

# Inventive Intellectual Adventures in Cyberspace

Fanie de Beer

Developments in recent decades in the field of information and communication technique and technology have had dramatic impacts on human beings and societies and on their activities. Central human activities such as thinking, reading, writing and acting—to mention only a few crucial ones for our context—have changed in significance. Conceptions regarding more or less all important matters have been radically revised like our views of humans, subjectivity, thinking, reality, world, subjectivity, space, time, and so on which are all so vitally important for human existence, happiness, progress and survival. Careful reflection leads to a new understanding of all these old and traditional themes albeit extremely difficult to articulate these matters differently and appropriately.

One of the most impressive changes relates to our perception and experiences of space and its demarcations and boundaries. A marked illustration of such a change in thinking is the way Castells (1996) distinguishes between 'a space of places' and 'a space of flows'. The 'space of flows' which substitutes the 'space of places' stands under the direct influence and impact of the so-called 'network society'. He writes:

... the new communication system radically transforms space and time, the fundamental dimensions of human life. Localities become disembodied from their cultural, historical, geographic meaning, and reintegrated into functional networks, or into image collages, inducing a space of flows that substitutes for the space of places. Time is erased in the new communication system when past, present, and future can be programmed to interact with each other in the same message. The space of flows and timeless time are the material foundations of a new culture, that transcends and includes the diversity of historically

transmitted systems of representation: the culture of real virtuality where make-belief is belief in the making (Castells 1996:375).

The space of flows is basically an information space and the issue here is the flow of information. There exists no discrimination between units of information nor are there privileged ones either. For instance, the highly subsidised natural sciences and the highly privileged economic sciences are not exceptional in this spatial context over against the humanities. The only primary condition is that the humanities should use the opportunity to come forward with their qualities and participate without hesitation in the general discourses of the day. Related to this is a secondary equally important condition: know the other discourses; be familiar with the rhetoric of natural scientists and economists. Despite their pretentious attitudes they do not have impeccable insights neither do they possess the ultimate in knowledge. Without the humanities the ideological pretensions, metaphysical assumptions and very human extra-scientific prejudices governing all these sciences will never be identified or unmasked.

To be here and in Paris or Los Angeles at the same time implies a drastic relativization of space in the sense of near and far. The virtualisation of space which transgresses boundaries without effort (we are no longer locked up between four walls) brings about a different experience of space, world, reality, being in the world and many other related issues. Let us then begin with space in this new sense. As Paul Virillio (1991:25) puts it: '... the substantial, homogeneous space derived from classical Greek geometry gives way to an accidental, heterogeneous space in which sections and fractions become essential once more'.

Vast digital networks, computer memories, interactive multimodal interfaces, quick and nomadic, which individuals can easily appropriate present to the human mind stimuli which make thought visible, image abstraction and complexity, create landscapes that our bodies can explore, feel, and modify and these together constitute what may be called 'virtual worlds'. In a 'virtual world' it is possible and necessary to construct and apply technical, social and semiotic means that will effectively incarnate and give material existence to the notion of collective intelligence so that interconnected relations can become apparent, the most obscure notions can be contacted, images be illuminated and made comprehensible. When these things happen one can with freedom state that collective intelligence creates a new space. This space is called cyberspace. A careful consideration of this

notion of space is required because this is the space within which our intellectual activities are displayed.

## 1 Cyberspace

This is a word from the pen of William Gibson, the science fiction writer, a word with serious negative connotations, but also a word 'that gives a name to a new stage, a new and irresistible development in the elaboration of human culture and business under the sign of technology'. It is indeed a new notion of space with all sorts of implications which is emerging—not utopian, nor another metaphysics but a statement of fact. This new notion has been described in a very lively and intriguing way by various authors participating in a publication edited by Michael Benedikt (1992).

This whole discussion is necessitated by developments in the field of electronic media and the very important terms 'virtuality' and 'virtual space' which are so characteristic of all these developments and especially in view of their impact on all human discourses. This space is characterised by the necessity of an irreducible plurality—it is a space of the multiple or of multiplicity. On the 'principle of multiplicity' Deleuze and Guattari (1983:13f) write: 'It is only when the multiple is treated as substantive or multiplicity that it no longer bears any relationship to the One as subject or as object, as natural or intellectual reality, as image or world'. This space filled with the multiple engenders a new conception of world, reality, subject and object totally and radically different from before. The multiplicities have no subjects or objects; they are rhizomatic. And rhizomes never cease to connect semiotic chains, organizations of power, and events in the arts, sciences, and social struggles. The dimensions of multiplicities grow and in the process their connections increase as well. Cyberspace is clearly a space of dimensions, connections and relations. Well-known and widely utilized terms like 'net' and 'web' are appropriate here.

These dramatic dimensions pose a serious challenge to intellectual activities. The beauty of the challenges is clear from the etymology of the word 'intellectual', i.e. *inter* + *legere*, which literally means that our thinking can move across boundaries and between lines. The intellect finds this space adventurously inviting and challenging to travel and navigate. It may have special significance for reading. It means that humans, all humans from all disciplines, possess special abilities to respond adequately to these challenges.

The notions of cyberspace and virtual reality open up renewed possib-

ilities for metaphysical speculation sometimes to the utmost degree and to the extreme. Porush (1994) offers a clear discussion of this theme in his article. It is not the intention in this present article to glide into the same kind of threatening abyss. Yet it needs to be emphasized, however, that one facet of speculation which may be even more dangerous than metaphysical pursuits may be unreflective participation in the application of terms not well understood or perhaps not understood at all. Lévy (1998:183) puts it fairly strongly when he states unequivocally that 'much of the madness and violence of our time' may exactly be caused by submitting for example to the term 'virtualization' without understanding it. For this reason it is only responsible to search for an understanding of this and related notions.

Lévy (1997b:107) defines cyberspace as 'the space communication opened by the mondial interconnection of computers and informatic memories'. This definition includes the totality of electronic communication systems to the extent that they convey information. The distinctive mark of cyberspace is the plastic, fluid, finely calculable and treatable in real time, hypertextual and—for all practical purposes—virtual character of information. Cyberspace is indeed an information space and as such not limited to any specific discourse but accommodating of all possible discourses and very specifically the discourses of the humanities. This is important from the point of view that discourses degrading the humanities are still fully active at this point in time up to the highest level.

New communication and information systems provide members of a community with the means to coordinate their interactions within the same virtual universe of knowledge. This is not merely a matter of modelling the physical environment, but of enabling members of localized communities to interact within a mobile landscape of signification. Events, decisions, actions, and individuals would be situated along dynamic maps of shared context and continuously transform the virtual universe in which they assume meaning. In this sense cyberspace would become the shifting space of interaction among knowledge and knowers, in deterritorialized intelligent communities.

A dimension of decisive importance of cyberspace is that of virtuality. Lévy (1997a) devotes in a recent publication a chapter to 'Cyberspace or the Virtualization of Communication' in which he deals with matters like world wide web, access at a distance, the transfer of files, electronic mail, electronic conferences, and communication by the shared virtual world. Cyberspace represents a shared world. It is the space within which the unthinkable can be actualised due to its virtuality. 'Virtualization is the very dynamic of a shared

world; it is that through which we share a reality'(Lévy 1998:184). The important link between the notions of cyberspace and virtuality should be worked out in more detail since it is quite an intriguing relationship but also because in both directions it is really a qualifying of terms. The one without the other is unthinkable. The virtual character of cyberspace gives this space the character of a space for communication, thought and invention.

It becomes a space with an own architecture, or, as Lévy (1997b: Chapter 6) would be keen to point out and develop: 'the art and architecture of cyberspace: the aesthetics of collective intelligence'. Cyberspace represents not only communications networks and digital memories which will soon incorporate nearly all forms of representation and messages in circulation. It might also presage the terrifying often inhuman future revealed in science fiction: the cataloguing of individuals, the anonymous exercise of power, the annihilation of memory, and many more issues. It is nevertheless equally possible that the virtual world of collective intelligence could just as easily be as replete with culture, beauty, intellect and knowledge, as a Greek temple, or a Gothic cathedral. Porush (1994) develops this possibility further in his valuable discussions on the architecture of cyberspace. It is indeed a site to be fully inhabited should we want to share in the beauty and wealth invested there. What we encounter here is an unmediated communications space which puts us in a direct way in contact with vast knowledge resources liberated from disciplinary boundaries. These remarks postulate a cyberspace under construction with the encouragement of collective intelligence and collective imagination. With a view to achieving this ideal Lévy (1997b:127) suggests that we concentrate on the following:

1. Instruments that promote the social bond through the exchange of knowledge;
2. Methods of communication that acknowledge, integrate, and restore diversity rather than simple reproduction;
3. Systems that promote the emergence of autonomous beings;
4. Semiotic engineering that will enable us to exploit and enhance data, skills and symbolic power accumulated by humanity.

It is self-evident to what extent the discourses of the humanities can be introduced in this context on a grand scale. Hesitation may reflect a certain rejection of responsibility on their side, but most certainly not because of a lack of opportunities.

But this is not all. The notion of cyberspace as a space of intellectual exchanges and networks of discourses has an interesting theoretical background that may enable us to accommodate the notion of cyberspace more constructively.

## **2 Cyberspace and its Theory**

### *Theoretical Preparations*

There is no lack of theoretical preparation for this new spatial concept and its dynamic implications. Even before the stage of the emergence of an electronic environment as we have come to know it now, theoretical reflections anticipated these developments, as it were. The theoretical possibilities of new spatial networks were developed by many thinkers in many different ways. Barthes, Deleuze, Derrida, Foucault, Guattari, Kristeva, Lacan, Serres are some of the prominent figures in this regard—to name only a few. They prepared the theoretical soil for what was to come. Certainly, most of the time these specific developments were not anticipated, especially not in the late sixties when their first works came into existence.

In the sixties Kristeva developed her views on the notion of ‘intertext’ and Nelson his on ‘hypertext’. These were unrelated developments on two sides of the globe, one from the perspective of literary theory and the other from the perspective of computer work and informatics. It is interesting to notice to what extent notions like digitalisation, deconstruction, intertextuality and hypertextuality give expression to what Foucault would have called the contemporary episteme. For Kristeva (1984:59-60) intertext denotes ‘the passage from one sign system to another’. This shift of positions involves an altering of position—the destruction of the old position and the formation of a new one. The formation of a specific signifying system is the result of a redistribution of several different sign systems. The transposition of one (or several) sign system(s) into another, the passage from one signifying system to another demands a new articulation. ‘If one grants that every signifying practice is a field of transpositions of various signifying systems (an intertextuality) one understands that the “place” of enunciation and its denoted “object” are never single, complete, and identical to themselves, but always plural, shattered, capable of being tabulated’ (Kristeva 1984:60). Hypertext, coined by Nelson in the 1960s, refers to a form of electronic text, a radically new information technology, and is defined as follows: ‘By “hypertext” I

mean nonsequential writing—text that branches and allows choices to the reader, best read at an interactive screen. As popularly conceived, this is a series of text chunks connected by links which offer the reader different pathways' (Nelson 1981:2). It is clear that links, networks, alternative readings and inventions are built in into both approaches.

Derrida's demonstration of textures in *Glas* where he links texts of Hegel and Genet with his own reading is another brilliant example of the same idea. The reading of texts can and should lead to the creation of a new text, what Kristeva calls 'a new articulation' and what Nelson refers to as 'different (or new?) pathways'.

Serres' demonstration of the relevance of networks, and especially networks of messages in *La Communication* (1968) is an overwhelming insight for that time. But his whole oeuvre, created during a period of about ten years, and not only this text, gives evidence of the same idea: *La traduction* (1974); *L'interférence* (1972); *La distribution* (1977); *Le passage du Nord-Ouest* (1980); also some other publications by him for example one of the more recent ones titled *The Angels*. The development of the actor-network theory in French and British sociology circles were direct consequences of these views. While the previous texts worked on the theory only, the last one demonstrates in what ways electronic media and computer networks are relevant and applicable in the world of information and knowledge as such.

Deleuze and Guattari with their 'thousand plateaus' and the notions of the multiple, rhizome, and nomad science, to mention only a few terms, prepare a super playground for hypertextual activities in cyberspace. Networks, textures and rhizomes are clearly significant and appropriate terms to use creatively in this context.

We have to move from these largely preparatory texts to more specific theorising of the notion of cyberspace and related issues. They are preparatory in the sense that they have no specific and very explicit focus on electronic connections—it is much more a matter of the connection of ideas and texts and signifying systems. Developments in the field of electronic media are more a matter of creating agencies for facilitating these connections.

### *Theorising Cyberspace*

The bridge between the theories with implications for cyberspace and what it represents on the one hand and the specific and explicit theorising of

cyberspace is well articulated in many ways and by diverse scholars but one specific work, that of Landow (1992), may be one of the most telling examples of this bridging process. The title of his book is *Hypertext: The Convergence of Contemporary Critical Theory and Technology*. In this book he discusses in what ways the previous paragraph and the following can be linked in a significant way. His linkage of a notion of critical theory interpreted in a fairly wide sense and contemporary technical developments is particularly significant for the role, possibilities, and challenges confronting the humanities regarding their future at this specific point in time. Poster (1995) has done the same but with a more specific focus on the impact of media developments on our understanding of human subjectivity and the human subject in relation to information.

Theorizing cyberspace leads to very interesting insights which remind us time and again of the theoretical milieu in which these views emerge. Communication networks and digital memories are in the process of incorporating nearly all forms of representation and messages in circulation. These networks and message circulation no longer have any limitations. Traditional boundaries are transgressed in a physical sense but also in the sense of signification. Definitions and demarcations have to be redefined and redescribed. Traditionally space has been defined more in terms of its boundaries than in terms of its extensions and scope. Redefining and redescribing space brings us to the vastness of limitless scope and infinite dimensions. This spatial redescription is referred to cyberspace or virtual space. Lévy (1998:119) writes: 'Cyberspace constitutes a vast, unlimited field, still partially indeterminate, which should not be reduced to only one of its many components. It is designed to interconnect and provide an interface for various methods of creation, recording, communication, and simulation'. It represents the universe of digital networks as a world of interaction and adventure, of the new media of information transmission. As such it refers to the modes of creation, navigation and invention within knowledge, but also to the social relations all these developments bring about. A new culture emerges namely 'cyberculture' (Lévy 1997a).

The intention here is not, as already mentioned, to indulge in metaphysical speculations and considerations of transcendence, despite the fact that this may prove to be, according to some, a natural human inclination. A more significant and promising move may be rather to opt for ontological considerations. Although even this emphasis is strongly rejected by some as a possible way of a constructive development of 'an ontology of cyberspace' in



terms of extreme realism (Graham 1999), theory of being seems nevertheless very adequate to theorize cyberspace and its concomitant notion of virtual reality. Guattari (1995:60) discusses extensively what he calls 'the assemblage of the four ontological functions'. Rather than moving towards the simplification of the complex he is moving towards the complexification of the complex, 'its processual enrichment towards the consistency of its virtual lines of bifurcation and differentiation, in short towards its ontological heterogeneity'.

Both Alliez (1993) and Martin (1996) add their explicit and significant contributions to the reflection on an ontology applicable to and relevant for this context. For Alliez ontologies are daily reborn under our eyes, despite criticisms against objects, and even if they are not already part of all our daily discourses. According to Martin the so-called virtual realities propose to us a trip in and among images. Both writers' conjectures are influenced by the insights of Gilles Deleuze and Felix Guattari.

Pierre Lévy (1998:169-179) is, however, the one who has picked up and refined these insights, making them more practical and applicable in the context of virtual reality, cyberspace and cyberculture, especially in his elaborate and clear discussions of 'the four modes of being'. It seems plain that these discussions open the road to a very constructive and substantial development of a theory of virtual reality and cyberspace in terms of an elaborate theory of being, while especially preparing the road for inventiveness. In this regard it is useful to consult Hillis (1999) for a critical history of virtual reality.

Cyberspace and cyberculture include matters like hypertext, interactive multimedia, video games, virtual reality, simulations; a more comprehensive understanding of reality than up till now. We indeed encounter a new, different world. This world should be inhabited. Its potential must be recognized as a potential for beauty, thought and new forms of social regulation. Some suggest a new name for these new citizens, namely 'cyborg' (Haraway 1990, and *The Cyborg Handbook*). This takes us to the next dimension of our reflections.

### 3 Cyberspace as Human Space

New possibilities of exploration for inquisitive human beings have been uncovered. Cyberspace is not an electronic space in the first place. Human imagination is for centuries far beyond cyberspace—see for example Kant's

notion of 'transcendental imagination'. Cyberspace, to the extent that it is energized by electronic media, is not so much novel, but rather an exercise in trying to catch up with human imagination—like a travel agent moving very fast beyond all familiar places and spaces. Imagination involves intellect as well as knowledge (*inter + legere*—'reading between the lines', as mentioned earlier). In other words, linking discourses of different kinds. The implication of linking discourses is inevitably a matter of moving beyond boundaries, transgressing limitations.

Lévy (1997b) uses the term 'anthropological space' as a characterization of the place of humans in cyberspace. Humans do not occupy single spaces. 'I do not inhabit a unique space ... but I inhabit a multiplicity of spaces' writes Michel Serres (1972:151). This can certainly refer to physical and geographical spaces, and also aesthetic, emotional, social and historical spaces but, especially in our context, cyberspace. These spaces are all inhabitable spaces of signification, but cyberspace in particular is a space of signification.

It is an anthropological space, but a space in which new models of subjectivity emerge. What is required now is to understand the human being as a set of informational processes. It becomes especially a space of the posthuman. While the liberal self is produced by market relations, the posthuman is an amalgam, a collection of heterogeneous components, a material-informational entity whose boundaries undergo continuous construction and reconstruction (Hayles 1999a:3-5). If cyberspace is a human space, it is indeed a space where humans are redefined and redescribed as entities, but also as social beings, in other words in their sociality. Cyborgs, posthumans ... are descriptive terms in this regard. Porush (1994:552-553) characterizes the cyborg and the posthuman respectively in the following way:

The result of the inscription of a utopian vision onto a human is a cyborg, a natural organism linked for its survival and improvement to a cybernetic system. The imminence of the cyborg is not a matter of speculation, it is a matter of reporting the news .... We are already experiencing the reflux from a time twenty seconds into the future when our own media technologies will physically transcribe themselves onto our bodies, recreating the human in their own images, forcing our evolution into the posthuman through a combination of mechanistic and genetic manipulations. We will all become texts in which the culture reads back to itself the computer codes inscribed on

our bodies. The posthuman will be the governor—the cybernetes or pilot—in the inscription loop between the ultimate controlling technology of cybernetics.

From a different perspective this change in the understanding of human subjectivity in cyberspace is described by Lévy (1993:155-172) in terms of ‘the fragmentation at its basis of the thinking subject’ and in terms of ‘the dissolution of the knowing subject’. From various sources the plurality and multiplicity of all aspects which compose the human cognitive system have been described. There are no longer subjects as thinking substances. ‘It’ thinks in a network where neurones, cognitive modules, humans, teaching institutions, language systems, writing systems, books and computers are interconnected while transforming and translating transformations. Levy finds his theoretical support in the work of Deleuze, Guattari and Serres. Poster (1995:33) sees this new subject as inserted in ‘a decentred network of communications’ with the implication that the subject is no longer in the centre. In her discussion of the theme ‘what virtual creatures can teach us’ Hayles (1999b) is even more explicit:

... as I think about my connection to virtual creatures, I am tempted to fashion myself in their images, seeing myself as a distributed cognitive system comprised of multiple agents running the programs from which consciousness emerges, even though consciousness remains blissfully unaware of them. I am one kind of material embodiment, the virtual creatures are another, but we are connected through dynamic processes that weave us together in a web of jointly articulated cognitive activities. I think, therefore I connect with all the other cognizers in my environment, human and nonhuman ....

In their publication *A Thousand Plateaus* Deleuze and Guattari describe the ‘rhizomes’ which extend themselves on a plane of consistency while transgressing all arborescent classifications and connecting the totally heterogeneous strata of being. The multiplicity and molecular processes are in opposition to unifying forces. ‘A rhizome never ceases to connect semiotic chains, organizations of power, and events in the arts, sciences, and social struggles’, they write elsewhere (Deleuze & Guattari 1983:12). In *The Parasite* Serres (1982) utilises the same words to speak of human relations and things of the world. Although the two domains were separated and studied

by different sciences, there is always in all cases of communications, of interceptions and interferences, of translations and distributions, of transformations of messages, the question of 'the parasite'. Human relations are fundamentally parasitical relations. It remains a matter of how human subjects fit into the networks in cyberspace and what kind of impact these links have on subjects. The posthuman subject is more mobile than the traditional liberal subject to explore and move around in cyberspace.

The human dimension of cyberspace is thoroughly explored by Bolter and Grusin (1999:230-265) 'by examining some consequences of the remediating power of digital media for our culture's definitions of the self', which they have well articulated in terms of 'the remediated self', 'the virtual self', and 'the networked self'.

#### **4 Cyberspace as Knowledge Space**

This is about the interconnectedness (atlas) of knowledges. It is knowledge in its fullness that fills this space. The informatization of society (see De Beer 2000) on a global scale creates a predominant position for knowledge to such an extent that there can be and is indeed talk of 'the age of knowledge'. The question here is how we should approach the so-called 'age of knowledge' in view of the transformations that resulted from the contemporary evolution of technical and organizational structures: the multiplication of intelligence, the linking of intelligences on a global scale; the acknowledgement of the authenticity and validity of the intelligence of the other. 'Totalitarianism collapsed' because 'it was incapable of collective intelligence' (Lévy 1997b:3). All dogmatisms inevitably collapse eventually. The assumption of collective intelligence is that we will abandon the perspective of power. Collective intelligence strives to pursue and promote the interplay with alterity, imaginativeness and labyrinthine complexity. The ultimate aim may be the establishment of intelligent communities. A climate or milieu is created for writing, reading and thinking on a different level.

#### **Implications**

1. Breakdown of boundaries, especially disciplinary boundaries—transgressions (epistemic as well as ethical);

2. Reconnecting and configuring: the shape of a molecule as determined by the arrangement of its atoms or, the structure of an atom as determined by the arrangement of its electrons and nucleons;
3. Inventions: Invention tends to occur when unrelated areas, ideas, or forms come together in unexpected ways. Specialised organization of disciplines works precisely to avoid and suppress the conditions conducive to invention (Ulmer & Tschumi 1990);
4. Confrontations—burial of sacred cows. Agonistics of Lyotard and confrontation of Ulmer are in place here. Confrontation—face facing face;
5. Collective intelligence: The issues mentioned open up new understanding of intelligence, intelligence without boundaries or racist, culturalist or dogmatist preferential connections, free moving intelligence.

This notion of 'collective intelligence' has been explicitly and comprehensively developed by Pierre Lévy (1997b). He sees the computerization/informatization of society as having the potential to 'promote the construction of intelligent communities in which our social and cognitive potential can be mutually developed and enhanced' (Lévy 1997:17). It is his hope that the Internet, World Wide Web and the new computer technologies, 'will serve to filter and help us navigate knowledge, and enable us to think collectively rather than simply haul masses of information around with us' (Lévy 1997:17). His vision is deeply human and social. He believes that the computer can, through technologies like 'knowledge trees', provide us a means by which to share knowledge with others and meet them in largely unbiased and democratic cyberspace. His notion of collective intelligence is a 'universally distributed intelligence'. He believes that 'no one knows everything, everyone knows something, all knowledge resides in humanity'. All of us have something to contribute to this knowledge pool. All have something to gain.

In this regard the statement by Michel Serres (1997:xvi) is very relevant: 'Science speaks of organs, functions, cells, and molecules, to admit finally that it's been a long time since life has been spoken of in laboratories, but it never says flesh, which very precisely, designates the mixture of muscles and blood, skin and hairs, bones, nerves and diverse functions which thus mixes what the relevant disciplines analyse. Life throws the dice ..'. Each portion of knowledge works at the intersection of the interference of many

other disciplines and, sometimes, of almost all of them (Serres 1997:xvi-xvii). It is not unjustified to view all sciences as human sciences anyway. Are not all the sciences and their discourses, from the natural sciences to theology, human discourses on specific themes, topics or objects and even domains of study?

Discursive networks are established all the time; new connections are established; connections between intelligences are established. For this very reason Lévy publishes a book precisely on the rich and pregnant notion of 'collective intelligence' which constitutes a virtual world replete with culture, beauty, knowledge and intellect.

Cyberspace represents the ultimate labyrinth on which Castoriades writes in such a pertinent way. At the same time, as one of its most decisive implications, it implies or demonstrates the opposite of the linear conception of knowledge rejected already long ago by Nietzsche, Hundertwasser the artist, Mandelbrot the geometrist, Deleuze and Guattari, philosopher and psychoanalyst respectively.

Even the interdisciplinary studies of for example Prigogine and Stengers deserve to be mentioned. Textual networks are not limited to works of literature and can even include in a very productive way the sciences they claim in *La nouvelle alliance* (1986) and *Time and Eternity* (1989). Serres (1989) made explicit contributions in this regard as well, to which we will return later, and so does Hawkins (1995:xi) according to whom 'chaos theory currently provides the most fruitful of all conceptual bridges between "the two cultures"'.

The rethinking of established views becomes a self-evident obligation. Only a few of these views will be mentioned.

*Knowledge:* Knowledge becomes infinitely more than empirical facts understood in terms of positivism. What this includes is the discovery of the remainder: all that is left over or falls outside the calculations of reason. Lecercle (1990) is excellent on this in his book on the relationship between violence and language, or, in terms of Virillio (1992) the discovery of the lost dimension. This dimension is forced upon us again by the electronic media and can no longer be ignored. But there is still more to it than this. The discovery of the Other, or of the Unconscious (Lacan) requires that even the unconscious needs to be rethought in view of current theoretical as well as technical developments. There exists a very significant link between the unconscious and knowledge as so well articulated by Shoshana Felman (1987) with an emphasis on overcoming the threatening and pathological disposition,

embraced by many, namely the will to ignorance or the passion for ignorance. Ulmer (1990) discusses the secret of learning how to overhear the Other and the contribution this strategy of listening makes to the development of knowledge and the dissemination of knowledge discourses.

*Words:* Words are not fixed—not only sciences, hard or soft, exact or inexact, rigorous and fluid, living and human, but words, because only with them can one meditate, that is with all possible words, because thinking well requires numerous words. Multiple journeys of the thinker who is not content with canonical knowledge or with the correct proof, but who must throw himself also into myths, stories, and literatures, folk knowledges.

*Messages:* They are no longer the linear and causal relationship from sender to receiver through a medium. The movability of messages, the linkage of messages, the wing-footed Hermes-like movement of messages almost in all or any directions, so well described by Michel Serres in his various publications, is a unique phenomenon of our time. The angel-like presence of information messages around and in us reconstructs our world and offers us a new space, or adds a new dimension to our spatial experience.

*Book:* The notion of the book as we know it reflects a certain model or paradigm of thought based on platonic philosophy. The idea of the book is the idea of a totality—fixed, closed and final, of course. Herewith immense implications are posed for the act of reading, but certainly also for the act of writing. Books are no longer fixed entities and reading is no longer an effort to identify with the authority of the book. Intertextuality and hypertextuality open up books from both sides and establish infinite links with other texts.

*Subject and subjectivity:* In redefining the subject we have to move beyond the traditional conception of the subject as in opposition to an object, be it world, society, or things. Subjectivity is in fact plural and polyphonic, inserted in networks of which it only forms a part and not necessarily the most important part. Accepting this new description, this new ‘fate’, is not at all a suspension of responsibilities. The answers to questions about the posthumans will be ‘the mutual creation of a planet full of humans struggling to bring into existence a future in which we can continue to survive, continue to find meaning for ourselves, and our children, and continue to ponder our kinship with and differences from the intelligent machines with which our destinies are increasingly entwined’ (Hayles 1999a:282).

## **5 The Emergence of a New Figure of Knowledge**

The demands of this knowledge space requires new perspectives on rationality. It can no longer be interpreted in the strict sense of the rationalist tradition. Alternative epistemological approaches are required which will focus on detotalizing aspects of language and will capture the extrarational richness of experience—the wealth and abundance of being on which Feyerabend fixed our attention. To make this happen we will need a more robust model of cognition that will transcend the differences between literary representation and scientific epistemologies.

It seems clear that we have to leave our commitments to orthodox rationalism behind us and to realize that we are living in the postrational, postlogocentric era. The demands of such an awareness are clear. Our ability to think has to be newly discovered, explored and cultivated. This thinking can no longer be controlled by merely clinging to physical, rationalist, and realist strategies and approaches. It contains other imaginative, spiritual, noological dimensions as well which should effectively be entertained. The domain of human thought activity and explorations should be enlarged and expanded. Porush (1994:569) articulates this urge in the following way:

The effect of Babel/Infocalypse, of evolving out of the machine code and into natural language, of moving out of the Edenic prelogocentrism of direct mind control (programming code) and into the babble of uncertainty and invention, was to enlarge the domain of human activity in two directions at once. The first leads to words and languaging, which from thence forward would never be enough. The second leads to a recognition of the spirit world, a domain that transcends physical presence and mechanical activity, a realm beyond words, which we can never utterly know. In certain strong innovations of culture, like ... the utopian envisioning of cyberspace, it becomes clear that the tension between the word and spirit is the fundamental creative impulse in humanity.

When we look at these new dimensions it becomes clear that a 'fantastic' world opens up before us. Foucault, commenting on one of the books of Deleuze, offers this description of the dynamic challenges of this new context. We have no option but to respond to the challenges. Foucault (1980:169)



writes: 'It is this expanding domain of intangible objects that must be integrated into our thought: we must articulate a philosophy of the phantasm that cannot be reduced to a primordial fact through the intermediacy of perception or an image, but that arises between surfaces, where it assumes meaning, and in the reversal that causes every interior to pass to the outside and every exterior to the inside, in the temporal oscillation that always makes it precede and follow itself ..'..

What is called for is a new order of discourse which will collapse the multiple and delusory boundaries between literature, epistemology, cognition and science. This challenge is particularly well addressed by Michel Serres in a special article on the exact sciences and literature. He writes:

I think that ... we even will achieve our greatest vitality under the conditions of inventing, quickly, the Third Curriculum. I mean well-rounded thought, that of both our hands and of both our hemispheres. That is the role model, necessary yet lacking .... [W]e can no longer leave algorithmic ratiocination and literary rehashings completely segregated, without mortal danger. We must imagine a way in which to teach, with the same gesture, both the poem and the theorem, without wronging either and with mutual enrichment: experimentation and experience, the new world of scientists and the storytelling of time immemorial, the immortal world of scientific laws and the new age of the arts (Serres 1989:34).

This 'Third Curriculum' requires to be taught by people with special qualities.

I am seeking knowledge that is finally adult, a balanced wisdom, a certain forgetfulness of death .... The adult man is educated in a third way ... he has both culture and science .... The step undertaken here is thus not simply one of explanation; its goal is more than to reveal another form of criticism. Criticism is fairly futile—only invention counts (Serres 1989:6).

At a later stage Michel Serres (1997) developed these views further in a dramatic way and is most probably correct when he identifies 'a special figure' for this adventurous double task of exploiting these possibilities to the full and to teach it to others as his so-called 'instructed third' or 'the

troubadour of knowledge'—the thoughtful and inventive adventurer. It is an educational model or figure at the same time. Such people should be our teachers. They are able to establish connections between all knowledges; they are informed about all the sciences and all cultures. This 'new figure' is of crucial importance in the age of knowledge. What are writers, readers and thinkers doing if their writing, reading and thinking are not related to knowledge. We are not and can no longer remain outside the space of knowledge. The emergence of a new figure of knowledge reflects a deep need for a figure who can facilitate knowledge as comprehensively and as thoroughly and as deeply as possible. The challenges of the contemporary world prohibits the indulgence in superficialities and simplifications.

Understanding the world, this new world, this new spatial concept; no longer changing or transforming the world, because we do not really know what it is we want to change, or into what it should be changed. The dehumanising and overly exploited skills focus of today as the solution to all possible problems of life and society may be nothing but the sordid after-effects of an obsolete Marxism in terms of which we are no longer required to understand or think about the world but are called upon to change it, irrespective of how ill-considered or thoughtless these changes may happen to be.

The instructed third or troubadour of knowledge should facilitate collective intelligence, which also implies collective imagination, but what is more, collective understanding as well, which will inevitably lead to collective responsibility. The principal operation, for which this figure is exceptionally well qualified, is to bring about connections in the context of this vast space, to construct and extend rhizomes of meaning, to generate the scene for inventions. It is really a cultural activity—cyberculture—which is in a very explicit way also a knowledge culture.

This facilitating activity can happen in terms of thoughtful endeavours like 1) Conversation in stead of dialectics; 2) Configuration in stead of manipulation; 3) Confrontation in stead of submissiveness.

1. Conversation, in the sense of the notion of 'infinite conversation' as we find it developed by Maurice Blanchot, is an excellent strategy for the troubadour. No dialectic, no criticism, no debate, only conversational movements. This mode is in full compliance with the requirements of cyberspace. This is a kind of interrelational space, and this field of relations rests upon a distortion which introduces between

things 'a relation of infinity' (Blanchot 1993:81). This literally means ceasing to think only with a view to unity, shaking off the yoke which encloses us in a fascination with unity. The implications emphasize an infinite task, the task of a truly plural speech (Blanchot 1993:82). It seems legitimate to draw a parallel between Blanchot's notion of infinite conversation and the circulation of messages in cyberspace.

2. Configuration, in the sense of bringing figures together in harmony, by linking them adequately and inventively, is a particularly relevant way in a time ripe for knowledge work in new dimensions. It calls for a special mode of thinking, understanding and interpretation which are conditions for all sensible knowledge activities.
3. Confrontation is another facilitating function characteristic of the troubadour—see Ulmer (1990) in this regard. The intellectual developments in recent times around this term makes it extremely suitable for utilization in the context of cyberspace. In Derrida's view confrontation is committed to the notions of margins, dissemination and deconstruction. What this meant in practice is the creation of a kind of milieu or free space, an open city, a theatre of deconstruction within which negotiations on knowledge and meaning can take place. It is an open place where representatives of different views came to discuss their works, their conflicts and differences, their perspectives, where there is a ban on 'interdictions' and without having to risk conflict and schism. These views prepare a milieu or space of invention. It should be kept in mind that invention should never be limited to technical devices, not even as the most important inventions. Intellectual adventures in this space must be extended to literally all human activities—poétique, pragmatique and technique.

Bernard Tschumi's experiments with a deconstructive architecture facilitates the same views. Tschumi (1990; 1998) abstracting the notions of confrontation and madness from their original theoretical and institutional background has designed a free zone, an open city. Tschumi's plans for Le Parc de la Villette won a competition for the park of the twenty-first century but his contribution is not limited to the idea of a physical park only. As a matter of fact his plans intended to encourage cultural invention in the sense

that they show the structure of relations that produce invention. As we know invention tends to occur when unrelated areas, ideas, or forms, very often in confrontation with each other, come together in unexpected ways. No wonder invention is and will remain such a rare event in university contexts especially where no disciplinary boundaries are allowed to be transgressed. Invention is particularly ready to emerge where boundaries of whatever kind are transgressed.

The troubadour or harlequin postulates almost a kind of playfulness. The most important function of the troubadour, of course, is to facilitate invention. Inventiveness is a very special quality of humans. Michel Serres (1997:93) writes:

Invention is the only true intellectual act, the only act of intelligence. The rest? Copying, cheating, reproduction, laziness, convention, battle, sleep. Only discovery awakens. Only invention proves that one only truly thinks, whatever that may be. I think therefore I invent, I invent therefore I think: the only proof that a scientist works or that a writer writes. Why work, why write otherwise? .... The inventive breath alone gives life, because life invents. The absence of invention proves ... the absence of the work and of thought. The one who does not invent works somewhere other than in intelligence.

The milieu for invention is created and prepared by the developments discussed up till now. Inhabiting cyberspace and indulging in its wealth of knowledge and information makes invention a strong possibility and something to pursue keenly.

'The liberty of invention thus of thought' is the phrase Michel Serres (1997:xvii) used to establish the link between inventiveness and thinking, hence no invention without thinking. The troubadour is the one who excels in thinking and consequently also the one who excels in invention. This happens because of the total rejection of repetitive reasoning, of methodical laziness, of ruminating on the past and because of the embracement of the liveliness of the improbable unexpectedness of the finding (Serres 1997:100). The troubadour is the wanderer who has uncovered the secrets of employing communications, interferences, distributions, translations and voyages to the ultimate, the figure qualified by Michel Serres (1997:155) as one with 'infinite capacity', not from a position of arrogance but from a position of

worthlessness: 'I am no one and am worth nothing—capable, then, of learning everything and of inventing everything, body, soul, understanding, and wisdom'.

Department of Library and Information Science  
University of South Africa

## Bibliography

- Alliez, E 1993. *La Signature du Monde*. Paris: Des Editions du Cerf.
- Benedikt, M (ed) 1992. *Cyberspace: First Steps*. Cambridge (Ma): The MIT Press.
- Blanchot, M 1993. *Infinite Conversation*. Minneapolis: University of Minnesota Press.
- Bolter, JD & R Grusin 1999. *Remediation: Understanding New Media*. Cambridge (Ma): The MIT Press.
- Castells, M 1996. *The Rise of the Network Society*. Oxford: Blackwell Publishers.
- Deleuze, G 1993. *The Fold: Leibniz and the Baroque*. Minneapolis: University of Minnesota Press.
- Deleuze, G & F Guattari 1994. *What is Philosophy?* London: Verso.
- Deleuze, G & F Guattari 1983. *On the Line*. New York: Semiotext(e).
- Deleuze, G & F Guattari 1988. *A Thousand Plateaus: Capitalism and Schizophrenia*. London: The Athlone Press.
- Felman, S 1987. *Jacques Lacan and the Adventure of Insight: Psycho-analysis in Contemporary Culture*. Cambridge (Ma): Harvard University Press.
- Foucault, M 1980. *Theatrum Philosophicum*. In *Language, Counter-memory, Practice: Selected Essays and Interviews by Michel Foucault*. Ithaca: Cornell University Press.
- Graham, G 1999. *The internet:// A Philosophical Inquiry*. London: Routledge.
- Guattari, F 1995. *Chaosmosis: An Ethico-aesthetic Paradigm*. Bloomington: Indiana University Press.
- Hawkins, H 1995. *Strange Attractors: Literature, Culture and Chaos Theory*. London: Prentice Hall.
- Hayles, NK 1999a. *How we Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: The University of Chicago Press.

- Hayles, NK 1999b. Simulating Narratives: What Virtual Creatures can Teach Us. *Critical inquiry*, 26:1-26.
- Hillis, K 1999. *Digital Sensations: Space, Identity, and Embodiment in Virtual Reality*. Minneapolis: University of Minnesota Press.
- Kristeva, J 1984. *Revolution in Poetic Language*. New York: Columbia University Press.
- Landow, GP 1992. *Hypertext: The Convergence of Contemporary Critical Theory and Technology*. Baltimore: The Johns Hopkins University Press.
- Lecerle, J-J 1990. *The Violence of Language*. London: Routledge.
- Lévy, P 1993 *Les technologies de l'intelligence: l'avenit de la pensee a l'ere informatique*. Paris: Seuil.
- Lévy, P 1997a. *Cyberculture*. Paris: Editions Odile Jacob.
- Lévy, P 1997b. *Collective Intelligence: Mankind's Emerging World in cyberspace*. New York: Plenum Trade.
- Lévy, P 1998. *Becoming Virtual: Reality in the Digital Age*. New York: Plenum Trade.
- Martin, J-C 1996. *L'Image virtuelle: essai sur la construction du monde*. Paris: Editions Kime.
- Nelson, TN 1981. *Literary Machines*. Swarthmore, Pa: Selfpublished.
- Porush, D 1994. Hacking the Brainstem: Postmodern Metaphysics and Stephenson's *Snow Crash*. *Configurations*, 3:537-571.
- Poster, M 1995. *The Second Media Age*. Cambridge: Polity Press.
- Prigogine, I & I Stengers 1986. *La nouvelle alliance*. Paris: Gallimard.
- Prigogine, I & I Stengers 1989. *Tussen Tijd en Eeuwigheid: De Nieuwe Plaats van de Mens in de Natuurwetenschap*. Amsterdam: Uitgeverij Bert Bakker
- Serres, M 1972. *Interferences*. Paris: Minuit
- Serres, M 1982. *The Parasite*. Baltimore: The Johns Hopkins University Press.
- Serres, M 1989. Literature and the Exact Sciences. *SubStance* 18(2):3-34.
- Serres, M 1994. *Atlas*. Paris: Editions Julliard.
- Serres, M 1997. *The Troubadour of Knowledge*. Ann Arbor: The University of Michigan Press.
- Tschumi, B 1990. *Questions of Space*. London: The Architectural Association.
- Tschumi, B 1998. *Architecture and Disjunction*. Cambridge (Ma): The MIT Press.
- Ulmer, G 1990. Confrontation (For a New Consultancy). *The Oxford Literary Review* 12:155-171.

- Ulmer, G 1989. *Teletheory: Grammatology in the Age of the Video*. New York: Routledge.
- Virillio, P 1991. *The Lost Dimension*. New York: Semiotext(e).
- Virillio, P 2000. *The Information Bomb*. London: Verso.