundane reality of hacking, however, centres on interaction, copying, communicating and working with others in exploring and bringing into relation specific material-technical traits within a technological ensemble.

While language and perception have long been vital terrains of individuation for human cultures in general, in the contemporary problematization of information the ‘productive forces’ of technological action engage with language and perception to expand and intensify individuation. Although intimately coupled with linguistic symbolisation in information and communication technologies, technological actions have a non-representational dimension. Virno links technological action and pre-individual reality through certain forces:

The entire realm of productive forces is pre-individual. It is social cooperation in the form of action in concert, the totality of poietic, ‘political’, cognitive, emotional
forces (Virno 2004: 78).

The emphasis in Simondon’s account on pre-individual realities entails something irreducible to organised forms or matter. When Virno adds ‘poietic, political, cognitive and emotional’ elements to ‘productive forces’, he is not just referring to the high value of affective labour in post-Fordist organisation of work. He is pointing towards the problematic nature of contemporary technological action itself as something that draws on and alters given social forms.

In contrast to social constructionist accounts of technology, Simondon suggests that a different set of norms emerges through technological action in its specificity. He writes, ‘En effet, les normes techniques sont entièrement accessible à l’individu sans qu’il doive avoir recours à une normativité sociale’ ‘in effect, technical norms are entirely accessible to the individual without him needing to have recourse to a social normativity’ (Simondon 1989b: 264). What normativity apart from social normativity could be involved here? BitTorrent is a program that allows anonymous distribution of files on the Internet without the use of web-servers. 20 million people, according to newspaper reports (Norton 2005), have downloaded it. BitTorrent links the movement of files to their popularity. The more people who download a particular file using BitTorrent, the more widely available that file will tend to become. Instead of storing information on high-bandwidth servers, BitTorrent, like other ‘peer-to-peer’ software, distributes storage. Whereas existing media systems in general depend on mass production and distribution (warehouses, transport, retail), BitTorrent couples media distribution to the emotional, cognitive or political dimensions of social co-operation indexed by 'popularity'.

Like many of the previous examples, BitTorrent responds to a contest over access and distribution of information. Any attribution of radical, democratic potential to BitTorrent can easily sound doggedly libertarian. Yet the very diverse forms of attention (legal, mainstream media, political, market, popular) it attracts suggests something is at stake. To varying degrees, a technological action participates in a becoming or event that restructures a domain. As we have seen above, through abstraction and concretisation it links different orders or disparate realities in that restructuring. BitTorrent amplifies resonances already found in a particular domain of collective life because it enmeshes the availability of information with its popularity. In her commentary on Simondon, Muriel Combes writes that ‘it is only by passing from the level of technical objects to the more profound level of technicity that one can grasp in what the normativity intrinsic to technology consists’ (Combes 1999: 109). 'Technicity' for Simondon refers to the degree of

6 ‘In effect, technical norms are entirely accessible to the individual without him having to have recourse to a social normativity'.
concretisation of the object (Simondon 1989a: 72), the extent to which it knits together different forces affecting a given situation. However, technicity is a property of objects or artefacts that derives from the ensemble. In the informatic problematization, the ensemble includes poietic, cognitive, emotional and 'political' dimensions. In combining different technical elements, a technical object such as BitTorrent organises technicities in such a way as to generate differences of force and effects of power. Rather than acting by imposing a form, this normativity is reticulatory.

Technical ensembles contain privileged sites and moments where powers of acting and openness to being acted upon are concentrated (Simondon 1989a: 164). Privileged moments and sites exist because technological acts produce relations that allow different domains to intersect. At those points, perceptions, feelings and action can become charged elements. In those sites and moments, changes that materially re-form an I-We relation can occur. The normativity of technological action is different although connected to that of symbolisation. Simondon writes:

La présence de monde n’est donc jamais éliminée par l’utilisation de la machine; mais la relation au monde peut être fractionné, et passer par l’intermédiaire de plusieurs étages de symbolisation, à laquelle correspond une construction technique qui répartit au long du monde des repères valables selon une perception par l’intermédiaire de la machine; cette perception n’est pas beaucoup plus automatique que la perception directe par las organes sensoriels.

The presence of the world is never eliminated by use of machines. However, relation to the world can be split and pass through the several intermediate stages of symbolisation, to which there corresponds a technical construction that distributes viable points throughout the world perceived through the intermediary of the machine. This perception is no more automatic than perception by sensory organs (Simondon 1989b: 287).

Just as manifold ‘stages of symbolisation’ replace direct symbolisation in language and perception, Simondon argues that the splitting or staggering of relation to world (and others) associated with technological (‘use of machines’) distributes ‘viable points’ in the world. They do not eliminate relation to the world. Rather, they re-distribute or stagger relations across specific points of intersection.

Conclusion: technological action in contemporary thought
What can be learnt from technological action when it takes on this reticulatory, distributive character, when technological actions structure collective life? The opposition between technology and culture that underlies many critical accounts of technology begins to collapse. Technological action diverges from the overpowering figure of technology as a heavily socially pre-constructed system that crystallizes or freezes relations. Technological action is provisional, historically and materially specific, and perhaps highly ambivalent. There is no simple opposition between technological action and symbolisation. Both belong to specific problematizations. If symbolisation collectively represents relations of identity and alterity, technological action produces relations through practices of abstraction and concretisation. Those relations cannot be reduced to social or psychological norms. They overflow symbolised norms because they flow from those aspects of collective life that are not yet structured or individuated. Technological actions activate, in highly temporally complex ways, the potentials of the pre-individuated realities that comprise collective life.

An understanding of ethical action could derive from this point. Technological action does something to the extent it stages encounters with other realities through the reticulations it draws out. It is connective. Perhaps what such acts represent is not the breakdown of self-other relations, but the growth of relations that respond to privileged sites and moments within a power-saturated problematization. The emergence of identities in this context is intrinsically collective because acts tie to other acts, and transformation of self accompanies potential transformations of others.

A mode of thought for investigating cultural situations could also base itself on technological action. According to the account of technological action developed here, technological actions have no pre-constituted observers. If we think of technological action as a process of abstraction and concretisation that responds to a situation by individuating, thought itself cannot actually respond to that situation without also individuating. Thinking is a process of individuation and begins to belong to the domain in question in the same way that technological action does. Foucault’s notion of problematization implies that all social situations precipitate unstable interplays of truth and falsehood, as well as power relations. Tracing the outlines and

With some notable exceptions—such as Walter Benjamin—, critical responses to technology—such as Heidegger, the Frankfurt School thinkers and poststructuralist theory—maintain a radical separation, even an opposition between technological action and reflective or critical thought. Critical thought was predicated on the assumption that the conditions of perception, representation, conceptualisation and judgment are themselves separate or detached from the technological practices and contexts in which they were located. Such an assumption persists in much contemporary critical theory of technology (Feenberg 1999; Poster 1990) and in many attempts to regulate or normalise technology, ranging from advertising to government legislation.
shadows of a problematization poses specific analytical challenges. A problematization bears within it specific forms of intelligibility, and things make sense in particular ways within a problematization. The examples introduced in the discussion above all come from the relatively limited but prominent domain of information networks and digital technologies. Power relations pervade the problematization of information. It has demonstrated interplays of truth and falsehood at different levels over the last few decades, and generated hopes, expectations, formations of identity, values, and norms.

Finally, despite the instrumental function often attributed to technology, certain technological actions hint at a certain impersonal facet of life. Technological action generates a material-psychosocial point of connection to self that only secondarily relies on social norms. Simondon suggests that:

L'opération technique réalise en effet ce que le travail ou les autres fonctions communautaires ne peuvent réaliser: la réactivité de l'acte; l'activité constructive donne à l'homme l'image réelle de son acte, parce que ce qui est actuellement objet de la construction devient moyen d'une construction ultérieure, grâce à une permanente médiatisation; c'est ce régime continu et ouvert du temps de l'effort technique qui permet à l'individue d'avoir la conscience réactive de sa propre action, et d'être sa propre norme.

[a] technical operation achieves in effect what work or other functions of communication cannot fulfil: the reactivity of the act. Constructive activity gives to human beings the real image of the act because what is in the moment object of construction becomes means of a further construction thanks to a permanent mediation. It is this continuous and open regime of the time of technical effort that permits an individual to have a reactive consciousness of her own action, and to be her own norm (Simondon 1989b: 264).

A technical operation achieves in effect what work or other functions of communication cannot fulfil: the reactivity of the act. Constructive activity gives to human beings the real image of the act because what is in the moment object of construction become means of a further construction thanks to a permanent mediation. T his continuous and open regime of the time of technical effort permits an individual to have a reactive consciousness of her own action, and to be her own norm.

On occasions when it overflows norms of work or consumption, technological action allows an
individual to glimpse their own actions outside any framing by social function or norms. This becoming transforms them into a mediator, site of co-invention of the situation and language. Rather than technological action narcissistically turning in on itself, this exposure to a ‘continuous and open regime of time of technological action’ remains irreducible to social norms.

References

Works Cited


