11

Remembering the Technological Unconscious by Foregrounding Knowledges of Position

Introduction: engraining anticipation

This chapter is part of a more general attempt to provide an account of the *spaces of anticipation* that are found in contemporary everyday life, an account of how it is that environments of which we are a part gradually come to be accepted as the only way to be because, each and every day, they show up more or less as expected (Thrift, 2000c; 2003a). Such spaces depend upon the gradual construction of complex ethologies of bodies and objects which are repositories of the 'correct' *positionings* and *juxtapositionings* which allow things to arrive and become known (Siegert, 1999). These very basic sendings and receivings of socio-technical life – and the modest but constant hum of connection and interconnection that they make possible – have often been neglected. But it seems clear to me that as we move into an era populated by more and more objects whose *raison d'être* is precisely to hone such sendings and receivings, so the task of understanding becomes far more pressing.

Far more pressing too because much of what we call the cosmological order is achieved through the simple positionings and juxtapositionings of human and non-human actants – positionings and juxtapositionings which have to be repeated over and over as particular spaces which assume specific competencies (Weiss, 1996). This powerful infrastructural logic which allows the world to show up as confident and in charge is rarely written about in and for itself (for an exception see Gell, 1992), and yet this 'emptiness' lies at the root of our being, producing senses of the rightness and wrongness of the world so fundamental that we find it difficult to articulate them or to consider that these senses could have been otherwise. But it is possible to find clockfaces in the fourteenth century that circuited counterclockwise (Glennie and Thrift, 2003); large parts of the world read from right to left (Goody, 1987); in the early days of the automobile, seats were not always arranged in a two in front, two behind formation; in Norway and Sweden, washing up to the left or right of the sink can produce instant evaluations of worth (Linde-Larssen, 1996); and so on.

In other words, our conventions of *address*, of what will show up where, and what will show up next, are often arbitrary, and they rely on knowledges of position and juxtaposition – sometimes tacit, but increasingly systematized – which lie at the base of Euro-American societies. When practice is established and runs smoothly without being perturbed by disruptive events, conventions of address sit there quietly in the background and 'the

fictional nature of organizational knowledges does not surface easily. Everything – objects, settings, routes, people – seems to be real, that is the way things properly are, provided with a sort of existential fixedness and ontological correctness' (Lanzera and Patriotta, 2001, p. 965). It is, above all, this anonymous history of *knowledges* of position and juxtaposition which I want to search out, the familiar–unfamiliar knowledges of how human and non-human actants can be transported and aligned.

These knowledges do not belong to 'us' or to the environment. Rather, they have been coevolved, and so refuse a neat distinction between organic and inorganic life or person and environment. As Ingold nicely puts it in regard to notions of the environment.

> The environment of persons is no more reducible than is their organic existence to pure molecular substance. It is not merely physical, and it is certainly not blank. For example, the ground I walk on is surely a part of my environment, but in a physicalist description the ground, as such, does not exist; there are only packed molecules of carbon, nitrogen, silicon and so on. As Reed has eloquently put it, 'it is the earth on which we walk, and the soil in which we plant, that is relevant for us as perceiving and acting creatures; not the molecules discovered by scientists' … The environment, in short, is not the same as the physical world as it exists and takes on meaning in relation to the beings that inhabit it … As such, its formation has to be understood in the same way that we understand the growth of organisms and persons, in terms of the properties of dynamic self-organisation of relational fields. (2001, p. 265)

In what follows, I therefore want to try to outline some of the knowledges and competencies concerned with position and juxtaposition, but I also want to go further. I want to claim that they constitute a 'technological unconscious' (Clough, 2000) whose content is the bending of bodies with environments to a specific set of addresses without the benefit of any cognitive inputs, a prepersonal substrate of guaranteed correlations, assured encounters, and therefore unconsidered anticipations.

In certain senses, one might understand this project as Foucauldian, but I want to drop down a level from where Foucault did most (although not all) of his work. Using a distinction often employed in literary theory, my analysis will be of form rather than genre. Knowledges of form are usually not regarded as subjective (though just as clearly they have subject effects) because they have no strong interpretive content. They are repetitive, empirical, bereft of intention. 'For genre to exist as a norm it has first to circulate as a form, which has no ontology, but which is generated by repetitions that subjects learn to read as organised inevitability' (Berlant, 2001, p. 46). In turn these repetitions offer up intelligibility and compulsion. 'As the subject negotiates becoming orderly, the world promises that the subject's compliance will be valued and reflected in the social, such that a guiding law that seems to come from the subject can remain the general index of clarity where there is otherwise none' (2001, p. 50). They are, if you like, the equivalent to Genette's (1999) 'paratexts', or Lury's (1999) 'phatic

imagery': means by which senses are synchronized (and synchorized) so that practice can take place.

Of course, knowledges of form require a vast apparatus in order to produce successful repetitions and consistent consistencies – drawings, text, numbers, symbols, prose, statistics, tables, charts, maps – which set out sequences and prime practice. Infrastructure has precisely to be *performative* if it is to become reliably repetitive. Repetition is an achievement – and a method of achievement.

To summarize, my main concern in this chapter is with the basic conditions of life, and especially the style of repetitions that pertains at any point in history, the animated automatisms (Gehlen, 1990) that provide the stable ground for practices. Because I use the word 'automatisms' it should not be thought that these repetitions are arbitrary. Neither are they spontaneous. Rather they have been set in motion, and their momentum, and a good deal of improvisation, keeps them stable. My argument is that we are currently seeing a shift in the basic conditions of life, a move of the 'social' 'atomic structure' from one model to another as a full-blown *standardization of space* takes hold, very similar in its ambitions and effects to the nineteenth century standardization of time. (Other writers have attempted to consider changes in these basic conditions of life, most notably Virilio and Derrida – in his later writings in particular – but, as I hope will become clear, I will be taking a slightly different tack.)

I therefore want to search out some of the key knowledges of position and juxtaposition that make up the 'technological unconscious' and how they are currently changing, producing a new sense of how the world shows up. To this end, the rest of the chapter is in three main sections. The first section provides a capsule history of how a very few templates of position and juxtaposition have been powered up into an 'atomic structure' producing a specific kind of technological unconscious with its own forms of compulsion and fascination. Such a history is necessarily very partial but hopefully it gives a sense of the vast agenda of research that is being opened up. In the second section, however, I want to argue that in recent decades the nature (or style) of these templates has been changing as new modes of hyper-coordinated address have been invented, so that a new kind of technological unconscious is now being born which we need to grasp and understand. In the concluding section, I will then argue that the influence of this unconscious shows itself particularly in modern social theory which now assumes an event horizon quite different from what has gone before, an event horizon which is still all too easily misrecognized as the same as what went before.

1. Addressing the world

In this section, I will provide some general notes towards a history of knowledges of position and juxtaposition that were increasingly constituted by that very knowledge. Such a selective approach is necessary, since the topic

is potentially so vast. In order to narrow the orbit of this section even further I will consider only one of these knowledges (though arguably the most important), the knowledge of sequence in time, which in turn allows orderly and guaranteed *repetition*.

A large number of different institutions generated knowledges of sequence in time, the demands of one influencing the demands of the others. Of these institutions, arguably the most important was transport. The problems of supply of large cities like London and Paris led to the need to develop formal means of co-ordination of road transport such as the *timetable*. Full regular timing of travel dates from early on. Thus, in England, returns from Elizabethan postmasters noted the time that the mail was received and dispatched (Brayshay et al., 1998) and quasi-timetables resulted. Though earlier publications like I*The Carriers Cosmographie* (1637) and *The Present State of London* (1681) provided timetable information, the first national timetables seem to have been a later invention. For example, by 1715 the *Merchants and Traders Necessary Companion* provided a fully comprehensive directory of courier and coach services to and from London, listing over 600 services a week. These proto-national timetables were the precursors of the extensive train and bus timetables of the nineteenth century which spread knowledge of timetabling across all sections of society and, in the guise of commuting, made the city into one vast timetable.

In turn, these developments in transport generated other needs for sequential order, of which the most important was probably the expansion of the hospitality and retailing industry. Inns and taverns were built to clothe stagecoach routes, usually to a relatively standardized design, as a means of passing bodies on from point to point. By the end of the eighteenth century, hotels had begun to appear, for example the 60-bed Hôtel de Henri IV built in Nantes in 1788 at a total cost of £17,500, a tremendous sum of money at the time. In 1794 the first purpose-built hotel in North America was opened in New York, the City Hotel with 70 rooms. 'Several other, similar hotels were built in other cities in the next few years, but it was not until 1829 that the first first-class hotel, Boston's Tremont House, with 170 rooms, was built. The Tremont innovated such features as private rooms, with locks, soap and water for each room, bellboys and French cuisine' (Gray and Liguori, 1990, p. 5). The tourist expansion of the nineteenth and twentieth centuries saw a further massive expansion of hotels and motels, producing a whole set of new sequencing techniques – reservation books, sliding blackboards, rack slips. Subsequently, the computerization of the 1960s and 1970s allowed many of these systems to be automated.

Similar developments occurred in retailing. As shops and then department stores grew in number and complexity through the eighteenth and into the nineteenth and twentieth centuries (Glennie and Thrift, 1996), so they generated a need for all kinds of knowledge of – and tools of – sequence, from delivery schedules to formal order books, which still exist in automated form in the complex supply chains of today.

All these development were mirrored on a daily scale. Personal co-ordination increasingly depended upon timetables which in turn led to the development of various textual devices as early as the eighteenth century. For example, the *diary* was, in certain senses, a textual analogue of the watch, a means of gridding everyday life via a calibrated narrative with its imperative to fill each dated blank space with observations. At the same time, the diary heightened skills of observation of everyday life as sequence, since the complications of the event now could be routinely noted down (Amin and Thrift, 2002). The diary went hand in hand with other items of textual comprehension like memo books, the taking of 'minutes' by clerks, and the use of shorthand ('tachygraphy' or rapid writing) to produce a textual comprehension much closer to that of the present – which indeed begins to produce a different kind of present, both compressed and, through the new possibilities now offered, opened out.

Alongside these more general developments came other more specialized knowledges of position and juxtaposition. Though there are many of these knowledges, perhaps the most important and equally the most neglected have been those emanating from armies, navies and, latterly, air forces (Giedion, 1998). The word *logistics* is normally reckoned to date in its modern form from Jomini's (1836) *The Art of War*, which set down 'logistics' as one of the six branches of 'the military art'. Of course, logistics had existed long before then; armies could not exist just on foraging and had to collect provisions together, and many armies on the move stretched over miles. But it is also true that modern logistics was probably born after that date, in the crucible of the American Civil War, when the industrial revolution, large spaces of movement, mass technologies of movement (including the railroad), and heavy casualties dictated the construction of complex knowledges of sequence in order to supply basic items like water, let alone ammunition. There was even strict traffic control discipline. By the First World War, logistics had become a major enterprise. For example, the British Army shipped 5,253,538 tons of ammunition (include over 170 million shells) to France (and, it might be added, 5,438,602 tons of hay for animals) (Huston, 1966; Mackinsey, 1989; Thompson, 1991).

As in civilian life, so the everyday life of the military was affected by the need for exact position and juxtaposition, in particular through the evolution of drill and similar rigid positionings of the body which came to take up increasing amounts of time in most armies (Holmes, 2001). Some of the drills developed by Maurice of Orange from ancients like Aelianus and Vegetius, which became general in much of Europe as a result of example and a series of books, can lay claim to being the first time-and-motion studies in their exact and exacting attention to time:

> From Aelianus [the] key borrowing was the simple notion of training soldiers to move simultaneously in response to stylised 'words of command'. Aelianus had listed 22 different 'words of command' used by the Macedonians; but when Maurice's cousin and aide, Johann of Nassau, had analysed the motions required to handle a matchlock, he counted 42 distinct postures, and assigned

> a fixed word of command to each of them. A simpler drill, far closer to Macedonian precedents, was also derived for pikemen, who were needed to protect the arquebusiers from cavalry attack during the rather lengthy process of reloading.
>
> The practical importance of such pedantry was very great. In principle, and to a surprising degree also in practice, it became possible to get soldiers to move in unison while performing each of the actions needed to load, aim, and fire their guns. The resulting volleys came faster – and misfires were fewer when everyone acted in unison and kept time to shouted commands. Practice and more practice, repeated endlessly whenever spare time allowed, made the necessary motions almost automatic and less likely to be disrupted by the stress of battle. More lead projected at the enemy in less time was the result: a definite and obvious advantage when meeting troops not similarly trained. This was what Maurice and his drill masters had aimed for; and once their success became clear, the technique spread to other European armies with quite extraordinary rapidity. (McNeill, 1995, pp. 128–9)

Thus, by the time that William of Orange arrived in England in 1688, he found 'a small standing army which had considerable and varied experience of active service, which was well-enough armed and equipped, and which was trained to a system of drill and tactics as up to date as those practised elsewhere in Europe' (Houlding, 1981, p. 172). Helped by the circulation of a large military literature and especially drill books like Dundas's *Principles of Military Movements* and their accompanying crib cards, by the eighteenth century drill had become a carefully defined practice of bodily sequence right across Europe – and an essential element of battle (Holmes, 2001).

During the same period, the military also put increasing emphasis on using soldiers' time profitably in tasks like field fortification: digging trenches, raising embankments, building redoubts, constructing bridgeheads, and the like. The approach was practical, since it was realized that 'the elaborate mathematics and geometry of engineers were subjects too dry for everyone to relish; and indeed there was no need of handling the scale and compass of problems, nor tiresome calculations, in order to learn the art of putting all kinds of posts into a proper state of defence' (Houlding, 1981, p. 224). But the upshot was clear: directed bodies involved chiefly in what were coming to be known as logistical activities.

> Idleness, in effect, was banished from military life. This was a great departure from earlier custom, since waiting for something to happen occupies almost all of a soldier's time, and when left to their own devices, troops had traditionally escaped boredom by indulging in drink and other sorts of disruption. Debauchery was not banished entirely under the regime Prince Maurice and his imitators established, but it was usually confined to off-duty leave time. (McNeill, 1995, pp. 129–30)

Though these are clearly only notes towards a more general history of knowledges of position and juxtaposition – what Gille (1986) calls the 'maceration and purification' of space through a culture of interval – what is clear is that the goal was to produce a general configuration based on exact and countable sequencing which could roll over seamlessly into the

should be seen as a set (or, perhaps better, a series) of socio-technical mediations constantly in genesis that stabilize the collective so that sequence becomes possible (Simondon, 1992; Mackenzie, 2002). That said, it is important to point out that not everything works and not everything turns up on time, to put it but mildly. But such discrepancy can often be formative (Lowe and Schaffer, 2000). So, importantly, knowledge of error and delay has itself been built into knowledges of sequence. For example, modern forms of sequencing have classically included waiting in queues (and the development of associated technologies like taking tickets signalling position in an electronic queue) and, significantly, waiting itself has become the subject of a vast set of knowledges based on queuing theory and similar developments. Thus, delay can itself become a source of profit and other forms of advantage (Mackenzie, 2002).

Readdressing the world

In the world that has been developing since the 1960s, however, things have changed their character. What we can see is the evolution of new means of addressing the world based upon what is often called a *track and trace* model. This model assumes an underlying *standardization of space* which, at least in so far as it has become complex and extensive enough to take the variations of each milieu fully into account, is historically very recent. This new means of addressing the world can be said to have arisen from three different but related impulses which, taken together, provide a continuously updated, highly processed background which renders all sequences calculable. One is the general availability of a series of technologies which can continuously track position – lasers, various form of new information technology, wireless, geographical information systems, global positioning systems, and so on. The second is a series of formalized and integrative knowledges of sequences arising out of the general application of models drawn from logistics across a wide range of fields. As a formal field of study rather than a military 'art', logistics dates back to the 1940s and the applications of various operational research models to problems of inventory (storage) and distribution (flow), most especially in the context of the demands made by the Second World War. In the 1960s logistics became bound up with systems engineering and an associated array of technologies like flow charts, life-cycle analysis, network analysis, including scheduling approaches like PERT (programme evaluation and review technique) and CPM (critical path method), and so on. More recently, logistics has expanded again to become seen as an integral element of what production is, rather than as something subsequent to it (as 'distribution'). In turn, this has led to new means of production like distributive manufacturing. The third impulse is new means of countability which have provided new possibilities of calculation (Thrift and French, 2002). For example, spreadsheets have allowed all kinds of calculation to be made concerning future time

periods which would have been difficult and time-consuming or just plain expensive before.

These three impulses have in turn had three closely related results. One, already referred to in previous chapters, has been a major change in the *geography of calculation*. Whereas 'computing' used to consist of centres of calculation located at definite sites, now, through the medium of wireless, it is changing its shape. Computing is moving into the environment as it becomes possible to connect up all kinds of computing activity (Dertouzos, 2001). From being centred and stable entities located at definite sites, computing is moving out to inhabit all parts of the environment and users are able to be mobile. Computing can then become a part of everyday environments since there are no longer any restrictions on where computing devices can be located: they will be located everywhere in constantly shifting and adapting peer-to-peer networks. This is the advent of 'ubiquitous', 'pervasive', or 'everywhere' computing. It follows that 'computing' will become more and more context-dependent. This means both that devices will become more location-aware, knowing where they are in relation to users and other devices, and that they will be able to interact and communicate with and adapt to users and other devices. In other words, computing – understood as a network of devices – will increasingly be able to be appropriate to the situation (Lieberman and Selker, 2000).

A second important result has been a change in the nature of the *address*. Increasingly, addresses are moving with human or non-human actants. Four different technological innovations that are both ubiquitous and all but unnoticed will serve to make the point.

The first of these is the humble barcode. The barcode is a crucial element in the history of the new way of the world, one which remains largely untold. Based on Morse code, the barcode was invented by Joseph Woodward and Bernard Silver in 1949 and patented in 1952. But it did not actually get used until the 1970s, in part because of the invention of laser scanners. In 1969, the Grocery Manufacturers of America and the National Association of Food Chains met to express the need for 'an inter-industry product code' and convened an *ad hoc* committee to jointly pursue a uniform 11-number grocery product code. In 1971 this *ad hoc* committee became the Uniform Product Code Council (UPCC), predecessor of today's Uniform Code Council (UCC). On 26 June 1974 at 8.01 a.m. in the Troy, Ohio, Marsh supermarket a 10-pack of Wrigley's Chewing Gum marked the world's first commercial barcode scanning. At first, use of barcodes was slow to take off. At the end of 1976 only 106 US stores were using barcodes. But this was soon to change. The addition of more and more stores, the expansion of barcodes out of the United States with the foundation of the European Article Numbering Association (EAN) in 1977 (changed to EAN International in 1992 to reflect its global reach), with its 13-number code which administers barcode usage outside North America, and the adoption of barcodes outside the grocery sector as a means of electronic data interchange allowing computer ordering and invoicing for the warehousing

industry, all stimulated use (Hosoya and Schaefer, 2001). To signify this expanded role, the Uniform Product Code Council became simply the Uniform Code Council (UCC).

Today, it is estimated by UCC and EAN that barcodes are used by 900,000 companies worldwide in almost 100 countries and these codes are scanned 5 billion times a day. The codes are used in almost every kind of transaction. They are used by the shipping industry to track and deliver packages, the retail industry to track inventory and modulate pricing, and the medical industry to tag patients and encode their information. And they are used extensively by the armed forces. For example, since 1995 the US Department of Defense has used product codes in many logistics processes.

Indeed, demand is now so great that the barcode is being extended. New electronic commerce initiatives are in train. Attempts to standardize product codes worldwide by 2005 are being instituted, with US retailers expected to be able to scan 13 digits by that date, and with a general expansion to 14 digits being planned worldwide thereafter. New symbols are also being worked on worldwide which can fit space-constrained products.

But universal product codes are not universal. They actually only constitute about half of barcode usage in the US. There, large agencies like FedEx, UPS and the US Postal Services have constructed their own proprietary barcodes to move mail and parcels. Since 1982, for example, the US Postal Services has printed a barcode on every envelope that goes through its system, signifying the address.

Another important form of innovation which is worth commenting on might be thought of as the computer equivalent of the barcode, and that is the series of addresses that allow computers to communicate with each other. A good example is the .sig file. First invented *circa* 1980, probably on an online bulletin board like FidoNet, the .sig file is one of a number of network address systems, a short block of text that can be automatically attached to the end of e-mail messages, usually containing information like the sender, job title, company name, phone number, e-mail address and various other digital soundbites. Little used to begin with, the .sig file is now becoming a kind of electronic business card, including graphics. In turn, the .sig file was used to produce one of the most successful business strategies, Hotmail – free web-based e-mail which attracted more than 12 million users in its first 18 months of use. Now owned by Microsoft, Hotmail currently has some 60 million subscribers.

The third innovation is the SIM (subscriber information module) card, first used generally in the early 1990s and manufactured by a small group of companies like GEMPLUS. The SIM card is at the heart of the modern mobile phone industry. It is a small card which identifies the subscriber to the network, and contains a microprocessor which stores unique information about the subscriber including the phone number and security numbers, plus a number of other functions (for example, memory space for phone numbers and text messages). The SIM card functions as, in effect, a mobile address.

One more innovation, and perhaps in the end the one likely to prove the most powerful, is the RFID (radiofrequency identification) tag. Such tags consist of a microchip and an antenna, sandwiched in plastic. Invented in the 1990s, these recyclable tags can be used to mark any kind of object. Their advantage is that each object can be identified separately, and can be given a unique identity and history, making them very different from barcodes which can only identify relatively simple information on classes of object (e.g. box of Shredded Wheat, $3.95). Also unlike barcodes, RFIDs can be read remotely, out of sight of a reader. The new generation of RFIDs is small (often less than one millimetre in area and half a millimetre thick) and can be read from 1.5 metres from a passive array. Tags that signal actively can be read up to 6 metres away from a passive array. Currently, tags are too expensive at 20 to 30 cents a chip (compared with a price of 1 cent for a barcode) to achieve this kind of circulation, but this situation is changing. There seems every reason to believe that they will reshape the practical conduct of life in a way that the barcode has only partly achieved. Thus, it is generally agreed that RFIDs will reshape supply chains by allowing all objects to be tracked as they are produced (by tagging the whole inventory and assembly process), transported to the point of sale and even, in the future, tipped on to the landfill site (Ferguson, 2002; *Financial Times*, 2 October 2002). RFIDs are also being linked to all kinds of sensors so that they can give continuous updates on the condition of the objects that they are attached to. And, in time, it is hoped to make objects proactive: the possibilities are being worked out at this very moment but the clear intent is to make objects that are able to react creatively to the situation they find themselves in by reading all the other RFIDs broadcasting in their immediate area. As a result, a kind of continuous informational ethology is coming into being.

Thus, for example, it comes as no surprise to find that a number of currency printers and central banks (e.g. the European Central Bank) are now looking at the possibilities of RFIDs. Indeed, the ECB has a target of inserting RFIDs in all Euro notes by 2005. Of course, these tags have enormous potential to invade privacy, since almost anything will be able to be tagged (including illicit money and, no doubt, human beings: a Florida company has already developed a passive RFID chip compatible with human tissue). Indeed, given the possibilities of 'Little Angel' and other similar current surveillance schemes (see Katz and Aakhus, 2002) being powered up using RFIDs, the future is of considerable concern.

The third development is the growth of what is usually called in the mobile communication literature 'hyper-coordination' or 'micro-coordination' (e.g. Ling and Yttri, 2002). The developments in technology of the kind outlined above make it possible to continually track and trace human and non-human actants to produce levels of co-ordination that were previously unachievable. Hyper-coordination is distinguished by the quality of perpetual contact, whereby it is possible to be in continuous contact with actants, and the quality of perpetual revision, whereby it is possible to continually recalibrate agreements to meet or deliver at a specific time and place. In

other words, it is possible to co-ordinate and re-coordinate at a distance on an all but continuous, and continually adjusted, basis. In turn, hyper-coordination offers up new possibilities for economic, social and cultural encounters, of which the most important is what is often called 'planful opportunism', a kind of just-in-time co-ordination (Perry et al., 2001). Encounters are able to be continually revised in a kind of intricate ballet of circumstances of the kind that used to have to be reserved for public meeting places like the street (Brown et al., 2002; Katz and Aakhus, 2002).

Courier companies like FedEx, which ships three million packages a day and uses some 3700 vans and trucks, 720 aeroplanes and 47,000 couriers, are built on hyper-coordination. Lastminute.com, which matches the last-minute supply of airline tickets, hotel rooms, package holidays and the like from 8500 suppliers to the demand from about 3.5 million subscriber users, could not exist without hyper-coordination, but neither could teenager mobile phone owners continually using their phones to meet their friends.

Thus what we see is a different kind of repetition which allows things to show up differently with different kinds of opportunities associated with them. Through the application of a set of technologies and knowledges (the two being impossible to separate), a style of repetition has been produced which is more controlled *and* also more open-ended, a new kind of roving empiricism which continually ties up and undoes itself in a search for the most efficient ways to use the space and time of each moment.

These developments are, I think, producing a new kind of embodied phenomenality of position and juxtaposition, one 'made continuous with the properties admitted by the natural sciences' (Petitot et al., 1999, p. 23), based on a background sense of highly complex systems simulating life. This is because in a self-fulfilling prophecy, as I have shown, highly complex systems (of communication, logistics, and so on) *do* structure life, and increasingly do so adaptively. This new phenomenality is beginning to structure what is human by disclosing 'embodied' capacities of communication, memory, and collaborative reach in particular ways that privilege a roving, engaged interaction as typical of 'human' cognition and feed that conception back into the informational devices and environments that increasingly surround us (Dourish, 2001; Goffey, 2002). In turn, we can perhaps begin to see the bare bones of this historically new kind of technological unconscious appearing now even in mundane activities like playing with highly complex games software that is increasingly opaque to rule-guided order and depends on a kind of sensitivity to – and sensibility of – emergence, a kind of planful opportunism incarnate:

> Take as an example one of the most successful titles from the Nintendo 64 platform, Shigeru Miyomoto's Zelda: Ocarina of Time. Zelda embodies the uneven development of the late-nineties interactive entertainment. The plot belongs squarely to the archaic world of fairy-tales – a young boy armed with magic spells sets off to rescue the princess. As a control system, though, Zelda is an incredibly complex structure, with hundreds of interrelated goals and puzzles dispersed throughout the game's massive virtual world. Moving your character around is simple enough, but figuring out what you're supposed to

> do with him takes hours of exploration and trial and error. By traditional usability standards, Zelda is a complete mess: you need a hundred-page guidebook just to establish what the rules are. But if you see that opacity as part of the art then the whole experience changes: you're exploring the world of the game and the rules of the game at the same time.
>
> Think about the ten-year-olds who willingly immerse themselves in Zelda's world. For them the struggle for mastery of the system doesn't feel like a struggle. They've been decoding the landscape on the screen – guessing at causal relations between actions and results, building working hypotheses about the system's underlying rules – since before they learned how to read. The conventional wisdom about these kids is that they're more nimble at puzzle solving and more manually dextrous than the TV generation, and while there's certainly some truth to that, I think we lose something important in stressing how talented this generation is with their joysticks. I think they have developed another skill, one that almost looks like patience; they are more tolerant at being out of control, more tolerant of that exploratory phase where the rules don't all make sense, and where few goals have been clearly defined. In other words, they are uniquely equipped to embrace the more oblique control system of emergent software. The hard work of tomorrow's interactive design will be exploring the tolerance – that suspension of control – in ways that enlighten us, in ways that move beyond the insulting residue of princesses and magic spells. (Johnson, 2001, pp. 176–7)

Conclusions: on topological complication

In this conclusion, I want to argue that these new conditionings of position and juxtaposition – and the new event horizon that results – go part way to explaining the emergence of social theory of a particular kind. Recently, writers like Turner and Rojek have argued for a 'robust political economy of social organization' which can combat some of what they see as the excesses of a more 'decorative' approach which focuses on 'aesthetic and technological revolutions' (2001, p. 199). But at least some of the work I think they want to excoriate on both theoretical and empirical levels strikes me, especially in its emphasis on a dynamic iterability, as exactly about trying to articulate the new technological unconscious of a world of performative infrastructures. If that is even partly the case – and I think that it is – then we can see many of the authors which the 'decorative' approach takes to task as actually attempting to describe a historically new situation and the skills and competencies that are needed to cope with it: a new kind of political economy of social organization, if you like, but operating at the molecular level.

Judith Butler is a good example. She is known for her notion of performance which problematizes the body as 'imaginary matter' (in which the body and unconscious fantasy, matter and the image, are indistinguishable). Butler 'relocates the matter of the unconscious to the interval between repetitions' (Clough, 2000, p. 120) so that, as Butler puts it:

> If every performance repeats itself to institute the effect of identity, then every repetition requires an interval between the acts, as it were, in which risk

> and excess threaten to disrupt the identity being constituted. The unconscious is this excess that enables and contests every performance, and which never fully appears within the performance itself. (1991, p. 28)

Butler's notion of performance suggests that bodily matter is dynamic, more an event or a matter of temporality. Butler is drawing on Derrida here, and relating the unconscious repetition compulsion to a *différance* or pure repetition. Butler therefore argues that the unconscious should be located 'within a signifying chain as the instability of all interability'. The unconscious, therefore, 'is not "in" the body, but in the very signifying process through which that body comes to appear; it is the lapse in repetition as well as its compulsion, precisely what the performance seeks to deny, and that which compels it from the start' (1991, p. 28). Thus, as Clough puts it, 'by drawing the unconscious back to *différance*, Butler allows for a more general unconscious than the Freudian and Lacanian unconscious. But this rethinking of the unconscious presumes the deconstruction of the psychoanalytic configuration of the imaginary, the symbolic and the real' (2000, p. 120).

Deleuze (1990b) provides a similar kind of analysis of iteration in that repetition must, for him, pursue something open, even within a framework in which scenes may appear to move past as frozen and immured. Not everything is brought back:

> Exchange implies only resemblance, even if the resemblance is extreme. Exactness is its criterion, along with the equivalence of exchanged products. This is the false repetition which causes our illness. True repetition, on the other hand, appears as a singular behaviour that we display in relation to that which cannot be exchanged, replaced, or substituted – like a poem that is repeated on the condition that no word may be changed. It is no longer a matter of an equivalence between similar things, it is not even a matter of an identity of the Same. True repetition addresses something singular, unchangeable, and different, without 'identity'. Instead of exchanging the similar and identifying the Same, it authenticates the different. (1990b, pp. 287–8)

In each of these cases, and no doubt more (for example, some of Derrida's recent writings on the gift and on new forms of technological text like e-mail), what I think we can see is the attempt to *disclose and touch* (Marks, 2000) a world of planful opportunism, a world in which 'true repetition' occurs, but in part *because* exact exchange has been achieved. As a result, new senses of sense become possible built on the new frames of anticipation and forms of memory that can show up and be touched in and by events now. And perhaps this should come as no surprise. For example, Derrida's and Deleuze's models of thinking as an open system were heavily influenced by systems theory (see Johnson, 1993) and it would be possible to argue that the connected world we now live in, built upon the loops and whorls of systems theory, and their work share some common epistemic forebears.

Let me come to an end with a speculation concerning the vexed topic of resistance to, and subversion of, this generally unconscious order. For what seems clear is that resistance and subversion become a different matter. Take

the example of the address. Through history materials and people have resisted the exigencies of the address in numerous ways, most often by seeking various forms of anonymity. But it seems to me that we need to think much more seriously about what might constitute resistance and subversion of the address under the new 'track and trace' model. One thing seems certain: old-style notions of 'getting lost' in space through random *dérives*, as in situationist texts, seem increasingly like an artefact of another age. Getting lost will increasingly become a challenging and difficult task, what with wearable computing, in-car navigation, and the like. Further, many actions will be tracked on a fairly continuous basis. It may be that this means we will have to get much better at harnessing the energy of moments by much greater attention to the minutiae of performativity (Thrift, 2000c). (Already, it seems as though the pure thrill experience of bungee jumping and the like has become a new way of getting lost.) On the other hand, modern complex systems are so overdetermined that in their interleavings all kinds of gaps are likely to be found in which new kinds of 'excursions' can be coaxed into existence. If things are showing up differently, we can do different things too, energetically opening up the new order of being. As the direction of attention changes, so perhaps we make a change in the direction of our attention, sensing possible emergences and new embodiments.