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Abstract

In which the fundamental principles to be discussed are set out; the present evolution of human consciousness, the Information Age context, notions of collective Mind and Alienation as the result of accelerated technological sophistication.

Chapter One: Problems of Change

Since the dawn of human self-consciousness, we have questioned the nature of our self-knowing. This consciousness has granted us particular power in the world, and it is the nature of that power, or rather our use of it, which is particularly troubling at this time. Our present-day consciousness includes an awareness that as we live in the latter half of the Twentieth Century, we are subject to some of the most profound changes in our way of living on planet Earth ever to confront the human species. We have come very far on our evolutionary journey, from the beginnings of life some two-to-three billion years ago, past the milestones of emergence from the unconscious animal world to our present condition, that of Homo Sapiens Sapiens, between two-to-three hundred thousand years ago.

The emergence of consciousness, as we know it today, has been a slow process; but now the pace of change is accelerating, as the application of consciousness to the empirical investigation of our phenomenological existence brings about an expansion in our capacity to shape the world through the technologies born of theory, invention and practice (Jantsch & Waddington, 1976). This enhanced capacity has granted us great power over our fellow creatures, over the earth and its natural resources; the capacity to travel in outer space, to journey to the depths of the oceans; the power to smash atoms and to twist and grow living things. Today we also have the power to translate the phenomenal world into digital form, which grants us advanced abilities to communicate with one another and to represent the world in which we find ourselves.

And yet all this might over nature, granted alone to humankind by the evolutionary growth of the cerebral neo-cortex, has seemingly not given us the power to control our destiny. We are swept along by the unconscious, animal tides of greed, fear and self-interest, without the capacity to steer our world in a direction which will optimise living conditions for all of its inhabitants. Yet it is largely the nature of our conscious mental operations which has brought us to this point, in the fusion of the human abilities for cognitive processing of sensory inputs, abstract conceptualisation as a means of problem-solving, and combinations of bodily functions such as hand-eye co-ordination in order to translate thoughts into action. These attributes of human awareness and action are embedded in culture, which can be understood to be essentially the system of beliefs and behaviours whereby human beings create

d (Muller, Tomaselli & Tomaselli, 1989). It is s achieves significance in the ability to represent individual psyche, and externally through communicating with others. Culture is the field of signification in which mind manifests itself, the reference grid in which meanings are articulated and referenced relative to other significant factors in the environment.

In order to have a culture however, we need communication, a means whereby we can negotiate meaning among ourselves, as well as co-operate in the processes required to sustain our physical existence and modify the world according to our individual and collective will. Our means to this latter end consists of various technologies, including the technology of language, insofar as this belongs to the domain of rational, rather than organic constructs. The nature of change in our time, the late 20th Century, is founded on constant changes in technology which is our means of interfacing with processes of production, transportation, communication and economic activity. Driven by the imperatives of empirical science and the capitalist mode of production, constant technological innovation demands cultural, economic and natural resources to sustain it, as well as constantly threatening to widen the gap between those who possess technological power and those who do not.

Science, which includes the scientific method, the practices, personnel, infrastructure, economies and ideologies which sustain it, is the means of production for technology. In one sense we live in a world which is being eaten' by science, which demands ever increasing input of natural and human resources in the blind drive towards technological and economic expansion. This socio-economic imperative fosters the rapid increase of the global human population and which slowly poisons the environment, the earth and its seas and sky, the air which we breathe and the aesthetics of the milieu in which we live. The surge of this consuming growth is still slow, but its exponential increase must surely reach a point where such pollution too accelerates, resulting if not in our destruction as a species, then at least in a significant reduction of the quality of life possible for the vast majority of human beings on the planet.

In the light of the above factors, we must ask how we can creatively transform ourselves in order to deal with the problematics which confront us, both socially and technologically, in order to harmonize the relationship between human beings, their technology and the planet. Political solutions are not enough to overcome the inertia of our social and psychological modalities which constrain the limits of what it is possible for a socio-political system to achieve in the governance of human activity. The consistent failure of revolutions in the Twentieth Century to deliver anything other than more of the same' repression, exploitation and imperialism, is proof of our political failings; but perhaps we are capable of greater things, if we are able to utilize our theoretical knowledge to build technologies which can aid the development of our consciousness, the essential mechanism for the harmonious development of the human species on planet Earth.

If changes in environment caused by natural means have in the past propelled our ancestors to adopt the upright, bipedal posture, and concomitantly to expand their mental capacity through evolving the cerebral neocortex in order to become the sophisticated, creative innovators and controllers we have become today, then it is not impossible that current rapid changes which we are creating in our environment

ary growth. This evolution is not necessarily the
ed by Darwin, with some scientists claiming that
al niche and will not progress any further; but
rather it is an evolution of consciousness, for it is in this sphere that we are likely to
notice the most profound changes in the future.

There are several reasons for the above. Firstly, I believe there is an imperative for change as a result of the maladaptive behaviours exhibited by the present evolutionary stage of humankind; secondly our technological innovations are already impacting on our consciousness in the form of the various communications technologies which have been developed; thirdly, further technological advances will bring us enhanced capacities for communication as well as the manipulation of genetic codes and the bio-mechanical interface; and fourthly we have embarked on a voyage of discovery into the nature of the psyche and conscious awareness through specific technologies such as hallucinogenic drugs and harmonic sound techniques which facilitate the exploration of altered states of consciousness (Leary, 1993; Lilly, 1973; Monroe, 1995; Youngblood, 1970). Concomitant with these factors is the deepening disillusionment with materialist science and the resurgence of interest in the noumenal realm (Tomaselli, 1994), or those dimensions of existence which human beings have supposed to lie beyond our ordinary conscious awareness; the domain of spirit, the nature of which human beings have grappled with ever since we became aware of ourselves as a species qualitatively separate from other animals.

In the light of the above factors, I contend that there is a need to harmonize the interface between human beings and the technology which we have created. In part, this involves creating what Ivan Illich (1973) refers to as "convivial" technologies, those which can enlarge the range of each person's competence, control and initiative'. Illich contends that such technological usage would create a society in which modern technologies serve politically interrelated individuals rather than managers', and thus maximise the energy and imagination of autonomous individuals and primary groups' within the production matrix, instead of reducing them to the status of mere consumers.

Illich uses the term 'conviviality' to mean the opposite of industrial productivity', in that it is 'autonomous and creative intercourse among persons, and the intercourse of persons with their environment' (Illich, 1973; p11), as well as holding ethical value in individual freedom, couched in the interdependence of each one person's fit to her neighbours. He does however see this in the light of a rather utopian socialist vision, where a 'convivial society' is one in which social arrangements

guarantee for each member the most ample and free access to the tools of the community and limit this freedom only in favour of another member's equal freedom (Illich, 1973; p12).

This in turn requires some sacrifices, ie. universal voluntary reduction in birth rates and limitations on the affluence and power possessed by both individuals and groups. In such a society, both technological innovation and professional specialisation are limited. Convivial tools in this scenario are those which can be easily used by anybody, and which do not require the user to be qualified' to operate them. The society would be one where people help each other and rely on one another for such assistance, rather than relying on machines or industrial forms of social organisation.

Marxism as the social framework in which his technological view of the industrial base which has underpinned the socialism to date. The hitherto dominant mode of socialist theory, Marxism, is based on structuralist thinking locked into the metanarrative of rationalism. The rationalist cause has historically rallied around the standard of science, with for example Marx's emphasis on scientific socialism' being the accepted dogma of historical materialism. The materialist approach, dubbed scientism' by Russell Jacoby (1981), has characterised the industrial eras of the Western and Eastern blocs alike. This empirical approach is all very well, but unfortunately Marx could not see the limitations of the scientific' mode of thought indeed it has taken over a hundred years for us to have sufficient perspective on this view to enable us to successfully critique it. Marx used the term science in opposition to utopian socialism' (Jacoby, 1981), as well as linking it to the notion of technological achievement and progress. But this much-touted scientific' characteristic of Marxism is locked into the same industrial metanarrative as that of bourgeois capitalist society, for in its seductive appeal lie concealed the inequitable power relations of extractive production; and these yet bedevil the workplace and the power relations of modern communist societies. This flaw of Marxist mythology is characterised by Jacoby as follows:

To challenge Marxism as a science does not encourage the occult or the mysterious. The single alternative of science or the irrational is posed by the inflexible scientific mind. Rather the challenge is directed against a repressive concept of science, perhaps more accurately dubbed "scientism". The strict natural sciences, elevated to the sole model of knowledge, censor critical thought. Anything that cannot be squeezed into scientific categories is proscribed or neglected (Jacoby, 1981; p6). We shall return to the problem of scientism later in this essay; suffice to say that this theoretical mould has shaped industrial modes of production which have disempowered people in socialist countries just as much as in their capitalist rivals. While the scientific method has triumphed in producing the technologically advanced world we live in today, it has not met with equal success in humanising the production and consumption processes in ways which Illich propounds as convivial. Nevertheless, Marxism does offer some useful insights into the nature of technology under the industrial production paradigm, from whose gloomy embrace we are now emerging into the postmodern, post-industrial information age.

Mind, Alienation and the Mode of Production

The industrial revolution brought about great changes in the relationship between human beings and their world. Prior to this age of machines, the use of tools as means of production presupposed a direct correlation between the activity of mind and body, through work, with the resulting product. People were intrinsically involved in the products of their labour, and had a great degree of control over them. This changed with the advent of steam-driven engines, which not only had their own 'built in' source of energy (ie. not relying on human, animal or the natural energy of sun, wind or water), but also to a large degree took over the production process. The status of humans was reduced from that of creators to that of being mere cogs in the machine; from having control over the production process, human beings became just another part of it, often subservient to the machinery which they minded.

For the theorists of the industrial age, Marx saw in this new economic function which resulted in the phenomenon of alienation as a defining feature of human experience, Marx proposed that human beings were alienated from the products of their work activities because of factors such as the division of labour and money. Because some people were workers and others managers, the division of labour forced people to act in predetermined ways within the mode of production, and not voluntarily, according to their will. Thus the individual is not free to choose any form of labour but is forced into a particular role according to his/her birth. This relationship between the individual and work then alienates the labour activity from the labourer, as he/she is regulated by its form rather than the other way round.

This idea of alienation derived from Hegel's idea of Mind overcoming its "alienation" or lack of self-awareness, and history is then an account of human self-consciousness freeing itself from the illusions that prevent it achieving self-understanding and freedom' (Singer, 1980; p14). For the young Marx, man's chief illusion became religion, counter posed to which human self-consciousness was the highest form of divinity'. Later, Marx shifted the locus of his discontent to money as the alienating principle, the effect of which was to prevent humankind from achieving the wholeness of fusion with its species life', which outcome he conceived in terms of a Hegelian synthesis arising out of the dialectic of contradictions. In the Marxist conception, the nature of productive relations in the labour process corresponds to the relative stage of development of man's productive capacity, or the productive forces'. So the nature of capitalism is dependant on the technology it uses to harness productive capacity; technology cannot be neutral in this sense, in that it determines the parameters within which social and power relations can occur.

Although Marx's analysis was flawed in many ways, his conception of alienation is important because it addresses (a) the relations of power in a society relative to the technological means of production and (b) the relation of the existential experience of alienation to human self-consciousness. In the first place it is clear that technology plays a role in the structure of labour relations within a society, in that access to technology defines control over the means of production; ie. technology confers productive capacity upon those who control it. In the information age, the dominant means of production in the global economy is the production of symbolic forms, ie. of knowledge, through educational institutions, mass media, the culture industry and bureaucracies (Radoby & Bruck, 1989).

In advanced capitalist countries such as the USA, more than 50% of labour production involves the manipulation of information (ibid), and with the convergence of computer and communications technologies between the '60s and the '80s, 'the global information infrastructure became essentially ubiquitous' (Braman, 1993). This convergence facilitated the 'rationalisation' of the international economy and the development of multinational and transnational corporations. This process facilitates both instrumental and structural power of the corporations and the nation-states, as well as deepening the 'process of commoditisation' or consumerism which now dominates global economic transactions. So the control over industrial technologies in the 19th Century, noted by Marx as an essential component of bourgeois power over the means of production, has been transformed into control over information technologies in the 20th Century, with similar results in terms of power relations between the 'haves' and the 'have-nots'. Alienation is then inherent in the forms of

patterns of power distribution in the 20th Century, the technological means of economic production.

The relationship between technology and human consciousness is rather more complex. Marx and Hegel both thought of history as having a purpose, a goal -- for Hegel the self-consciousness of Mind and for Marx the liberation from alienation of the human species (Singer, 1980). Marx saw in communism the eradication of aspects of human nature such as greed, egoism and envy because for him these were historically located in the stage of alienation. With the dismissal of private property, people would 'naturally' work for the communal good rather than for individual gain, and the progression from capitalism to communism was 'naturalised' as an inevitable evolutionary step for humankind, an evolution of consciousness for the human 'species-being'. Marx derived this idea of humanity as a 'species-being' from Fierbich and Hegel, and believed it was only through control over productive labour that humans could actualise themselves as part of this species-being; labour transforms the 'essence of human life' into objects, ie. labour is 'the objectification of man's species-life' (Singer, 1980).

But the Marxist mythology of materialism as a means to implement this species-being has failed humanity utterly, for everywhere it has been applied, conditions of oppression, environmental degradation, poverty (both material and spiritual), military and cultural imperialism and even genocide have occurred. It appears that control of labour is not enough to actualize a species-being; Marx bought into the rationalist sales-pitch of post-renaissance science, and millions of people have paid the price for the application of this narrow conception to human functioning. In losing what Jacoby terms the "warm currents" of Marx's essentially humanist focus, Marxist communism in the Twentieth Century has lost its soul. Marx's own renunciation of the noumenal realm of religious impulse, in reaction to the religiously inspired philosophies of his predecessors, denuded people in communist societies of their connection with the divine, and so lost them the essence of their humanity. Although the manufacture of material goods may be a sign (or symptom) of species-being, it is not the thing itself, just as Being for the Human Being precedes processes of material creation. Just as the experience of Being takes place in consciousness or thought, so too does the experience of species-being occur in this same dimension.

Fierbich, on whose theories Marx based his own, held that "Existence precedes thought, thought does not precede existence" (Singer, 1980) in arguing against the concept of religion. However, if we conceive of our universe as consisting of information (McKenna, 1991), then it may be that thought in the form of self-organizing information, is what precedes existence. Whether or not history has a 'goal' as such is unknowable, but it would appear from the evidence that evolution -- both biological and social -- is a consequence of the tendency for self-organizing systems to develop through processes of self-transcendence (Jantsch, 1976), which means that living systems (organisms or collectives of organisms) have the ability to adapt to changing environments. In the light of this proclivity, it is time to backtrack to Hegel's original idea of Mind as an evolving phenomenon, and reconsider it in the light of Twentieth Century developments.

In order to examine the notion of Mind and its development, we need to reflect as to who and what we are as human beings in the cosmos. The notion of self-reflexivity has gained much currency in postmodern conceptions of our late Twentieth Century experience. This idea is nowhere better epitomised than in the moment of knowledge which struck humankind when our spaceships first looked down upon the Earth and sent images of the blue planet back to the eyes of its inhabitants. The image of the Earth floating alone in space is a powerful conceptual tool, for it gives us a perfect metaphor for seeing our species in relation to the rest of the universe. In the process of becoming what we are today, humanity's horizons have steadily broadened; first from the forests to the grassy savannas on which our ancestors wandered, adopting the unique upright stance which distinguishes our species from the other animals, then to new continents, and now to outer space.

This self-reflexive image of the planet enabled humans to see a relationship which had hitherto been obscured by the immediacy of our perception, our vision circumscribed by the horizons which bound our sensory knowledge. The relationship is one of the Earth as a unitary system, ultimately bound up in the wholeness of the solar system, which swims in the Milky Way galaxy, in turn swirling through the reaches of our space-time universe. As individuals or peoples or nations or as a species among many others, human beings are intrinsically bound up with the total planetary system. We are but one energy component of the total energy system located on the blue planet, swinging on its orbit about the sun like a pearl on a string; one planet, one unit, symbol of the number one, resisting the fragmentation or atomization which we ascribe to existence which begins when the child becomes aware of "I" and "not I", the basic conception of self on which the psyche is predicated. From "I-and-not-I" we derive "us and them", where the social group constructed by self-identity is opposed by those outside of this narrow sphere.

There is a new paradigm emerging from the postmodernist fog of indeterminacy. This is a unitarian view where all living and non-living systems are seen in terms of energy. From this perspective, all aspects of the energy system can be seen as intrinsically interlinked no one aspect can be affected without affecting all the other elements. This is a dynamic ontological viewpoint. As one of the champions of the emerging paradigmatic view, Beverly Jones (1993) says,

The research connected to the new connectivity paradigm stresses connectedness of mind/body, of mind and body with environment and interconnections of phenomena within the environment. In the modern model these connections and interdependent influencing would have been viewed as harkening back to a premodern 'magical' model (Jones, 1993; p7).

To understand reality in terms of energy system dynamics is to see that change, rather than stasis, is of central importance to conceptualising system processes. In living energy systems, change = life and stasis = death. So the nature of change is important, especially when we consider how human consciousness changes or evolves over time and in relation to changing environments. As Pankow (1976) puts it,

systems which are built from living systems are open to matter, energy, and information which they (Pankow, 1976; p16).

This kind of openness, which expresses the notion of continuity in change as a basic characteristic of life, is referred to as a 'formal openness' by Pankow. This definition provides an important clue in considering how the concept of Mind arose in the evolution of the sophisticated human brain with its capacity for self-consciousness. The concept of chaos theory, which was developed to understand processes of change in dynamic systems, is significant here. The advancing wave of change through time is explicated in terms of chaos theory by Eric Jantsch (1976), who argues that aspects of life such as 'imperfection, nonequilibrium... nonpredictability... differentiation and symbiotic pluralism' play important roles in transformation. There is however a basic rule of 'self-transcendence' in evolution, which applies particularly to consciousness. In this model it is process rather than transitory structures which provides the shaping factor of evolutionary gestalt. The notion of gestalt refers here to an open system in which flows of 'energy, matter and information' contribute towards self-transcendence, or the capacity of a system to represent or model itself. Jantsch puts forward the suggestion of 'dynamic process thinking' enabling intermeshing learning processes which result in the mutual correlation of species with the physical environment, and in the human world also of man with his social and cultural environments (Jantsch, 1976; p3).

Environmental factors place a 'stress' on populations, which results in genetic variations in the capacity of different individuals to respond appropriately to it (Waddington, 1976). The adaptability of phenotype behaviour patterns to environmental stress induces a changing potential in the genotype, according to natural selection, by which future generations have a greater capacity to respond in an adaptive fashion to the stress. There are particular 'stresses' in the natural environment which have shaped human evolution, for example the move from forest to savannah and the ending of the last ice age; but in evolving a complex brain capable of supporting the abstract modelling system we call Mind, human beings have developed the ability to mould their physical environment and to form unique cultural environments. Subsequent to our evolutionary step into our current physical manifestation of *Homo Sapiens Sapiens*, it is changes to this cultural environment which have resulted in what Bronowski (1973) calls "The Ascent of Man":

Man is distinguished from other animals by his imaginative gifts. He makes plans, inventions, new discoveries, by putting different talents together; and his discoveries become more subtle and penetrating, as he learns to combine his talents in more complex and intimate ways. So the great discoveries of different ages and different cultures, in technique, in science, in the arts, express in their progression a richer and more intricate conjunction of human faculties, an ascending trellis of his gifts (Bronowski, 1973; p20).

The conceptual abilities of Mind have also developed in the course of time. Julian Jaynes (1976) contends that human beings have only relatively recently achieved self-consciousness, the shift into consciousness having only occurred since the "classical" times of antiquity, ie. only within the last 3 000 years. He bases this argument on the idea that the consciousness implied by Homer's epic, *The Illiad*, was based on only a partial conjunction of brain functions. In this view, consciousness only arose through the development of communication between the left and right hemispheres of the brain. The appearance of gods in *The Illiad* represent the

self of the protagonists; in other words, the 'real' creations of the central nervous systems of themselves simply "noble automatons who knew not what they did" (Jaynes, 1976; p75). This 'bicameral mind' of divided hemispheres relied on non-conscious abstract thought processes to direct the conscious experience of the individual. Jaynes argues that

the presence of voices which had to be obeyed were the absolute prerequisite to the conscious stage of mind in which it is the self that is responsible and can debate within itself, can order and direct, and that the creation of such a self is the product of culture. In a sense, we have become our own gods. (Jaynes, 1976; p79) Jaynes' position is a contentious one, but its extravagance should not detract from the justifiable tracing of the development of consciousness. His essential idea is that the organisation of the brain is to a large extent determined by the environment in which it finds itself. The question of how consciousness could arise from the bicameral mind in the space of but a few thousand years is important, and underlines Jaynes' focus on the brain's plasticity, its 'redundant representation of psychological capacities within a specialised centre or region' (Jaynes, 1976; p122). Because evolutionary change happens over many generations, it is easy to ignore its presence, or worse, to actively work against it. Jantsch points out that we tend to think of human systems in static terms and so aim our ideals at homeostasis. In this situation, negative feedback which reduces deviation is preferred to positive feedback which increases deviation. In the latter case, such self-organizing or 'self-realizing and self-balancing' systems are 'open learning systems, exchanging energy with their environment' (Jantsh, 1976; p38). In this energy exchange model of evolution, structure is that which focuses and directs energy into action. The energy of interacting processes defines temporary structures, just as resonant wave forms create standing waves.

The accelerated process of change occasioned by humankind's technological progress calls for a new 'cybernetic technology', according to Jantsh. This is a technology which utilizes natural energy flows, rather than converting stored energy (eg. fossil fuels) in an 'energy pushing' manner. Understanding phenomena in terms of energy flows enables new visions of other levels of human functioning in social, cultural and even spiritual modalities. Here 'two-way correlations' mark the interaction of feedback mechanisms, so human evolution is

both unfolding of an inherent dynamic potential, and correlation with many levels of dynamic environment which, in their totality, fall together with universal evolution (Jantsh, 1976; p40).

In this model it is the dynamic relations between organisational levels which motivates change and which characterises the nature of the system, rather than any fixed structure. The Cartesian split of rationalism is fused when mind is understood in a non-dualistic fashion, ie. as 'higher-level co-ordination of the same processes which, at other levels, appear as "matter" ' (Jantsh, 1976; p42). Evolution is thus 'a change in organization' which occurs through 'in-struction from a higher level of co-ordination' which orders or encodes information in a semantic fashion. In this sense, semantics is a functional relationship between a space-time structure and its environment. Consciousness and language have developed then as higher forms of organisation, which in turn facilitate accelerated evolution.

Evolution is not simply a Darwinian process of natural selection. It is the physical response within a species to the total information system of the environment in which the species exists. In this sense, the total information system' is a form of Mind, the higher level of co-ordination' which acts to direct change.

Technology and Consciousness

The form of Mind as inclusive of both individual and mass consciousness, together with the signification systems of language and technology, have brought us to the 'Information Age' of the late Twentieth Century. This is the time of the "digital renaissance", where art and science fuse in the furnace of digital technology. The significance of this fusion is characterised by Bronowski, who says that:

Art and science are both uniquely human actions, outside the range of anything that an animal can do. And here we see that they derive from the same human faculty: the ability to visualise the future, to foresee what may happen and plan to anticipate it, and to represent it to ourselves in images that we project and move about inside our head, or in a square of light on the dark wall of a cave or a television screen (Bronowski, 1973; p56).

There is also the view espoused by Walter Pankow (1976), who argues that technology and language co-develop. According to Pankow, language represents a 'conscious re-creation of our world of experience' and that the world of experience is also a concrete representation of language'. So thinking and acting are united, as one in constituting a 'complementarity', where

Man can only understand himself by understanding his environment, and he understands his environment only by transforming it actively into a world, his world. Therefore, man is the most open of all living beings, not only because he has the highest potential for development, but also because he recognizes this potential (Pankow, 1976; p31).

There is thus a relationship between consciousness and the transformation of the 'objective' world into a realm of understanding. Because the world is itself a dynamic process, so increasing understanding of the world is a broadening of consciousness. Major alterations in the course of human history, if one follows Jaynes' logic, can also be attributed to changes of consciousness. So consciousness, the Mind of Man, changed with technological advances such as the development of language. The invention of writing facilitated the emergence of ancient civilizations, because it enabled people to extend their representation of the world. The Enlightenment too was an overall change in human consciousness -- or self-consciousness which facilitated the industrial revolution.

Technology is a means of exercising control over form, and so is a means of representing humans to themselves through processes of creation. Marshall McLuhan (1964) viewed technology, in the form of media, as "extensions of consciousness". The self-representation of humankind takes place through media, combinations of printed material, images and sounds which are transcribed across different mediums in order to conjoin individual and social units in the communal construction of meaning. From being slaves of the machine in the industrial age, we are moving into

by this I mean that the human-machine interface is of 'inanimate' constructs with the human bio-people can now have electronic implants in the brain which enable them to see with a video camera, or tune directly into computerised cyberspace. Jonathan Crary and Sanford Kwinter (1992), identify processes which they dub 'integration', ie. the combination of human life into metasystems of social and technical organization, and 'embodiment', whereby individuals assimilate the 'patterns and rhythms' of the socio-historical milieu. Through these mechanisms, they argue that human life is undergoing a metamorphosis as part of what they call 'the vitalization of the machine'. This is an uneven historical transition where there is

a proliferation at a variety of levels of new virtual pathways and historical countermovements which have the potential to be used or activated in diverse and opposing ways (Crary & Kwinter, 1992; p14).

Despite the inertia of the presently entrenched power structures of the postmodern world, there will always be counter-paradigmatic movements with the vitality to challenge and even overcome the status quo. These forces have the capacity for 'cognitive and cultural transformation', in other words using these mechanisms to transform human society as a whole.

The evolution of which I speak is one where individual self-consciousness is linked to global human self-consciousness. By transforming the individual's capacity for conceiving and constructing the world in new ways, we can, through mechanisms of advanced interconnectivity, transform planetary consciousness into new ways of becoming. This process occurs primarily through the mechanism of media, which is the mirror in which we can view ourselves as a species. Media here include the cybermedia of computer communications. In order to effect such a transformation, it is useful to study the workings of the human mind, with specific reference to certain field theories which encompass the concept of information flows.

Mind and Media

The human brain has a surplus of processing power, an architecture where the higher processor function areas are undistracted by the constant "noise" of motor co-ordination performed by lower brain structures. This cephalization, located primarily in the frontal lobes of the forebrain, enables the brain to process sufficient information to render in the mind's eye the abstractions which characterise consciousness. The holographic functioning of memory (Sheldrake, 1988) is indicative of the functioning of mind as a whole. Consciousness too can be thought of as a holographic representation of information, which models perceptions of exterior reality for the individual to create meaning.

What is the ontological reality of a hologram? It is real, but at the same time a representation, an 'illusion' created by the nature of wave patterns caught in photographic film. This 'illusion' rests for its existence on a sophisticated array of hardware, the technology created by human ingenuity. In Mind, consciousness rests in a similar relationship to the physical 'wetware' of brain, nervous system etc. The individual psyche is a field of shifting 'holograms', the intersection of memory, language and sensory information. Within the field of Mind, brain activity can be conceptualized in terms of self-organizing systems, the dynamics of which organize information in terms of its integrative abilities just as computer software organizes

of computer hardware. These organizing fields are concerned with form, pattern, and rhythm (Sheldrake, 1988). They rely on but are not reducible to the interactions of material structures and their constituent parts, and so act in a way analogous to that of morphic fields in other words they are purposive, goal-directed structures of organization, or information fields which order the information environment of Mind.

Terrence McKenna (1994) posits that the universe is information, of which matter is an embodiment. If we take this view to be true, then mind can be seen as an amplificatory device for analysing and translating information. The idea of a holistic, unitary universe, together with an understanding of that universe as an informational construct, greatly facilitates a view of reality which enables understanding of singularities such as psi phenomena, or Mind as a collective phenomenon. Rupert Sheldrake's theory of morphic resonance also rests on the 'universe as information' idea, and gives a firmer grounding for the acceptance of events such as these which have hitherto been regarded with extreme scepticism by mainstream science. In Sheldrake's view, morphic fields are non-physical fields of influence which shape patterns of matter, thought and behaviour. Behavioral phenomena associated with morphic field theory imply that consciousness, even among animals, is not an isolated phenomenon specific to individuals, but that there is a component which is common to populations, species etc. as a whole.

So consciousness is related in an intrinsic way to information, being a means of modelling the information of phenomenal reality in the internal or subjective reality of thought. The media, through the transmission and exchange of information, thus also have an effect on consciousness. This notion is best explicated by McLuhan in his discussion of technology, in particular media, as 'extensions of consciousness', whereby he conjoins the concept of the human central nervous system (CNS) with the sensory enhancements of technology.

The idea of humankind's merging with the machine by way of the technological extension of the human CNS and its manifestations of individual and collective consciousness, with the 'inert' mechanical and electronic engines we have created, is significant in terms of our earlier discussion of alienation. As the machine alienated humankind from the natural environment and the products of production or tool use, so it also began to alienate individuals from themselves. Humankind has only recently in its evolutionary history inhabited permanent, artificially constructed environments, and the gradual process of sophistication which these environments underwent has culminated in the rise of industrialisation, which created a whole new order of complexity in its structuring. This unprecedented complexity has resulted in the explosive information age of today, where the entire Earth is locking into a global information culture. This is a culture characterised by consumerism and the regulatory flows of information across the planet, which govern resource distribution and control, wealth and power (Braman, 1993; Buchanan, 1996).

Gene Youngblood (1970) calls our time the 'Paleocybernetic Age', because it combines the 'primitive potential' of Palaeolithic times with the 'transcendental integrities' of a cybernetic utopian vision. He identifies a cinematic form, which he calls 'expanded cinema', with expanded consciousness. This form of cinema uses abstract images merged in successive layers as a process of manifesting consciousness outside of mind. This is a visual field, like that of the 'intermedia

which according to Youngblood functions as a much the same way as McLuhan theorised.

Youngblood follows Adorno & Horkheimer (1972) in viewing alienation as an intrinsic component of the culture industry, which produces products that alienate people from themselves in substituting profit motives for use value. This occurs in a context where 'interior realities are not compatible with exterior realities', a gap which art attempts to overcome, finding freedom in a fusion between 'what is and what ought to be' (Youngblood, 1970; p42). Technology however is decentralizing humanity's communication channels, resulting in a new paradigm of cinematic language which Youngblood calls the 'synaesthetic mode'. The upshot of this decentralisation process is that art and technology enable people to live in a creative fashion, and thus leisure time and work time can be combined. In his understanding of evolving consciousness and culture, Youngblood uses Teilhard de Chardin's term 'humanisation' when referring to the process whereby each succeeding generation integrates and builds upon the experiences of the previous level. Youngblood comments that

This "consciousness expansion" has reached a velocity of evolutionary acceleration at which several transformations occur within the life-span of a single generation. Because of mankind's inevitable symbiosis with the mind-manifesting hallucinogens of the ecology on the one hand, and his organic partnership with machines on the other, an increasing number of the inhabitants of this planet live virtually in another world (Youngblood, 1970; p47).

The above contribution to our understanding of the relationship between consciousness, technology and the media gives some useful points of entry to the struggle for human empowerment in our modern age. Put simply, if people can find creative ways to utilize technology in opposition to the ideological practices of the culture industry, then we have a means whereby we can alter our collective consciousness, and go on to new levels of sophistication. This means the enhanced capacity to model our subjective and objective realities, and to create a communal space where such new perspectives can be shared. As Youngblood points out, this process is already happening -- it is interesting to note that Youngblood was writing at a time *before* the Internet explosion of connectivity across the planet, and before the notion of Virtual Reality had been developed.

The rapid advance of electronic technologies has put powerful productive tools into the hands of individuals and groups who could not before have had such power in their grasp. In a way, the large-scale productive capacity required by the industrial age has given way to the small-scale productive engines of digital technology. The effect of this is to put the productive power of the factory into the hands of individuals or groups, granting them the power to manipulate the basic resource of information to transform into material gain. But this information harvest can only be of benefit to all through the establishment of a convivial technology, which helps to overcome the problem of alienation inherent in industrial processes.

At the same time, we must recognize the problem of centralization of power which the confluences of information technology are generating. Transnational information linkages, together with what Braman (1993) refers to as the 'harmonization of systems' across different media, facilitate centralizing tendencies where power agglomerations grow by swallowing up disparate corporate entities. So media barons

er control vast media empires, while small Internet
by large corporations, which also makes it easier
ation flows across the 'net (Kinnear, 1996).

Convivial Technology

In order to transform centralizing cybernetic information systems into democratically accessible ones, a convivial approach is necessary. Convivial technology requires two major elements in order to succeed: firstly a human-friendly interface (Laurel, 1990), and secondly interactive, dialogical cybernetic systems which enable people to participate in the process of meaning construction (Radoby & Bruck, 1989).

Laurel suggests that the notion of interface includes 'the cognitive and emotional aspects of the user's experience', as well as being 'the contact surface of a thing' (pxii), its shape reflecting the physical qualities of the interacting subjects, the nature of the functions to be performed as well as the power relations of that interaction. These functions imply that interfaces to media, ie. our means of communication, be designed with accessibility in mind. Laurel defines empowerment in terms of both functionality and 'greater ease of use', which implies that it is not necessary for individuals contributing to information flows be 'professionals'. This is where the concept of community media is important, because individuals and community groups can become involved in the process of media production (or information dissemination) without the constraints of professionalism (White, 1994). Computers can play an integral role in such media; for example, Crockford (1990) calls the integration of television (video) technology and computers 'The New Television', and says that this integration could make the tools of media production available to everyone. In this regard, 'The New Television could perhaps be the most important form of communication ever invented' (in Laurel, 1990; p466).

Illich's notion of 'convivial' media are those which enable people to be both producers and consumers, eg. the telephone and BBSs (Bulletin Board Systems). The prerequisite to this is what Illich terms 'symmetry', ie. that everyone has access to the same means of production. The aim here is to produce 'talent-limited' rather than 'economically-limited' creative processes, which have a low threshold of accessibility. Personalising adaptive media to optimize salience, or the 'pertinence of a piece of information to a particular person's needs at the time it is presented' can also help to create competitive low-budget media. Illich notes that collaging processes which utilize existing works in the creation of new ones would also increase accessibility because producers do not have to be originators in this sense. This method could also be related to Youngblood's synaesthetic technique, whereby appropriated images can be layered together to generate new meanings.

If the interface to communication through media occurs at the level of community media, it enables more people to become involved in processes of meaning construction. Meaning can be effectively constructed by collective efforts at processing inputs from the environment and modelling them in an 'artistic' fashion (ie. combining aesthetic descriptiveness with connotative or 'intuitive' implications) in virtual space. This model of operations can be effectively applied in the development of forms of media such as the Internet, World Wide Web and the electronic media of radio and television. Through participation in such processes of meaning creation, the capacity of a society to process information is enhanced, so altering the 'collective consciousness' of the society. In today's global media environment, this

ness of humanity as a whole. This alteration takes
ative data resources of the population, as well as
communication within the human macrocosm.

A good example of this is the stock market, which is a global information system where information about human activities and economic flows is processed. Here the individual minds of the brokers are fused with the data space of the 'cybersphere', the communications systems which link those brokers both individually and collectively (in their specific trading floor locales) and which exchange and display information linked to economic activity. Television, for example CNN, acts as an auxiliary data space where economic and political issues are debated and shared amongst the global broker community. The gestalt of this total cybernetic system is then manifested in the 'bullishness' or 'bearishness' of the market.

The above example indicates that the way forward for media lies in the efficient management of interactive information. This involves conceptualising media in terms of information flows, where environmental feedback combines with information compression techniques to optimize information flows. Note that the stock brokers in the above example are interactive players within the field of information flows relating to economic activity. In media, the merging of different information flows through the convergence of hitherto disparate media (Braman's 'harmonization' of systems), involves the various media forms such as newspapers, radio, television, magazines etc. becoming a combined traffic flow on the so-called "information highway". Here the emphasis is on connectivity and the participation of all users in contributing to the total information field. The tendency towards media consumerism, within the paradigm of one-way transmission which has hitherto governed both print and airwaves, remains; but even large-scale commercial producers are driven to the concept of interactivity in their manufacture of cultural products. From the World Wide Web to interactive movies, the entertainment industry has to seriously reconsider its strategy of one-way information transmission to passive consumers.

Information, Knowledge and Understanding

At the same time, there are deeper forces at work than a mere demand for participation in interactive media systems. There is also a spirit of militancy and rebellion against the power-relationships of the past arising in the midst of the cyber-masses, which is manifest through all layers of the social strata, from those hitherto deemed politically conservative to the most 'radical' leftists. This is a revolt against the limitations of previous hegemonic (or 'modernist') thinking about the nature of physical reality and our relationship to it. As the "Magna Carta for the Knowledge Age", produced by the 'conservative', libertarian Progress & Freedom Foundation of the USA, states in its preamble:

The central event of the 20th Century is the overthrow of matter. In technology, economics, and the politics of nations, wealth in the form of physical resources has been losing value and significance. The powers of mind are everywhere ascendant over the brute force of things (Dyson, Gilder, Keyworth, Toffler, 1995).

One of the authors of the 'Magna Carta' is Dr Alvin Toffler, famous for his futurist studies, among them his theory of 'Third Wave' society which has gained much currency in information technology circles. According to Third Wave theory, 'actionable knowledge' in the form of stored and transmitted information, is the basic

your- and machine-intensive productive forces of responds with Jean Lyotard's concept of discussion of postmodernism (see Chapter 2). But 'Information is not knowledge; knowledge is not understanding', according to Mark Taylor and Esa Saarinen (1994), who posit the idea of 'imagologies' as a radicalising of textuality in media through telecommunications technology. This is a means to 'electrify the signifier' by concentrating on the power of images, for images are 'the medium of thought, action and communication'. This conception complements our earlier discussion about the inductive power of images as a contribution to conceptualisation, the 'inspiration' from which rational logic processes often stem. After all, Newton's "Eureka" was a consequence of the image of the proverbial apple falling in front of him, and this concept can be transposed to our means of communication, particularly synaesthetic media.

Taylor & Saarinen contend that the compression of information into image forms is the gateway to the realm of inductive thought, the non-rational sphere where contradiction can bring enlightened understanding; that Zen moment when even 'misunderstanding can release energy'. Media impacts on consciousness, so by changing the images through which we uncover our existence, we alter the gestalt of consciousness. Language is more than just words when it can be additionally represented with images, for example in creative typesetting.

Media philosophy transforms the philosophy of language into an energetics of image. A word is a micropower that carries political force... Language does not set the limits of the world because the world does not have any fixed limits but is an ongoing project of the imagination (Taylor & Saarinen; p6).

Advances in digital visualisation technologies, such as Silicon Graphics' VRML (Virtual Reality Markup Language) developed to create 3D graphics on the Web, as well as animations and video FX, will enable us to create the icons of tomorrow's media languages. There is already a change in our way of thinking taking place as a result of the advent of electronic multi-media and hypertext mediums. These mediums are constructed in ways which allow for non-linear or "intuitive" approaches to the exploration of knowledge-space, rather than the linear logic required by traditional media such as books, films or television. Such media require the construction of intuitive pathways and linkages instead of building sequential logic structures.

For example, in committing this essay to paper, I am encoding it in an analogue fashion which lends it particular communicative characteristics. The essay would then be passed on to a reader, who would tend to read the essay from start to finish in a linear fashion, so following the rationality of the arguments. If I encode the same essay in digital form and place it into the collectively accessible, non-linear medium of the World Wide Web, these communicative characteristics are fundamentally altered. In the first place, the document is now accessible by large numbers of people, located almost anywhere on the planet. It is also accessible through different mechanisms, ie. links to its subject matter which appear on different Web search engines or other home pages. The information of the essay itself can be thought of as a kind of 'info-sphere', in that the reader can now follow arguments through links within the document. Each link can take the reader along a 'knowledge pathway' through the body of information, or connect to other bodies of information which are also on the Web (ie. readings which I have summarized and digitized or other Web locations). The addition of information in the form of images, graphics, animations

the cognitive gestalt of the information system,
ts in a more holistic or intuitive fashion.

The capacities for data depiction through imagery and intuitive modes of information retrieval together make the human-computer interface more 'convivial' in that they more closely mimic the functioning of mind, the way in which our brains function to represent and make sense of the world. Such characteristics have the potential to facilitate profound changes being effected in the collective human consciousness. With the transcription of images through the global network, we are able to activate other brain sectors in human receptors, ie. the non-rational and intuitive areas of neural energy focus. With advanced techniques, such as those of abstract film makers Jordan Belson or John Whitney, we can create synaesthetic experiences in virtual space which will enable access to other levels of consciousness. Just as the visualising centre of the individual mind utilises synaesthetic combinations of image, sound and smell to create a mental holograph for imaginative 'visualisation', so can the global visualisation space perform the same function for a global "mind". In other words, a collective vision is worked out within the communications system; such a scenario presupposes the presence of interactivity in the system, ie. the global computing network is turned into a kind of 'democracy machine', where every constituent element has the ability to interact with the total system and affect its outcome. In cybernetic terms, this is a 'feedback loop', where information is input into the system from the environment and vice versa.

Consider a scenario where instead of a audience several billion strong passively watching a spectacle, eg. the Olympic Games, that 'audience' participates in generating the spectacle, which then becomes a collective experience. Whether the 'spectacle' is then the election of a world government, a global referendum or an artistic or cultural event, the machine functions to convey the sentiment of the mass, without this sentiment being limited or funnelled through the machinations of 'leaders' or 'representatives', as is currently the case in our political systems. In the case of artistic or cultural events, the audience is not the passive subject of the video, film or performance -- the audience *is* the performance, which is rendered or imaged for the global vision by the machine. A simple example of this would be a 'vote-meter', which displays in graphical form the progress of votes being counted. As people watch voting trends emerge, they can register their vote in such a way as to effect the potential outcome of the vote.

If such global convocations encourage an experience of liminality, where the strictures of everyday social and personal relationships are lifted, this could potentiate an alteration in the collective consciousness, manifested in aspects such as global outlooks, or an experience of Being or a kind of 'communal mind'. Direct experience of this communal mind could occur in situations where combinations of energy inputs, ie. sound and light, of sufficient intensity and harmonic resonance transport participants into altered states of consciousness or trance. In the trance state, gnostic experiences enable the creative fusion of ideas through access to higher states of information organisation -- in other words, the sum of individual consciousness will constitute the collective 'mind', though each individual might only experience the collective consciousness in a numinous fashion. Just as the individual neuron in the brain does not experience consciousness, so will the individuals linked into the cyber network not 'know' some sort of god-like superconsciousness, except partially, through gnostic induction. The effect of this experience for the individual will be inspirational, where knowledge is in effect shared amongst the participants in

This knowledge will only become conscious if the
by the individual and ultimately shared
of media images and words.

Such an event would reconstitute humanity through the fusion of the noumenal with the phenomenal, the spiritual and the technological. That there is a need for this is expressed by popular icons such as local pop singer Levannah of the South African music group *Qcumber Zoo*.

Man has lost touch with his spirituality and there's a definite movement to recover that ground. I don't believe that we have done everything there is to do and that the world is sliding into degeneracy. If enough people believe, there's a point of critical mass that tips the scales. It can only make the world a better place to live (Mail & Guardian, May 24-30, 1996).

This would be what Hillman (1995) terms 're-awakening the sense of soul in the world', in order to address a problem identified by deep ecology, that human arrogance, greed and alienation from Nature are destroying our planet, and until we heal our spiritual alienation from the Earth, no long-term solutions are possible (Head, 1995).

In order to address the problematics of the late Twentieth Century, we need to remake not only our world, but ourselves as well. As a species, humankind is undergoing rapid processes of change, which alter our global society's relationship to what Jantsch terms the 'stability boundary' of the whole dynamic system. In this state of flux, stasis is difficult to maintain due to the fluctuating conditions which contribute towards this chaos boundary. Bifurcations or points of departure for the future of the total dynamic system are potentialised by the unstable conditions at the system's periphery. Despite the potentials for directing the probability of change in certain directions however, Jantsch notes that human systems have 'richly coupled subsystems' which are able to absorb relatively big fluctuations, so attaining a 'metastability'. This means that they can exist 'close to a stability boundary where resilience is high' (Jantsch, 1976; p4).

One positive or encouraging fact to emerge from chaos theory in recent times is the notion that small changes to a dynamic system can have large consequences (the so-called 'butterfly effect'). If we wish to affect the outcome of social and economic tendencies in the long term, in other words if we wish our present self-organizing human system to transcend itself, we must work ceaselessly towards this goal. The principle which orders chaotic or dynamic systems is that of iteration, repeatedly feeding the outcome of the social equation back into itself. This principle indicates how countercultural tendencies, for example revolutionary movements, can sweep to power despite the odds stacked in favour of the status quo. The type of liminal communicative events cited above must be continually created and repeated, in order for the transcendence embodied within them to become translated into the everyday phenomenal world. The site of struggle on our planet has moved into the realm of consciousness -- we must create ourselves anew through actualizing the potentials of Mind if we want to be free.

I have taken the opportunity over the past two years of engaging in experimental community access television broadcasts, which form the body of evidence I have gathered to substantiate the above arguments. I have used the medium of

focus on what Youngblood terms "synaesthetic" images in a free-flowing, artistic fashion. This process of compressing information in both the visual and audile fields perceived by the brain. It does this in a fashion which has both rational and intuitive interpretive aspects, that is it requires a bi-hemispheric or unified brain approach to comprehension (Jaynes, 1972). This differs radically from the rationalist logic, which relies exclusively on left-brain functioning and actively denies the intuitive or non-rational side.

These media events also seek to yield information about democratic methods of media construction and use, in the belief that the combination of creativity and democratic practice will enhance the capacity of mind to evolve itself. It is important to view these experiments not as static events locked into particular space-time locales, but rather as dynamic, transformative processes which continue today and into the future. The experiments are moments upon this evolutionary track, which through their impacts on people's lives and the collective imagination will affect the trajectory of humankind's development. This may seem a grandiose claim, but here I refer the reader to the Buddhist koan: Does the drop of water dissolve into the ocean, or does the ocean dissolve into the drop? (Humphreys, 1962). The fundamental insight of the autopoietic worldview is the interconnectedness of all things, so that any intervention, no matter how small, must have an effect on the totality. The small arena also provides a mirror of the macrocosm, so social tendencies can be examined through the microprocesses of the experiment. Experiments in information technologies are a fitting starting point for investigating the nature of existence in the Information Age, and it is the nature of both technology and temporality which will be examined in the following chapters.

Chapter 2 : The Ghost in the (Postmodern) Machine

Meaning, Media and Machines

In considering the nature of the human-machine interface in the Information Age, we can view the present human condition in terms of currently shifting theoretical paradigms. Information is the realm of the mind, so it is fitting that the shifting indeterminacies of postmodernism outline the defining paradigm of the Information Age. Of course this stance is paradoxical, given the refusal of postmodernism to accept absolute limitations; but the context of the postmodern age, the ascription of significance to the philosophical viewpoint which postmodernism affords has a certain aesthetic. In this there is a harmony or resonance with the philosophy's ontological context which is difficult to ignore, and which is an appropriate metaphor for the shifting surfaces and maze-like complexity of our information society. Because change is also particularly significant in this time, a theory of dynamic systems, chaos theory, is singularly appropriate concept for understanding how creative change processes can be managed.

With its thesis of relativist indeterminacy opposed to modernist certainty, postmodernism finds a basis in the discoveries of science in the sub-atomic realm (Doll, 1993; Thornton, 1990), as well as facilitating use of chaos theory mathematics as a trope for understanding dynamic social development. In the light of these factors, Doll argues that one purpose of post-modernism is,

doubt whether such a future will emerge. This is a
categories, such as order and disorder, are not
d but are entwined, each within the other, each
reinforcing and sustaining the other (Doll, 1993; p279).

The post-modern age has given us complex webs of meaning with which to contend as we strive to make sense of the social changes which have been steadily accelerating in our time, particularly since the second world war. The advent of the information age with its computer technologies and electronic communications is generating information-intense societies, linked in vast neural networks across the globe (Stock, 1993). The complex nature of social and individual relations in this epoch needs suitable metaphors in order to approach an understanding of it; yet at the same time it denies, in its fluid intricacy, the possibility of any single, fixed conceptual structure to enclose it. In this it is opposed to the 'totalising metanarratives' of modernism (Prinsloo, 1993). The crumbling of scientific certainties has provided a vision of reality which is open-ended and indeterminate, and Doll (1993) points out that the 'spirit' of post-modernism is that 'definitions limit and close rather than generate and open'.

The postmodern is often described in terms of borders, particularly with regard to the breakdown of borders between previously disparate categories (Prinsloo, 1993; Campbell & Freed, 1992). Global communications and transport systems together with the proliferation of information are dissolving what were previously considered hard and fast boundaries between social concepts, whether these be of the nation, ideologies, geographical borders or the delineations between areas of knowledge. The realm of borders is an area where chaos theory is particularly useful, given the infinite maps it provides of those numinous fringes which lie at the outskirts of possibility. Borders can define that which is within from that which is without, but fractal theory, in the form of the Cantor effect, shows us how infinitely fine those divides can be. Digital technologies are particularly significant here, because they not only translate the world into new forms (McLuhan, 1964), so dissolving the border between reality and representation (Baudrillard, 1981), but also usher in an era where communication takes on a multi-dimensional character in addressing both rational and intuitive modalities of mental functioning, to generate uniquely creative interpretations. As Beverly Jones (1993) elucidates, 'contemporary computer graphic simulations of chaotic systems and strange attractors may be said to illuminate and alter the borders of our understanding' (Jones, 1993; p32).

So the separation of knowledge categories inherent in modernism is dissolved in postmodernism's 'pastiche' of intertextual references, concomitant with the appropriations of images and references of computer processes (eg. graphics, artworks, interactivity) and other media (eg. TV programmes, films, books). There is also a dissolution of the borders of spectator/participant in interactive media, between truth and fiction, phenomenal and noumenal, as well as, on the macro-scale, the emerging vision of connectedness between mind, body and environment which signals the end of Cartesian dualism and even the emergence of a post-postmodern paradigm (Jones, 1993). The openness of the postmodern approach together with the dissolution of borders, enables new conceptions of reality, both social and physical, which do not rely on absolutist notions of 'truth' for their validity. In this way we are able (to some degree) to abandon theoretical ideologies such as science, empiricism and rationalism in an endeavour to obtain dynamic models of human functioning which will work on a practical level as sense-giving mechanisms. This emancipation from absolutism can be an empowering tool in freeing humankind

h past ideologies have constructed, in attempting
patory or anti-hierarchical social systems.

There is in the above view a concentration on the notion of narrative linked to particular communities in determining temporally specific social meaning. Jean Lyotard for example differentiates between scientific knowledge and narrative knowledge, although the former requires the latter in order to attain legitimation (Sarup, 1988). The narrative of a culture determines or constitutes its 'social bond', formulating that society's 'way of knowing', ie. how it knows itself and its environment. Lyotard argues for small narratives as opposed to grand narratives in postmodern times, with narrative conceived of as an organic process which (in traditional societies) integrates 'myth, magic, folk wisdom and other attempts at explanation'.

The project of the bourgeois Enlightenment, which spawned the 'scientist' approach to knowledge, was to free humanity from the iron grip of 'irrational' nature. But this noble rationalist leap fell short of its mark; for everywhere the spires of industry and commerce rise to close us in, advertising plays its walls of dazzling light across our senses, while the culture industry deepens the darkness of our uncertainty about who and what we are. Prinsloo (1993) indicates how the 'Eurocentric metanarrative' which defines the sense-making mechanisms of western society contains accepted bodies of knowledge that do not problematize their own history and legitimacy. Within this paradigm of modernist industrial rationality, information constructions are selective and partial as all information is mediated, being produced within a signifying system transmitted via the organs of the culture industry. However, the grand narrative of rationalism is being undermined by new ways of understanding reality, which hark back to the narratives of premodern times. So in fields of 'hard science' such as physics and biology, recourse is being made to ancient eastern philosophies such as Taoism, Buddhism and the Vedic scriptures to explain phenomena which baffle rationalist methods of investigation (Capra, 1975; Singh, 1996).

This is an expansion of our worldview which arises to meet the needs of a world in which information is a defining characteristic; information which is stored, accessed and communicated electronically, so providing a dynamic environment which can be easily manipulated. The effect of social power relations in this information society is to promulgate particular ideologies through information mediums, the culture industry (including the media) serving the interests of the powerful in disempowering those whose function it is to labour and consume (Adorno & Horkheimer, 1972; Sarup, 1988). At the same time, the nature of dynamic information flows in society permit new ways of reconstituting meaning in the form of narratives which convey meaning in a mythic fashion, and which can be co-opted or appropriated by countercultures. Television, for example, relies on various formulas or narrative styles through which ideology is transmitted -- the soap opera, the police series, sitcoms etc. all create mythic constructions about the social relationships and meanings within an increasingly global monoculture (Buchanan, 1996). Where countercultures have access to media, for example pirate radio or community television, the myths of mainstream media can be undermined, deconstructed or countered with the creation of alternative narratives or mythic structures.

Increased reliance on mechanical means of production during the modern era, culminating in the electronic means of production of the information age has

...in the concrete products of labour, but also from the anarchist writer Sunfrog refers to as 'the lived experience' (Sunfrog 1995; p3). The postmodern condition of hyperreality explicated by theorists such as Baudrillard (1973) and Eco (1984) where meaning is 'imploded' in the realm of media-mediated reality is a prime example of this, for here people gain their ontological conceptions from media which present a 'reality' which is 'more real than the real'. The imperative of the mass media of today is largely one of consumerism, the inexorable logic of capitalism which suppresses the real and perpetuates alienation from the body; it is as Sunfrog puts it a 'depreciation of sensual reality' which finds its ultimate expression in cyberspace.

Sunfrog notes that 'In the capitalist model of cyberspace, all information is a commodity and all commodities are information' (Sunfrog 1995; p6). In this sense the 'corporate information state' is ready to control information flows in order to extract profits; the very use of information technology is linked to socio-economic class status, with the poor being largely excluded from enjoying the creative and informational privileges bestowed by digital technologies. Along with this goes the notion of control, that characteristic particular to the cybernetic systems of information technology. The powerful elites use cybernetic control systems through economic, political and media mechanisms to continue their dominance, maintaining surveillance of counter-culture activities and conserving the hegemony of their ideologies.

The mass media play a central role in the maintenance of hegemony; in Baudrillard's (1981) conception of mass media as a realm of hyper-reality and simulations, 'the real' is dissolved and only its simulation, the media image, remains. The 'proliferation of signs and information' which characterize the new media also has the effect of 'obliterating meaning' because they neutralize and dissolve content. Meaning collapses as the distinction between reality and representation is dissolved. Information and meaning 'implode', and meaning is lost in the 'noise' of media images which have effect but lack content. In this context, Baudrillard sees information as the enemy of meaning, because its proliferation as a cultural commodity leads ultimately to a state of 'entropy' in the social sphere. This is because meaning or content is lost when it is only form which is all-important and there is a kind of short-circuit of polarities of the real which 'media' mediate between. Sense or meaning is conceived of by Baudrillard as a direct or linear relationship between such polarities, which he feels the electronic media has eliminated, in that it removes the distinction between the real and the unreal -- thus 'implosion', the absorption of one thing into another, and thus too the end of 'media' themselves (Kellner, 1989). For postmodernist theorists like Baudrillard, the collapse of the 'metanarratives' of modernism has led to a truth vacuum, where the dictum of Hassan i Sabbah that 'nothing is true -- everything is permissible' holds sway.

Media Dimensions

This distantiation from the real is accentuated by the division of media today by two distinct encoding processes, these being analogue and digital. Timothy Binkley (1993) defines analogue media as being characterised by processes of imprinting and transcription:

through some kind of transcription which transfers material into an analogous arrangement in another

Analogue media achieve this transcription through imbuing objects or materials with 'resilient marks,' for example alterations in voltage levels to produce waveforms of sound, which are then 'perceivable either directly through the senses, or indirectly through a display process that carries out an additional transcription' (Binkley, 1993; p95). Digital media on the other hand operate through a process of conversion, whereby information is stored as a formal relationship in an abstract structure of numbers, which enables it to be transferred across different mediums. Digital media are not permanent representations cast into a particular material, as analogue media tend to be and nor are they directly perceivable to human senses or by a playback transcription. Rather they are 'diaphanous', because they consist of numbers which are 'abstractions that have no concrete physical existence' (Binkley, 1993; p97).

Numbers are represented by tokens, which are the marks symbolising the number. By translating physical phenomena into numbers, digital media transform matter or wave phenomena such as light into pure abstraction. This information is but a collection of numbers which can be manipulated using abstract mathematical techniques in order to record them, alter them or output them. In other words, 'since their creative resources are mathematically instead of materially based, their limits are fixed at logical instead of physical boundaries' (Binkley, 1993; p100). This property of digital information allows us to perform 'magical' operations, in that we are able to manifest the products of our imagination in 'virtual' space. Hence the illusion of living dinosaurs was created for the movie Jurassic Park by means of computer animations, and the development of virtual reality technology will enable us to be physically present in the imaginal dimension of cyberspace. Although the 'imaginal' realm of cyberspace is in many ways inferior in rendering capacity compared with its analogue counterparts (Lanier, 1995), it can confer benefits upon its users by empowering imaginative capacity. The problem arises when such imaginative capacity is slave to the urges to consumerism and cybernetic control which are characteristic of late capitalism.

But virtual reality is only one, relatively sophisticated manifestation of cyberspace. The dissolution of boundaries between 'reality' and 'virtual reality' is already upon us. So the [Magna Carta for the Knowledge Age](#) describes cyberspace in terms of both 'media space' and digital space.

More ecosystem than machine, cyberspace is a bioelectronic environment that is literally universal: It exists everywhere there are telephone wires, coaxial cables, fibre-optic lines or electromagnetic waves. This environment is "inhabited" by knowledge, including incorrect ideas, existing in electronic form. It is connected to the physical environment by portals which allow people to see what's inside, to put knowledge in, to alter it, and to take knowledge out. Some of these portals are one-way (e.g. television receivers and television transmitters); others are two-way (e.g. telephones, computer modems). (Dyson, Gilder, Keyworth and Toffler; 1994).

In the imaginal realm of (particularly digital) media, the 'ecosystem' of cyberspace becomes an essentially magical domain. It is an occult realm of abstraction which, like the human mind, is bounded only by the imagination. If magic is understood as a mechanism by which change is affected in physical reality through signficatory systems operating on a non-physical, hidden (occult) realm, then any cybernetic

device. Cyberspace is an information field in which (Dyson, 1994) describes as the 'etheric' medium necessary to occur and have effect in the world. It comes as no surprise then that many modern-day followers of magical practices, such as the so-called "technopagans", are drawn from the ranks of information technology practitioners (Davis, 1996). Indeed, Davis defines magic as "the science of the imagination, the art of engineering consciousness and discovering the virtual forces that connect the body-mind with the physical world;" and what better method to use in the virtual world of cyberspace, where 'the real' is dissolved in the abstraction of numbers and codes?

Power and Production

By its occupation of cyberspace, capitalism transforms information into commodities and vice-versa. In communist societies, such as they exist today, the commercial imperative is replaced by one of bureaucratic power, where both analogue and cyber media are vehicles for the transmission of ideological domination by the power elites of the communist party. These magical or alchemical transformations in cyberspace in all modern nations perpetuate their own narratives of power. Media and the knowledge capacity of information systems reflect the power relations of society, which in both instances is characterised by uni-directional, top-down information flows. It is often argued by cyber-activists today that cyberspace, in the form of international computer communication networks (the Internet) allows for the formation of horizontal power relations; so 'virtual communities' can be formed by autonomous individuals and groups, unconstrained by political, ideological and economic boundaries which might be drawn by state or private sectors (Dyson, Gilder, Keyworth & Toffler, 1994). In this cyber-sphere, every participant has an equal voice; racial and gender identities can be disposed of as factors limiting dialogue and communication because of the anonymity bestowed by the medium.

The existence of such cyber-communities is not necessarily part of some utopian vision however, with critics arguing that such community life in cyberspace is indicative of another level of distantiation from the real, of alienation from lived experience in the analogue realm of the senses (Sunfrog, 1995; McChesney, 1996). It is also important to note that the systemic constraints of the society in which the cyber-sphere operates, ie. those factors which regulate power imbalances in that society, also affect people's access to and utilization of communications systems. So factors such as race, gender and economic privilege constrain access to the cyber-sphere as much as they constrain access to wealth, position and power in the society. For example, economic power buys access to the technologies of computers, telephones and electricity which are required in order to participate in the virtual community. Despite the fact that 'even the homeless' can access the Internet via public libraries in countries such as the United States (Braman, 1994), this too is the result of the general economic privilege of society as a whole in the First World nations, bought at the expense of the impoverished Second and Third worlds (not to mention the exploited classes of the First World).

Access to technology is also subject to the imperatives of the marketplace which dominates the global technosphere; the myth of technological progress is the carrot held before the consumer, as constant innovation in hardware and software, along with a corresponding progressive redundancy of 'obsolete' systems, demands constant investment from both suppliers and consumers. Everyone is locked into the

mighty Bill Gates to the lowliest PC user. In this
the essential alienating principle is a good starting
enation in socialist societies points to its true
nature as being inherent in the power relations between human beings and their
technological means of production. The workers of socialist societies are subject to
atomist, hierarchical modes of industrial production as much as their capitalist
counterparts. Digital technologies streamline production processes at the expense of
human labour, ie. machines take over people's jobs. Cyber technologies also
subsume the control mechanisms of society, subjecting all citizens to cybernetic and
economic control mechanisms.

In the face of the above tendencies, the capacity to overcome alienation can be
secured in two ways; firstly, digital technologies can be used to widen ownership of
means of production and secondly they can (paradoxically) be used to regain a sense
of meaning and connectedness within human societies. In a sense, the technological
progression from early industrialism to the present information age has been a
process of compression, where the huge machines which characterised industrial age
factories have given way to the small productive units of personal computers. The
'information managers' (Aitchison, 1992) who have replaced the industrial worker as
the mainstay of the workforce of technologically advanced societies operate
keyboards to control information flows, and hence machines and productive capacity.
Similarly, while electronic media are mainly used to transmit the values and
imperatives of the culture industry, they can also be used to enhance a sense of
human community, fostering small-scale narratives rather than the meta-narratives
of mass entertainment, mass communication etc. Where the cyber-sphere is used to
empower individuals and groups through strategies such as distance education and
community media, it can be transformed from a mechanism for repression and
ideological control into an emancipatory and convivial medium.

Simulacra and the problem of reality

The problematic presented to countercultural electronic media forms by the digital
conversion of reality into 'hyperreality' is rather more complex, and can best be
considered by a critical examination of the philosophy of postmodernism. This
philosophical strain was developed to describe the changing post-World War Two
societies, which are characterised by 'consumerism, mass media, computerisation
and bureaucracy' (Sarup, 1988). According to Sarup, in the postmodern view
technology, particularly information technology, is not only changing the way
knowledge is stored and accessed, it is also concerned with language and
communication, cybernetics and translation. Sarup notes that the French theorist
Lyotard has claimed that knowledge equals information in this time, and that
knowledge which cannot be digitised will be abandoned. Knowledge for human
beings has always been stored and accessed through language, which is a means of
representing our experience of the real in systems of communication. In a sense,
what you are now reading is not real. Words are signs which embody concepts which
are abstractions from the real, just as maps describe a territory in a form which is
not the territory itself. For that pre-eminent theorist of postmodernism, Jean
Baudrillard, our postmodern milieu is characterised by the dominance of 'signs,
codes and models', an era of simulation as opposed to the concreteness of modernist
industrial society (Kellner, 1989). The character of abstraction in these postmodern
times, Baudrillard tells us, is

double, the mirror or the concept. Simulation is no potential being or a substance. It is the generation by reality: a hyperreal (in Poster, p166).

The primary criticism of this media-moulded postmodern time is that its plasticity is a form where 'the real exists only to be reproduced'; in other words it is a realm of simulacra where the non-real pretends to be real, to such an extent that it (almost?) succeeds. A parallel to this might be the case of the 'replicant' Rachael in the movie *Blade Runner*, who is able to simulate being human to such an degree that to all intents she is human. *Blade Runner* serves to explicate other significant aspects of the postmodern condition, superimposing a scenario in the future onto our situation in the present, just as postmodernism is both 'the continuance and transcendence of modernism' (Campbell & Freed, 1992).

This is the world which Baudrillard characterises as being one of simulation, where 'the real is no longer what it used to be'. Perhaps philosophy became finally disillusioned with the real when Wittgenstein launched his theory of language as a system of word games, where the relation between signifier and signified could no longer be conceived as a one-on-one dynamic, and meaning arose from the difference between signifiers in a word-game. Jaques Derrida (in Sarup, 1988) took up the refrain, that there is no direct correlation between signifiers and signifieds but that meaning is dispersed across the system of signifiers. Derrida extended this poststructuralist conception to include the notion that meaning is ever absent from a sign because it is always defined by the meanings of other signs in the language system. So the sign must be written 'under erasure' because it contains that other beyond definition (Sarup, 1988). In viewing language as a series of metaphors or tropes, wherein meaning can never be literal but is always dependant upon the slippery surfaces of allusion and allegorical imagery, Derrida followed Nietzsche's idea that language is a trap because it is our only way of describing reality.

The realisation that language always puts us at one remove from reality was the beginning of the slippage of reality from the realms of experience. Language is not only a flawed tool for communicating the nature of reality or experience, it is also open to manipulation and distortion -- hence the concept of ideology as a false representation of objective reality. Language is thus a means of creating experienced reality, within the ambit of socially defined power relations; but language is mediated in the Twentieth Century by various signifiatory practices, eg. film, television, advertising, as well as by its storage, manipulation and transmission by digital technologies. The information technology of the Twentieth Century has enhanced the malleability of reality through its proliferation of signs, symbols and images, an increase which has become exponential with the advent of digital technology. So for Baudrillard, 'The real is produced from miniaturized units, from matrices, memory banks and command models -- and with these it can be reproduced an indefinite number of times' (Baudrillard, 1981; p167). It is in this environment then that the real is ultimately subverted, and its simulation produced by the culture factories of state machineries and corporate plant. The nature of simulation is such that it collapses or 'implodes' meaning, demolishing the difference between the real and the imaginary, and so doing away with the imaginary altogether. As Baudrillard puts it,

In this passage to a space whose curvature is no longer that of the real, nor of truth, the age of simulation thus begins with a liquidation of all referentials -- worse: by their artificial resurrection in systems of signs, which are a more ductile material than meaning, in that they lend themselves to all systems of equivalence, all binary

gebra. It is no longer a question of imitation, nor
ly. It is rather a question of substituting signs of
an operation to deter every real process by its

operational double, a metastable, programmatic, perfect descriptive machine which
provides all the signs of the real and short-circuits all its vicissitudes. (Baudrillard,
1981; p167)

Baudrillard bases his concept of implosion on the work of Marshall McLuhan (1964),
who also saw a process of 'implosion' occurring in the late Twentieth Century
(Kellner, 1989). McLuhan argued that this process resulted from the extension of the
human race's 'central nervous system' across the planet through electronic
communications networks. He felt that the 'technological simulation of
consciousness' cannot be far away with advances in computer and communications
technologies -- 'when the creative process of knowing will be collectively and
corporately extended to the whole of human society' (McLuhan, 1964; p3-4), a more
positive view of media processes than that taken by Baudrillard. For McLuhan, the
implosion process was a life-affirming one, rather than symbolising the 'system of
death' which Baudrillard perceives it to be.

Using McLuhan's 'hot' and 'cool' metaphors, Baudrillard sees all media as being 'cool'
in that they negate meaning and involve audiences as passive recipients of media
images, incapable of processing them and producing meaning from them. The
individual subject becomes an object, a nexus in the web of communication and
media networks. So 'the distinction between public and private, interior and exterior
space' is replaced by media space'. One of the prime mechanisms for the simulation
of reality in media space is the medium of television. Television separates us from
action and direct experience, mediating information while at the same time giving
the illusion of realism. So for example the American military overcame the shadow of
their defeat in Vietnam with victory in the Gulf war, using television to 'sell' the war
as an American triumph. As John Perry Barlow (1992) puts it, 'The enemy then is
mediated information' -- though at the same time we cannot escape the mediated
nature of information in media reception or production. This mediated information
reaches its apotheosis in the new technology of virtual reality, where the user is
immersed in cyberspace (although Timothy Leary claims Americans have been living
in virtual reality since the invention of television!). Virtual Reality specialist Jaron
Lanier confirms the opposition of experience to information:

Information is alienated experience. Computers are great, but they require making
life into information, since that's all a computer can hold. The first problem is that it's
information. The second problem is that it's linear information. And the third problem
is that it's false information. (Lanier, 1994; p257)

But is it really real?

Is the outlook then uniformly bleak? Have we irretrievably lost our souls to the
corporate and government media monsters, the latest 'evil empire' to subsume the
earth in its glutinous excrement? The postmodern pessimists ignore two salient
points in their media-madness; the first is that not everyone is uniformly blinded by
the veils of simulacra, which conceal 'the fact that the real is no longer real', that it is
still possible to critically transcend simulated reality. Real bullets still kill real people -
- the real exists and cannot be wished away by simulation, no matter how
sophisticated (as novelist Phillip K. Dick puts it: 'reality is that which doesn't go away
when you stop believing in it'). The problem arises in the first instance when

communication -- but this has always been so for events to one another via their speech or writing. The nature of media manipulation can have a mitigating effect on misrepresentation and manufactured 'realities', and the second criticism of the pessimist stance is that such critical awareness can be fostered by the production of counter-cultures through media and other devices which slip in through the 'cracks and breaks' of corporate media. As television activist Simone Farkhondeh (1991) says of the Gulf Crisis TV Project (GCTV), which voiced opposition to the Gulf conflict, 'We don't assume an ignorant public, but one that is influenced by mass media.' So simulated reality is not totally coextensive with 'real' reality, ie. does not overwhelm it, even in the world of media images. Says GCTV producer Chris Hoover, 'There is a certain refusal by us to think everything is only symbolism and a hope that all things be very real' (Hoover, 1991; p36).

Baudrillard of course does not agree with this view. He cites Enzensberger's call to media activism as doomed to failure in attempting to 'liberate productive forces from the fetters of productive relations', because the mass media are by their very nature uni-directional and transmissive, rather than involving real communication, which is an exchange of information (Kellner, 1989). This stance negates the active involvement in media production of people outside the culture industry, as the *Paper Tiger* project does in the United States with its Deep Dish satellite broadcast and public access approach to grassroots television production. This is an 'appropriation' of media and images acting to counter the simulacra produced by the culture industry, a strategy which the ultimately conservative theorists such as Baudrillard deny in their obsession with death, an existential angst worthy of Sartre. The trendy French post-Gaullist philosophers, locked in their ivory towers, glower at the chaotic stream of images which pour from the mouths of the media. One wonders if this is a generational affliction, and whether the MTV kids will have the same problem with media reality as the aging academics who now pour their scorn on this fast-moving electronic age.

This gloomy vision from Baudrillard and his fellow academic solipsists presupposes a uniformity of vision, that all who live in the world are as lost and confused as they in what Baudrillard terms the 'hell of images' which the culture industries deliver to their captive audiences. The implication of this is that these postmodern prophets are the only ones able to capture the glimmer of truth in these times (though they might deny the existence of truth itself), that their pompous assertions of the 'implosion of meaning' because of the superimposition of unreal on the real is the most valid interpretation of the postmodern condition. This perspective has aroused considerable ire amongst those who prefer some vision of liberation from the bonds of current social realities, late capitalism and the like, and who see in the closure of meaning offered by these theorists -- again, despite the antipathy of postmodernism to such closure -- in their despair of activism in a reality subverted by simulacra, a defeatism and the end of hope. Others take a different view of postmodernism's appropriations. From Andy Warhol's 'replicant' soup cans to the electronic samples of today's dance music, the postmodern sensibility appropriates images and meanings, transforming them creatively into new forms, which often comment and subvert their forbears. But 'Appropriation is now mainstreamed' says RU Sirius, (former) editor of the renowned postmodern, "New Edge" magazine, Mondo 2000. Punk writer Kathy Acker is not ashamed of dealing in the 'corrupted' currency of appropriations, and her work uses a pastiche technique of collaging extracts from other people's writings -- a heinous crime in the eyes of some postmodern gurus, bemoaning the loss of their modernist certainties and egotistical auteurisms. As Acker says,

it to use recombined images supplied to you
over source you got them from than manufacturing
(Mondo 2000 UGNE, p26)

The postmodern age is primarily defined by its temporal incidence -- the condition of postmodernism occurs in the time of postmodernity, so there is a direct relationship between the postmodern text and its context. There are elements of postmodern sensibility which have their roots way back in the past, and critics might wonder at just when postmodernism began -- but the key is the context, which in our age is given primarily by the technology which defines our productive processes as well as the quality and tone of our existence. These are technologies which have altered both the speed and complexity of our lives -- as RU Sirius notes, 'We're living in extremely fast and extremely dense times.' Information in the form of both commodity and production is the defining feature of this postmodern state, and the technologies of communication, media and commodification are delivering it at ever faster rates, spreading like mutating viruses across the body of the globe. One means to deal with this plethora of information is the process of layering, whereby information is accessed in a non-linear fashion; it is through this 'intuitive' approach to information-gathering in the process of gleaning meaning that patterns of information are apparent, as opposed to the rational linearity of modernist thinking. McLuhan attributes the 'fragmented' nature of modernist thought to the formative impact of the print medium, introduced to the mechanical age by Gutenberg. He counter poses this with the intuitive or 'instantaneous' thinking of the electronic age, brought about by instantaneous electronic media.

Indeed the layering of information along with the concept of pastiche and appropriations is exemplified in modern Techno music, where sounds at different pitches are sampled and layered to create a multi-textured pattern of music. The digital warblings of electronic samplers are opposed to the concerted movement of wood, brass and wind instruments that made up the classical orchestra, or the strutting imperialism of rock music's ego-inflated caricatures. The levelling characteristic of the modern culture industry, first identified by theorists of the Frankfurt school like Adorno and Horkheimer, has blossomed into a democratising influence when people can take the production of music or media or their involvement in either, for themselves; in terms of the House music genre and its attendant dance events, Fraser Clark (1994) suggests that the absence of egos onstage to draw the attention of audiences has put music 'back in the hands of the People now, or back on their feet'. When people on the dance floor are looking at each other, or are totally immersed in their own experience of dancing rather than looking up to some megastar performer on the stage, the flows of power in that particular communal situation are reversed from their former polarity; this new phenomenon echoes events on a broader scale, where access to information can no longer be seen in terms of a simple transmission model serving only the interests of those who rule the culture industry.

Computer technology has brought us the field of cyberspace, that matrix of electronically mediated communication, information flows and storage. Despite the play of information within this realm being primarily of a commercial nature, RU Sirius takes this the American way, that 'commerce is the ocean in which information swims'. Access to this sphere can be of itself an empowering process, for people to glean and manipulate information which they can use in practical applications to earn income. The potential for the communication of ideas on an equal basis across the

is a definite advantage of cyberspace, because in with the notion of a public sphere (Habermas). In communicate without the impediment of skewed power relations, to create temporary autonomous zones (Bey, 1985) where information has not been consciously manipulated to conform to the maintenance of status quo political, economic and class interests.

Liberation in a deep sense is probably only possible for brief moments; the moment of liminal euphoria after successful revolution against an oppressive regime in whatever sphere, be it the politics of nations or the personal relationships of individuals, is always overcome as differential power relations reassert themselves. The constraints inherent in late Twentieth Century capitalism and its information age will be difficult to overcome, for the system has a certain inertia which carries it forward in spite of opposing currents. We will probably have to wait until the river of technological innovation and materialist socio-economic structuring loses its momentum before significant socio-economic change is possible. Marx's Utopic vision of total worldwide revolution and social renewal is a fading dream, and other solutions must be sought. David Watson (1995) expresses the view that it is difficult to identify practical approaches to overcoming the problems which confront us, because these problematics are embedded in the very language we use to describe them, accretions of meaning obscuring the polarities such as rationality/irrationality with which we categorise the world. As Terrence McKenna says, 'we can evolve no faster than our language evolves' (McKenna, 1991; p3).

Beyond Language

The question arises of how we can overcome language, or at least its present constraints. The answer may lie in the evolution of Mind through technological and spiritual mechanisms, which will enable a development of consciousness. One means to this would be what Jaron Lanier terms 'post-symbolic communication', which involves the creation of 'sensory objects' in virtual reality. This would be a way of creating sensual worlds where people could communicate without interpretative symbols, which Lanier calls "reality conversations" or "intentional waking-state shared dreaming". Perhaps technology can even be used to map the regions of consciousness; virtual reality has the potential to place us in imaginary realms, where a multi-dimensional environment can be created which could simulate our experience of consciousness. Because specific mental events and phenomena are associated with different levels of consciousness, these phenomena could be simulated in the computer environment. Through dream recall and intuitive creation, talented artists could programme virtual simulations of the dream state. In this way we would be able to access our dreams in a conscious, waking state. By setting up other dream parameters, we can produce other effects on consciousness. Creative problem solving of life situations would be only one potential option in the emancipatory use of such technology (Masters & Houston, 1973).

But there are other levels of consciousness, other ways of experiencing our mental environment. There is for instance that visual space where imaginative visualisation takes place, that space where we as gods of our internal universe create worlds, visions and inner light. The creation of a communal visualisation space utilizing dream imagery and other mechanisms such as sound energy and sensory deprivation will manifest a concrete metaphor of group mind.

and communication technologies which is now moving towards this singularity, and it may well be this 'attractor' pulling various cultural forces towards it in our present time. Thus it is no surprise that in those cultural spheres where technology is being utilized for positive communion, ie. 'the rave culture' of modern techno-house music, that the idea of evolving consciousness is most strongly to be found. It may be significant in this regard that one of the most potent metaphors for creative change to be discovered in our times has also gained much currency in this context, that being the psychedelic fractal patterns which are often used as visual components in rave media, which are the graphical representations of mathematical chaos theory.

Chaos and Creativity

Fractal patterns are a particular manifestation of chaos theory, which arose out of a growth in scientific interest in irregular phenomena together with a new style of mathematics (Stewart, 1992). The particular type of 'ordered' chaos referred to in chaos theory is a dynamic phenomenon, occurring when the state of a system, defined by a variable or a set of variables, changes with time. The track of this change is guided by probability; small changes in the variables determining the state of the system at any temporal point result in large changes occurring in the system as it progresses along the arrow of time. This gives rise to an 'ordered' chaotic pattern of system behaviour, ie. it is different to entropy, which indicates the tendency of a system to disorder. Chaos theory provides a useful framework within which notions of consciousness as an active agent in determining probable outcomes of events in the real world can be illuminated. If consciousness itself can affect the outcome of physical events, even on the micro scale, such minute changes will ultimately breed substantial mutations on the macro scale.

Human history too can be conceived of as a self-organizing chaotic system, its progression of events unpredictable yet ordered, phenomena at each moment giving the total system fresh feedback from which to take the next leap into the future. To explicate the notion of feedback giving rise to patterns of ordered chaos (ie. fractal patterns), a principle borrowed from mathematics, that of iteration, can be fitted to conceptions of human activity (Doll, 1993). According to the iterating principle, when the values fed into an equation are themselves the results of that equation's previous calculation, an infinitely variegated yet ordered and self-similar pattern emerges. In terms of human endeavour this iterative process becomes one of recursion, the notion of returning to a position to enable a kind of post-modern reflexivity; in theorising human sciences for example, this would mean the ability of a theory, as it were, 'to look at itself, yet again, in a new light, for the first time' (Doll, 1993).

Using this recursive principle, in returning to an ancient, Aristotelian cosmology we can re-examine it through the mechanism of a remarkable new lens with which contemporary computer technology has provided us. The glowing electronic blooms of fractal sets which bud on today's computer screens provide a metaphorical analog for the interwoven patterns of our post-modern reality. These intricate, organic patterns unfurl a dimension where the margins between mathematics and nature coalesce in a cognitive space which has the power to transport us beyond the rationalist realm of language. The visual vigour of fractal sets seems to generate many a flow of ideas to irrigate the fields of new thought harvested by today's Digital

technological evolution. According to one of the
Benoit Mandelbrot,

Being able to play with pictures interactively on computers has provided a deep well for mathematical discoveries. Many fractals have already had an important cultural impact and have already been accepted as works of a new form of art. Some are representations while others are totally unreal and abstract. It has come as a surprise to both mathematicians and artists to see this kind of cultural interaction. (Mandelbrot, 1993; in Hall, p122).

So as a result of computerised depiction, what Stewart calls 'visual imagination', one of the most commanding attributes of the human mind, is brought to bear. This capacity enhances the creative capacity of mind as a dynamic system, for 'In the world of chaos, a picture is worth a million numbers' (Stewart, 1993; p44). The element of visual imagination potentiated by technology is crucial to the development of our mental functioning; and this maturation in turn is crucial to our abilities to manipulate the information environment into which technological advancement is thrusting our species (Leary, 1993).

The Information Age has brought us to the brink of a new frontier -- that is the mind itself, and what we need now are new tools to further our evolution: new ways of thinking, new ways of using our minds and the imaginative power which animates our ability to mould reality to our collective will. The significance of such novel mentations lies largely in their creative potential. Gregory Chaitin (1992) in discussing the impact of chaos theory on arithmetic, gives the example of the mathematician David Hilbert as mistakenly assuming that 'mathematical truth was black or white, that something was either true or false'. But Hilbert failed to perceive

something that was so basic to his thinking that he did not even formulate it as a question.... That was the idea that every mathematical problem has a solution. Clear, simple mathematical questions do not always have clear answers (Chaitin, 1992 in Hall, p200)

Today's technologies and cutting-edge epistemologies provide us with new ways of seeing and knowing, ways potentialised by principles of interactivity, non-linearity and visual symbolism which enhance mental power through uni-cameral perception, intuition and creativity (Jaynes, 1976; Leary, 1993; Sagan, 1977). These new perceptions, potentialised by the combination of technological facilitators, enable us to enter a new age of creative 'magic'. As Mandelbrot says,

To the layman, fractal art seems to be magical. Much of the underlying equations would have been regarded as part of being pure mathematics, without any application to the real world, had its visual nature not been seen. (Mandelbrot, 1992 in Hall, p122)

The graphical representation of fractals has lent new depth to our insights, or ways of conceiving the world. It has given us a distinct vision of the patterned nature of seemingly random events, the fundamental patterning of dynamic systems. This is of course not a new idea in itself; David Hume noted that mere sequence does not reveal causality, and McLuhan records that when electricity made things happen instantaneously, it ended the appearance of sequence. In achieving this, the organic and patterned nature of phenomena became apparent, and causality was open to scrutiny. He gives the example of movies, where sequence disappears and 'creative configuration and structure' emerges. The visionary nature of this insight lies in its temporal base -- at the time of his writing (1964), the patterned functioning of

through computer-generated graphics, was not a linear, holistic (what he termed 'mythic') nature of the 'instantaneous' knowledge acquired through pattern perception is more closely aligned with pre-modern intuitive, oral traditions such as occurs in Eastern concepts of rationality. For example, EM Forster's novel *A Passage to India* presents at one point the experience of 'the total and inclusive field of resonance that is India' (McLuhan, 1964; p16).

There is thus for McLuhan a significance in concentric form, which mimics the form of oral culture in its redundancy, its repetition of the initial statement of problem and resolution; this requires insight in order to perceive it, as it is the 'endless intersection of planes', which in media creates meaning through intertextuality -- no medium has its meaning or existence alone, but only in constant interplay with other media' (McLuhan, 1964; p26). This is an essentially postmodern view of how meaning is created in modern media; in McLuhan's view, meaning is not reducible to the constituent elements within media, but rather achieves significance through the dynamics of whole systems. He quotes Kenneth Boulding as saying 'The meaning of a message is the change which it produces in the image,' taking this to indicate the switch from the study of meaning to the study of effect in the electronic age, the effect being the totality of the situation rather than its specifics.

The effects of 'instantaneous' media on social patterning affects the way change takes place in society. Sandra Braman (1994) differentiates two distinct processes of change, 'genetic' and 'epigenetic'; the former takes place in a linear manner through the passage of time, while the latter is a process of "horizontal evolution" which takes place simultaneously in time, unfolding through concurrent interactions among systems. Both of these are 'recursive processes' which occur in 'self-amplifying causal loops', so explaining evolution as 'a process of multiplication of possibilities in which humans participate through their representations of evolving systems' (Braman, 1994; p14). This echoes McLuhan's concept of instantaneous knowledge, which also relates to specific modes of causality which Braman identifies as 'isolationist', ie. 'non-causal and synchronistic' and 'morphogenetic'. Isolationist systems are self-referential and 'open to positive feedback and the creation of new forms as well as negative feedback and closed realities' (Braman, 1994; p15). She distinguishes morphogenetic systems by their characteristic 'self-conscious process of change', defining them as 'heterogeneous, symbiotic and non-hierarchical'. Because of the essentially interrelated nature of morphogenetic social systems,

decisions made by individuals or by collective entities affect the evolution of the system and everyone in it. Thus all individual actions have a collective aspect that is synergistic in impact, irrespective of individual intention (Braman, 1994; p15). The morphogenetic system thus provides the kind of cultural matrix within which McLuhan's instantaneous media function, an area where intertextuality and concentric form achieve a field of resonance to affect the evolution of the total system. Such dynamic systems can also achieve what Braman terms 'co-evolution', which takes place through an intertextual swapping of energy and information. Braman notes that these systems are also subject to the influence of self-amplifying causal loops, which can have the effect of inducing significant changes on the large scale resulting from actions on the small scale.

Given the above implications of chaos theory, it may be possible to alter the gestalt of human thought on planet Earth by relatively small interventions, rather than

envisaged by the revolutionaries of the Nineteenth century, we are able to create a global environment of business, and put into action positive social strategies which can alter the balance of human activity on the planet to foster emancipation and conviviality rather than destructiveness and greed, then it is not necessary to create homogenous socio-political structures which negate regional, ethnic, cultural and other differences. In other words, the metanarratives of modernism can be transformed into a multitude of micronarratives, which nevertheless cohere into an harmonious and co-operative whole. These small narratives take place firstly at the level of the individual, then the group, community and upwards to other macro-levels of nations, corporations and their expressions in 'meta-entities' such as the United Nations and international agreements (eg. GAT the Global Tariffs and Trade agreement).

In order to achieve a harmonious co-evolution requires above all an **underlying attitude** which potentiates the decentralisation of power structures on regional, national and international levels. Such decentralisation of control could allow the kind of ethnic fragmentation which has occurred in Yugoslavia and Rwanda without the violent intolerance and strife which has hitherto accompanied such divisions. This attitude would be fostered primarily in the cultural sphere, for it is through this sphere that people are able to communicate with one another through liminal mechanisms (such as music, techno raves etc.), beyond the confines of fragmented thought which limits our everyday conceptions.

If one aims at fostering such an attitude, one of the primary interventions which can be made is in the field of cyberspace, ie. through accessible media such as community television (or radio) and computer communications, which link individual human consciousness into a global consciousness. If such small-scale interventions can take place in a harmonious fashion with other social, political, economic and ideological strategies, the possibility exists that they can affect the outcome of the global system; because all these areas are based on information, it follows that information is the tool of change. Moreover, it is through creativity that a multiplicity of successful strategies can be found to address particular problem areas, in order to alter the probable outcome of these dynamic information systems. Despite the problem of mediated information vs. reality, information is a means of communication, and it is through evolving our means of communication -- ie. language -- that we can connect with and come to understand the others with whom we share this planet (Lilly, 1973).

Chapter 3: Fine-tuning the Human Meta-machine

If we are to develop strategies to address problem areas in society through information systems, we need to look at the interface between humans and information technologies. How can such interfaces be developed in order to fulfill their emancipatory potential and evolve the language mechanisms by which we manipulate and represent our world? To develop this interface in a convivial manner, we need to be aware of the nature of human functioning in an holistic sense, ie. a non-reductionistic stance which takes into account the noumenal as well as phenomenal dimensions.

humans, machines and language

Humankind is currently engaged in a process of evolutionary transition which involves on one level a bio-mechanical merger, or rather the synthesis of biology, electronics and inanimate matter. This is what Jonathan Crary and Sanford Kwinter (1992) refer to as the 'vitalization of the machine', by which they mean the interpenetration of human life force with inanimate technology. This notion indicates that instead of trying to create intelligent or conscious machines, as the protagonists of artificial intelligence have been attempting, we should concentrate on extending our human mind through technological amplification, with the primary intention of evolving new language systems. Central to our technological machinations today is the computer, which has been described as a 'language machine' by Brenda Laurel (1990). Laurel even refers to the computer as being in itself a 'language', or ultimately a 'metamedium' which offers new dimensions of freedom for representation and expression. Computers, says Laurel, are 'thinking tools' which have speeded up the process of human evolution. In this way the computer is similar to language, both being tools which manipulate symbols in order to make other tools. They are thus 'symbolic systems' which enable us to create 'that which has never been created before' (Laurel, 1990; p226).

The creative potential unleashed by these new 'language systems' is explicated by Timothy Leary (1990), who sees computer interfaces as mechanisms for unleashing changes in the people's consciousness by expanding mental capacity. Leary hopes this new step in human evolution is a system which the biosphere on planet earth can develop in order to become 'conscious enough to take control' (Leary, 1990 in Laurel; p230). In support of this visionary scenario, Leary contends that 'the cellular circuit resonates with the neural circuit, the communications circuit, the computation circuit, and the whole planet waking up to itself in the nick of time' to save us from extinction.

I predict that if interfaces are designed with the notion of interpersonal communication in mind, the information technologies of the next ten years are going to link amplified individual minds into a global groupmind (Leary, 1990 in Laurel; p230).

This 'interpersonal' communication will result in new ways of relating to ourselves and others through the medium of the computer, where the individual as a dynamic 'system' interacts with the total system of the computer environment. The gestalt method in psychotherapy saw human perceptions and relations in terms of a field theory of human interaction. According to Heisenberg's uncertainty principle in particle physics, the presence of an observer affects the nature of the system under observation because there is an affective relationship between observer and system whereby the one is changed by the activity of the other. So psychologists interact with patients in a field where each is changed by the other in a dynamic fashion. To exist consciously in relation to an environment is to experience. For mind to lend resonance to that environment in a field of signification is to create meaning. It is not necessary to do this in a context of fixed structures, but rather in terms of organically evolving systems. This is a dynamic process where the system interacts with its environment, or with the other systems which come into contact with it. As Crary and Kwinter state,

emerges, evolves and passes away by
ted into, other emerging, evolving or disintegrating
ise it. Indeed, incorporation may well be the name
of the new primary logic of creation and innovation in our late modern world (Crary
& Kwinter, 1992; p15).

We exist today in a world where electronic communications link us both as individuals, one with another, and as groups or collectives; technologies from telephones to computers connect us as individuals, while technologies such as television and radio connect us as collectives. Part of our individual experience takes place through the mechanisms of media, which are at present limited in their abilities to involve individual consciousness. The media form part of the environment in which we exist, and there is a dialectic relationship between human beings and this environment, with each affecting the nature of the other. It is not surprising that there is a growing global awareness of connectivity; Marshall McLuhan's early 'global village' thesis has percolated through to mass consciousness to the extent that people now recognise this kind of increase in global connectivity. So President Nelson Mandela, addressing the joint Houses of Congress of the United States concerning the 'new world order', can say that

If what we say is true, that, manifestly, the world is one stage and the actions of all its inhabitants are part of the same drama, does it not then follow that each one of us as nations, including yourselves, should begin to define the national interest to include the genuine happiness of others, however distant in time and space their domicile might be? (Mandela, 1994)

How does the individual connect into the 'bioelectronic environment' of cyberspace? In contending that the human brain functions as an analogue device rather than a digital one, John Chittock (1995) points out that the world we live in is 'a frequency domain, not a digital one', and that analogue methods of recording that world, for example holography, are thus more efficient and appropriate than digital ones which serve to 'fragment' reality through their mechanisms of representation. There may well be some validity to this point; however, perhaps what we can see developing today is a synthesis between the analogue 'technology' of the human mind with the digital technology of the computer, to the extent that we will at some point be able to enter into a digitised realm of experience. The individual analogue system will then exist in a digital environment, a logical step from our present experience where analogue media environments are experienced by analogue minds. Even the digital realm is currently experienced through analogue methods, ie. we view computer screens, even in virtual reality, through the analogue mechanisms of our eyes. Chittock refers to the work of American neurosurgeon Karl Pribram, who contends that the brain functions like a hologram, 'holding received information as frequency patterns'. In this case the eye as a lens functions to narrow our experience of the phenomenological world, and Pribram's argument is that we could experience reality in a more direct fashion without this constraint, ie. 'where reality is an holistic experience rather than an optically-focused image' (Chittock, 1995; p250).

Terrence McKenna suggests a future when the phenomenal world is digitised through a global sensory system consisting of 'nanobots', microscopic sensory mechanisms linked to human minds through digital communications and recording systems. In this way we could experience the world in a multiplicity of dimensions, for example from the micro-scales of molecules, the interiors of the body or the perspective of

The interface between us and the world becomes mechanisms, a McLuhanesque extension of the technology. This kind of process is already happening -- for example, at a techno rave one is contained in an environment which is digitally generated through music (including the sensory dimension of sound waves impacting the body) and light through dynamic computer-generated images. The borders between 'man and machine' are dissolving -- but if this offers hope for improving our capacities for communication, can it sustain the essence of our biological humanness?

Reconnecting with spiritual energy

There is a quote from Mark Pesce on a World Wide Web page concerning Technopaganism which has it that

Without the sacred there is no differentiation in space. If we are about to enter cyberspace, the first thing we have to do is plant the divine in it. The engine of industrialism which has driven global cultures into the Twentieth Century has been motivated by a depersonalising imperative, where people are subject to their productive power mediated by machines. Human beings have become mere cogs in the wheel of capitalist industrial enterprise, the mirror of which is to be found even in socialist societies where bureaucracy holds sway. The question which confronts us is how to re-animate the human spirit in the face of this mechanist tendency, which threatens to overwhelm us in the cyber-sphere, condensing control modalities through its mathematical and communicative features. The answer lies in rediscovering our essential connectedness with nature, with our ancient animal selves and with that sense of the noumenal which drives our religious impulses.

In order to overcome the difficulties posed by present socio-cultural and economic constraints on human development, Watson contends that we have to 'respond with the whole of being', with a 'mindfulness' of our context and 'a respect not only for what we know but also for what we do not know and especially for what we cannot know' (Watson 1995; p8-9). In the face of these imponderables, Watson counsels endurance rather than force as the strength which will enable counter-cultures to win through the deluge, as he puts it 'radiating power rather than possessing or controlling it... listening to nature instead of fantasizing about mastering it' (Watson 1995; p9). While this can entail being open to the spiritual and non-rational, Watson counsels caution, so as not to fall victim to the speculative excesses which have often dogged metaphysical philosophies.

One approach is the so-called 'modern-primitive' synthesis, which attempts to combine archaic strategies of approaching the noumenal, such as tattooing, body piercing and shamanic practises, with modern living and technologies. In countering Marx's 'objective' method, Watson contends that the world is instead 'alive, inspirited', though this is so in a subtle rather than literalistic way. He notes that this is one of the 'key intuitions' of pre-modern societies, and is a notion being seriously debated by the 'new science' emerging in our times. Here the key concept is that everything is connected, so for example pollution on one side of the planet can travel to the other side, etc.

and counter-traditions must be that intelligence, working its way into us, as the Lakota philosopher would (Watson 1995; p9).

In Watson's view, our relationship with an 'intelligent, animate world' is something only a 'renewed mythopoeitics' can enable us to comprehend. So we need an erotic approach to science/knowledge in order to reunite with nature and overcome the instrumental rationality which is destroying our world, as it destroys us too as an intrinsic part of that world. Traditionally, the way human beings have connected with this Gaian spirit is through rituals, especially those involving ecstatic states of consciousness. What is it about such liminal states which induces this sense of community and connectedness with our spiritual nature, which is found in our modern society in forms of communal experience such as the multi-media dance events called techno raves?

Liminality

The term "liminality", originated by Victor Turner (1974), refers to the ambiguity of the ritual realm, where everyday reality is transformed into a symbolic, 'communitarian' experience which thereafter affects the individual's lived reality. In this way it can act as a catalyst for social change. In assessing Turner's thesis of "ritual anti-structure", Bobby Alexander (1980) notes that ritual can be a form of protest against the status quo. Such rituals include for example the subversion of both social and sex roles. In this manner, 'ritual creates social conflict by relaxing or suspending some of the requirements of everyday social structure, making possible alternative social arrangements', which transforms ritual into an agent of social change. In psychological terms, ritual can be viewed in terms of "flow" (Csikszentmihalyi, 1975 in Alexander) as a 'psychophysical experience of involving oneself totally in an activity', which provides the individual with the opportunity to assess his/her normal life, and that this can induce 'personal and social change' (Alexander, 1980; p2).

Turner argued that the dialectical relationship of ritual to social structure can facilitate creative responses to the negative aspects of day-to-day social structures, such as 'divisiveness, alienation and exploitation'. In binding individual elements of the social fabric together in a whole, ritual serves to create a sense of community among its participants, reinforcing those 'communitarian values' which hold people together. In turn, ritual threatens the status quo by undermining status positions when participants share in the creation of new (albeit temporary) social roles, encouraging experimental 'direct and egalitarian exchanges' between people. Finally, in serving the common good it reinforces people's sense of community, a sense of which they can take back with them into everyday life. Ritual also undermines the social structure, in that people find instruction in it as to the fundamental 'organizing principles and values' upon which they base their society. 'Structure and anti-structure' are brought into balance, as the bonds of structure are loosened and interaction becomes more egalitarian. In this way, 'Ritual is a principal means by which society "grows" and moves into the future' (Turner, 1974; p298).

In his semiotic analysis of rituals, Tomaselli defines them as 'The collectively patterned performance forms through which processes of cultural or sacred signification are integrated into consciousness and social practices' (Tomaselli, 1996; p50). They are also 'enacted' by sign-user communities to confirm cosmological locations, relationships to universal forces and to solidify social organisation. Through

with the world of belief, lending to the latter a
identifies the liminal state as enabling the
ways of operating and to recognise new possibilities.

Liminal states are also where the noumenal is oft to be found; 'noumena' in
Tomaselli's view are 'things and processes which resist scientific understanding',
which range from the paranormal to the supernatural. If liminal states are induced
through processes of ritual they may be utilized to effect changes in consciousness
where people experience a sense of spiritual unity, which can then be translated into
social movements aimed at transforming the nature of society. This already happens
to some extent, with musical genres such as punk rock and techno being associated
with the DIY (Do It Yourself) anarchist movement, though at the same time this
movement is scattered and sporadic rather than being an organised force in society.

Espousing a theory of social conviviality, Hakim Bey (1995) takes up the refrain in
his notion of "Temporary Autonomous Zones" (TAZ). Bey first developed his theory
of TAZ to describe 'moments when normally domesticated space is liberated for a
limited time for festive and subversive "moments of happiness".' The Permanent
Autonomous Zone (PAZ) extends this notion into temporal and spatial fixity. This is
liberation from the 'Grid of Alienation', the 'Consensus' against which such moments
seek a restoration of human contact. In this context, Bey speaks of the 'poetique' (a
"way of making") and a 'politique' (a "way of living together"). The PAZ provides a
venue for the TAZ network, the festivals which bring renewal and ongoing liberation
and energy. The PAZ is not limited to spatial locations, but can be non-local, like a
'weird religion' or a rebel art movement. It is a 'free space that extends into free
time'.

The essence of the PAZ must be the long-drawn-out intensification of the joys -- and
risks -- of the TAZ. And the intensification of the PAZ will be Utopia Now (Bey, 1995;
p32).

However, given the tendency of differential power relations to reformulate
themselves and perpetuate power imbalances even after liminal events, it may be
that Bey's PAZ are ultimately unachievable and we will have to content ourselves as
a species with a succession of TAZ moments where we are temporarily liberated from
systemic stasis.

TAZ Machines

Positive social tendencies can nevertheless be reinforced through ritual activities
which act as temporary autonomous zones, in which people can access the noumenal
through altered states of consciousness. Processes of social transformation can be
amplified through such techniques, where people can 'learn' new strategies of
thinking. There are different types of learning, for example what Jantsch calls
'conscious learning' is a transaction between consciousness, the environment and
memory. Jantsch also identifies 'superconscious learning', which takes place in a
quaternary system with the addition of "outer" and "inner" ways of learning. These
arise through the interaction of consciousness with transpersonal mass/collective
consciousness (eg. Jung's "collective unconscious").

The feedback link between consciousness and superconsciousness gives rise to
"inner experiential learning" or "tuning-in" to the dynamics of meta-systems

ate environment. It may be enhanced by various
connection with Eastern philosophies (Jantsch,

There are other techniques which can be used for such 'tuning in', for example shamanic practices such as visualisations, breathing techniques and ritual. Particular technologies can also be used to enhance such learning capacities, for example the ASCID (Altered States of Consciousness Induction Device) developed by Robert Masters and Jean Houston (1973). The modern techno rave is one such 'technology' because it is an information system, consisting of visual, auditory and sensual elements. The sound dimension operates through the harmonics of the melodies as well as the physical impact of amplified sound waves. These elements combine to entrain the human organism within the 'soundscape' created by high volume sound systems, just as for example monks chanting together entrain themselves, body and mind, to the collective harmonic. Gilbert Rouget (1985) notes that the amplification of sound achieved by modern technologies resonates sound through the body to involve the listener in the musical field, vibrating the 'internal erogenous zones of the abdomen' as well as producing a 'light hypnosis', just as the music of archaic trance ceremonies aims to do. Music alters the 'relation of the self to the world', modifying the psyche both internally and in its relations to the external space/time environment.

Prolonged dancing is also a feature of the rave scene and this is often (though not always) associated with drug use, especially the empathogen MDMA (Methylene Dioxy Meth Amphetamine) commonly known as Ecstasy. Taken in the right setting, Ecstasy like its popular hallucinogenic predecessor LSD, can bring creative insights into the self or the individual's life situation which can precipitate a 'life transforming experience' (Saunders, 1992). When ingested in the rave setting, the drug-induced altered state of consciousness may be amplified through other mechanisms. Through dancing in the multi-media soundscape of the rave and under the influence of chemicals such as Ecstasy and LSD, dancers can attain light trance states which are probably much like those obtained by people in archaic cultures using similar techniques. It is in this trance state that the individual in an altered state of consciousness can connect with the noumenal, which might be interpreted as access to a kind of group mind, or a spiritual/mystical experience (Delpont, 1995). Stewart Wavell suggested in 1966 that one day trances will become as accessible to us in western civilisation as the electric light, and that this will open 'immense new possibilities'. He felt the consequences of this will be felt in diverse fields from space travel to pop music -- a prophetic statement in view of what is currently occurring in the rave milieu (Delpont, 1995). Wavell refers to trance as 'a state of liberation', freeing the trancers from the bounds of ordinary reality, from 'the prison of the senses', and Wavell suggests that perhaps through trance it will be possible to transcend space and time. This could well be why there is a particular awareness in rave culture of ideas such as evolving consciousness and spirituality; for example recent raves in Johannesburg have been called "Spiritual Awakening" and "Operation 1: Conscious". A new rave culture magazine was launched in South Africa in December 1995 called *Evo/ver*, combining in this title references to Ecstasy and Evolution.

In archaic societies, the trance state is often associated with contacting disincorporate entities such as spirits. These entities may be autonomous complexes within the psyche, the view suggested by modern psychology. In an analysis of demonic possession, Gavin Ivey (1995) notes that Ogden (1990) held such internal psychic 'entities' to be 'dynamically unconscious suborganisms of the ego capable of

...ce, ie. capable of thought, feeling and perception'. The possibility that such 'spirits' may be independently interface with human consciousness in particular states. Both John Lilly and Terrence McKenna for example report encountering discorporate entities in altered states of consciousness, while the phenomenon of 'channelling' also indicates the potential existence of extra-psychic beings. The fact that discorporate beings are integral constituents of almost all human religious belief systems cannot be ignored, and we should not forget that the scientific reductionism which attempts to abolish such beliefs is in itself just another belief system (Duerr, 1978; Collins & Pinch, 1982; Inglis, 1986; Tomaselli, 1996).

People in trance lose their senses in that there is no activity in the hypothalamus, which controls the basic drives, and Wavell records that this brain area then 'continues an existence, apparently, independent of our senses'. The nature of the motive force of this area could be the spirit, an almost universal concept in human societies. In the absence of the usual occupant spirit, often other spirits inhabit the body during trance, ie. it becomes a state of possession. This raises the question of the nature of the spirit, and there are various common definitions which crop up in most cultures:

They are insubstantial: they do not occupy space: they can be summoned, it seems, from almost anywhere at a moment's notice. They move freely in Time: even the fourth dimension does not seem to inhibit them. they possess will-power and energy or, if they cannot themselves exert power, they do at least manipulate the hypothalamus drives of human beings in trance. They are thought to have human emotions, and their principle need is human affection. They are mischievous when neglected: they can even be diabolical (Wavell, 1966; p17). Audrey Butt (1966) notes that there is a correspondence in many cultures between the breath and the spirit, and there may be a correlation here between specific breathing techniques used for inducing altered states of consciousness in which a connection is made with spirit, either that of the subject or some other occupying entity.

Dancing is one of the most effective mechanisms for inducing trance. In his examination of archaic societies such as the San, Wavell refers to the trance dance as 'dance therapy' to escape the everyday pressures of hunter-gatherer life. Those who experience trance report feeling a lightness, energy and power. The trance dance is often initiated by the tribal shaman, who uses it to enter into trance himself or to induce trance in others. The shaman is a healer who articulates a harmonising motivation in society (Duerr, 1978), as well as being a performer who must woo his audience, 'entrancing' them through his dramatic skill as much as his magical ability. As Butt says,

Finally, his supreme achievement is to leave them at the end, peaceful and harmonious, yet elated -- even inspired. Let us therefore consider the shaman as an artist and his seance performance as the product of his art (Butt, 1966; p185). The notion of art or creativity in relation to trance is significant. Nina Epton (1966) argues that trances are creative states, or 'the key to most creative processes'. This involves the 'extinction' of the ego which allows for an altered state of consciousness, an inspirational state wherein the mind can achieve 'a higher form of being with a deeper understanding of self,' as well as communion with the divine.

in inducing trance, although as Rouget points out, trance; sometimes it triggers trance while at other chaotic trance ceremonies, different sounds can send people into trance, from loud drums to soft rattles. People can go into trance while dancing or while lying still. There are different theories as to why music can induce trance, from its emotive power to conditioned reflex. Rouget feels that music is a "socializing" influence on the trance phenomenon, and that this depends on the ideological systems in which it occurs. He also considers trance as 'a state of consciousness composed of two components, one psychophysiological, the other cultural' (Rouget, 1985; p3). The principal symptoms of trance are listed by Rouget as,

trembling, shuddering, horripilation, swooning, falling to the ground, yawning, lethargy, convulsions, foaming at the mouth, protruding eyes, large extrusions of the tongue, paralysis of a limb, thermal disturbances (icy hands despite tropical heat; being hot despite extreme circumambient cold), insensitivity to pain, tics, noisy breathing, fixed stare, and so on (Rouget, 1985; p13).

The subject in trance is also 'bewildered', ie. he is in a state which totally envelops his normal consciousness and he cannot return to it unless there is some external intervention. The subject does not engage with the world through his senses; he is 'senseless' to normal reality. There are a variety of behavioural signs, depending on the culture of the subject; but generally they 'symbolize the intensification of some particular faculty by means of an action endowed with certain extraordinary or astonishing aspects' (Rouget, 1985; p13), eg. walking on burning coals, piercing one's flesh, bending swords and metal bars, curing diseases, precognition, embodying a divinity, contacting the dead, etc. These phenomena are a transcendence of the normal self, or an 'exaltation' of the self.

The individual in a trance state is thus recognizable by the fact that (1) he is not in his usual state; (2) his relationship to the world around him is disturbed; (3) he can fall prey to certain neurophysiological disturbances; (4) his abilities are increased (either in reality or otherwise); (5) this increased ability is manifested by actions or behaviour observable by others (Rouget, 1985; p14).

It is clear from this description that participants in modern techno raves or similar music or ritual events do not as a rule enter into such deep states of trance; nevertheless this is not to say that 'echoes' of deep trance states may be found in the above-mentioned altered states of consciousness. I also have not heard of anyone who has encountered a specific 'entity' in the rave milieu; however there is a particular emphasis within this milieu on the Other (perhaps what McKenna calls the "Wholly Other") in the form of aliens (extraterrestrials) and dolphins, which might be the modern equivalents of the demons, angels, spirits etc. of other cultures. There is also a strong emphasis in rave culture on connecting to the 'Earth spirit' which is strongly equivalent to Standing Bear's 'spirit of the land'. It is this type of connection which McKenna advocates as central to the 'archaic revival', a concept which seeks to resuscitate the knowledge of archaic societies into the postmodern world, aiming to overcome the reductionist modality of scientific rationalism. This means reconnecting with the holistic world of nature, where mind, body and spirit are one. Rouget excavates the meaning of an archaic way of living or experiencing: in societies having preserved an archaic way of life, which are precisely those in which possession cults are frequently found, the individual lives in constant sensorial contact with nature. He lives in perpetual intimacy with the elements, plants,

between the animate and inanimate worlds is
plants, and things -- all have souls or are the
phenomenon is interpreted as resulting from the action or
presence of a soul. The visible is constantly animated by the invisible (Rouget, 1985;
p123).

Trance and Creativity

It may seem a strange proposition to suggest that humankind can reconnect with an archaic experience of nature through the medium of electronic technology, but it may be that through strategies such as those exemplified in the techno rave, which utilize a variety of sensory inputs to induce an altered state of consciousness, states of liminality can be achieved which will perform this function. The chief characteristic of virtual environments is that they are gateways to the imagination, in other words they enable the individual to be physically present in an imaginary realm. So Jay Kinney, writing about the 'inner planes' or spiritual dimensions in Gnosis magazine comments,

As the horizons of cyberspace and other computer-generated virtual realms rapidly expand into the culture at large, they allow the projections of our imagination to dance before us in the arena of the networked global mind. In cyberspace, the inner planes and unseen beings may unfold before us, strangely transmuted into digitized replicants mimicking our highest visions but lacking a certain crucial spark of life (Kinney, 1995; p16).

Here Kinney seems to be edging towards a view where the collective consciousness of a virtual environment takes on the characteristics of individual consciousness, in that autonomous complexes could manifest themselves and even in some way take on a life of their own. This idea was taken up by 'cyberpunk' science fiction writer William Gibson, as a disembodied intelligence inhabiting 'the net'. Such conceptions may seem far-fetched, but on the other hand we should not ignore the power which archetypal imagery can invoke in the psyche; Ivey recounts that identification with an archetype may produce an altered state of consciousness and even paranormal phenomena (for example in cases of 'demonic possession'). The nascent nuclei of such phenomena in cyberspace might be found in currently popular MUD (Multi-user Dungeon) games which people play on the Internet, where participants take on the roles of imaginary characters in order to embark on magical adventures, encountering various mythological helpers and adversaries in the process. By animating such imaginary actors with artificial intelligence software, the fictional gods, demons, wizards etc. could impact on the consciousness of individual participants in real ways -- in other words, interaction between player and the archetypal image embodied in the fictional character could create a feedback loop whereby each alters the behaviour of the other. Such a feedback loop between a group of participants and a computer-generated character might amplify the affective reality of the latter; or a form of collective entity could represent the intentions of a group of people. However these ideas are at present mere speculation and I can only say that the possibilities of such phenomena deserve more concrete study.

As the above arguments concerning the attainment of liminal and trance states indicate, it is often an advantage to utilize the whole body in order to achieve them -
- in other words, consciousness is a function of the body as a whole neuronal and bio-chemical energy system. Consciousness involves both sensory feedback

practices based in fields of signification which are
mental effects can be obtained when the entire
example through devices such as Masters and
Houston's ASCID. This apparatus consists of

a metal swing or pendulum in which the research subject stands upright, supported by broad bands of canvas and wearing blindfold goggles. This pendulum, hanging from a metallic frame, carries the subject and moves in forward and backward, side to side, and rotating motions generated by involuntary movements of the body of the subject. Frequently, then, a trance state ensues within two to twenty minutes, and may deepen as the spontaneous or directed experiencing of a subjective reality continues to unfold (Masters and Houston, 1973; p89-90).

Through using this device to induce altered states of consciousness, the subject can experience various 'subjective realities' or dreamlike visions, including mythical, science fiction, religious and mystic experiences. These experiences can have a positive and lasting effect on the subject. Masters and Houston have coined the phrase 'Visionary Anthropology' to describe a process whereby subjects are invited to explore a "world" in their imaginations, and to experience and describe elements of it such as its art, customs, music etc. The ASCID seems to enable a creative visualisation process, which aids artistic practices. Auditory musical imagery (or hallucinations) can also be experienced, especially by musicians. Such imagery can be described as 'automatic' or 'self-creating' works of art. Another phenomenon which can occur with the ASCID is 'accelerated mental process' (AMP), which is a form of subjective 'time distortion'. In this state, the subject experiences a volume of thoughts or images far greater than that experienced in normal time.

Other technologies, often of an electronic nature, are currently being developed. It is interesting to note that little exploration has been conducted in the use of technologies which link people in communal virtual spaces, where shared experiences could foster the development of a 'group mind' phenomenon. Jaron Lanier reports that a sense of mutual trust is generated between two people in virtual-space phenomena such as 'trading eyes' with each other, which results in the sensation of a 'shared body'. Consider the effect on a group of people in a such a virtual 'shared body'; amplify this experience through an altered state of consciousness, such as those 'whole body' experiences produced by the ASCID; engage the participants in a ritual activity designed to induce a liminal state aimed at contact with the noumenal -- and you have a recipe for a very unique experience, which might well result in a mystical gnosis for the participants. Indeed, William Taylor and James Swartz assert a link between mysticism and electronic technology, in that the 'evangelists' of electronic technology have an eastern approach to the conception of a 'unity of consciousness' on the net. This is a place where 'computation replaces meditation'.

Expressing his most profound hope for the technology he fathered, Jaron Lanier predicts that virtual reality "will bring back a sense of shared mystical altered states of reality that is so important in basically every other civilization and culture prior to big patriarchal power." In this apocalyptic vision, to don goggles and gloves is to enter an other world here and now (Taylor and Swartz, 1991; pTelevangelism5)

Communication

Taking a step back from this rather glowing account of the possibilities inherent in certain modern technologies, we can see that despite the tendencies towards alienation from our own humanity which have occurred primarily because of the context (industrialism) in which these technologies have developed, it is nevertheless possible to use them to reconnect to what is essentially human in our makeup. In other words, if we define alienation in the Hegelian sense as a condition arising from illusion, that which prevents Mind or the consciousness of humanity as a whole from achieving self-awareness, then the evolving human-machine interface has the capacity to overcome that illusion. This can be achieved primarily through communication -- that is intercourse between individuals, between collectives of individuals, organisations, groups, nations etc. and communion between consciousness and unconsciousness, between the phenomenal world of everyday experience and the noumenal realm of spirit.

In the phenomenal world, communication must be a collective process where information is shared; this is qualitatively different from the transmissive model of information flows which has predominated in the industrial age, where 'information elites' have controlled information flows in a top-down fashion. This is the model in which the much-criticised culture industry has flourished, which still holds much of humankind in thrall within the matrix of military-industrial ideological hegemonies. In order to shift the balance of communication flows from vertical transmission to horizontal sharing, we can now invoke the Marxist conception of alienation, ie. the distantiating between labour and the products of labour which arise under the direction of certain productive forces. This involves enabling or empowering people to participate in an active, productive fashion in the generation of symbolic forms, ie. in the global information economy. Such capacity can be granted through access to information technologies, in the form of computers or other analogue media. (It is in the latter area that my research has taken place, in the form of creating participatory television projects).

However, it is important to bear in mind that one of Marx's chief downfalls lay in his adherence to the precepts of materialist science, one result of which was his denial of the religious impulse. Human beings have used certain mechanisms since time immemorial to achieve a sense of community as well as to connect to the trans-human or other-than-human, ie. the noumenal, that which is beyond the grasp of science. Despite the continuing attempts of modernist science to reduce such phenomena to quantifiable levels, to measure them in terms of electro-chemical reactions, brain waves, patterns of neural activity, psychological complexes and the like, the subjective experience of such states and the implications of such experiences for our understanding of who and what we are, will remain forever beyond the comprehension of the mechanist world view. Fortunately, there appears to be a stirring in the scientist camp which betokens the emergence of a new scientific paradigm which accepts the validity of human experience, at the expense of notions such as measurability, rationalism and materialism (Inglis, 1986; Smart, 1992; Singh, 1996). It is through such newly emerging paradigms that we can focus our efforts to develop new methods of human interaction, communication and experience through the 'new media' (ie. the synthesis of publishing, communications and electronic media) which can ultimately lead to the evolution of language, and so of consciousness itself.

ietic Paradigm

In order to rotate the axis of information flows from vertical to horizontal, so addressing the problem of alienation, we turn to notions of empowerment within the emerging autopoietic paradigm. There are several questions which must be addressed in this regard. Can technology be used in an empowering fashion in the Information Age, when it is so closely tied to the objectives of capital, including profits and control? The 'father' of empowerment theory, Paulo Freire, argued for an educational praxis for oppressed peoples which emphasised a critical distance from the system in which they are enmeshed. Is such a critical distance possible -- or necessary -- in the (post)modern world? How can people use technology for purposes of communication and knowledge acquisition which will serve them in an empowering manner, and what dangers does a reliance on technology introduce? Finally, how can the notion of harmony be used to supply creative solutions for people to live together in a sustainable fashion? In summation of the above aspects of empowerment, I argue for a notion of empowerment through the creative fusion of art and science, a synthesis potentialised by the digital revolution and the myth-making capacities of media.

Change from within

Paulo Freire deals with the notion of individual agency and empowerment by positing a difference between living 'in' and 'with' the world -- that the latter implies an 'objective' distanciation from the world, that it might be studied and manipulated through language. Freire believed that 'praxis' exists in the dialectic relationship between object and subject, because according to him it is only through this relationship that people are able to reflect upon themselves and upon the world, and so transform them. Thus, 'Only beings who can reflect upon the fact that they are determined are capable of freeing themselves' (Freire, 1972; p52). Consciousness in this view arises from an interaction between thinking, self-aware beings and their notion of an objective world separate from themselves.

The Freirian view of the world was heavily influenced by Marxist thought, from which Freire derived his notion of objective reality being ascertainable through a 'scientific' analysis of historical conditions. However, as Jacoby (1981) notes, this modernist conception of science maintains the bourgeois notions of rationality and efficiency which led to the de-humanising oppression of communist societies. Moreover, it has today been superseded by both postmodern conceptions of language and the new emergent paradigm of interconnectedness, which Beverly Jones posits as arising as a result of 'computer models of complex, dynamic, self-organising phenomena' (Jones, 1993; p1). This paradigm breaks with both modernism and postmodernism in its emphasis on connectivity and pattern, and its conjoining of the hitherto separate realms of science and art. One of the major consequences of this new world view is its break with the Cartesian split of mind, body and environment, which characterised the modernist paradigm under which Marxism has briefly flourished and decayed on the world's stage. This break is due in part to 'the decline of certainty in the physical sciences', occasioned by developments such as Einstein's theory of relativity, Heisenberg's uncertainty principle and quantum physics. The dynamic connective processes of human neural functioning, also uncovered for cognitive science by graphical computer representations (Jones, 1993), are another

the simple dualistic way of conceiving operations in

Jones cites Heidegger as one of the first to question 'the distinction between the knowing subject, the knower, and a separable object, the known', a position which is borne out by the new paradigm's stress on the 'connectedness of mind/body, of mind and body with environment and interconnections of phenomena within the environment' (Jones, 1993; p30). For Heidegger, being 'in' the world was more conducive to our knowledge of it than Freire's being 'with' the world and gaining knowledge of it through a 'reflective representation'. This is because reality is conceived as a patterned structure, a 'situation' in which we act 'without the possibility of disengagement' from the overall pattern of activity. This precludes the possibility of the 'detached observer', an assertion borne out in sub-atomic physics (Capra, 1975; Talbot, 1981).

Freire's idea of manipulating the 'objective' world through language also presents a problem. Jaques Derrida (1989) interprets Heidegger's notions of knowledge in terms of 'conceptual structures, patterns and systems of knowledge' (in Jones, p30), regarding rationalism as limited in its ability to discern certain structures. The dissolution of meaning and subject/object differences in hyperreal media space and the undermining of these concepts by digital, computer graphic representations, cognitive and language studies force a fundamental reappraisal of Freire's conception of praxis and empowerment. Instead of a subject/object dialectic, we are presented in the new paradigm with organic patterns of interconnectedness, which hearken to a pre-modern, 'magical' conception of the universe, which is harmonious and holistic. In this model it is the perception of pattern from which meaning is derived; this is a condition where for example words and their essential content are distinct yet inseparable from one another (Adorno & Horkheimer, 1972); where nature is translated into art in a similar fashion to the way nature was invested with spiritual energy by means of pre-modern magic rituals (McLuhan); or where reality is translated into hyper-real media (Baudrillard).

One effect of pattern in communication is felt today where common perceptual or knowledge space defined by media or computer communication systems is conceived of in terms of complex, dynamic, self-organising (autopoietic) systems. It follows that the organising principles which define such systems apply to developments in this space. These principles are based on logic systems which are open rather than closed, emphasising probability rather than absolute predictability, biological and associative models rather than mechanistic, hierarchical ones and self-referentiality rather than 'the classical system-environment model based on external control' (Jones, 1994; p33). So within this space, which is to some extent contiguous with a potentialised public sphere (Habermas in Louw, 1982) where egalitarian relations of media production can apply (eg. networked computer communications), the nature of borders are a defining characteristic of difference, rather than the modernist subject/object split. Here "reference to the other" is 'a special case of self reference' (Jones, 1994; p33), which undermines for example the 'us and them' dichotomy of oppressors and oppressed, in a new understanding of oppression as affecting both parties in a de-humanising manner.

Freire's solution to the problem of unequal power distribution and concomitant repression in society was the process of conscientization of the oppressed, which can take place through a recognition of social conditioning. The problematic here lies in

of silence' which he attributes to subordinate culture which 'has a voice', ie. that of the masses). Freire sees the only possibility for those subjects of the silent society to gain a voice being in radical structural change. Dominated consciousness does not have 'sufficient distance from reality' in order to conceive it in an objective fashion -- it is too mediated by the structural dominance of the over-society's voice, which results in a lack of 'structural perception'. This situation is only changed in societies experiencing structural change -- the masses wish for a voice, while the elites attempt to deny them this privilege.

Harmonic development

Having said that Freire's conception of object/subject split has been superseded by a conception of patterned interconnectedness in autopoietic systems, it is needful to consider how such a paradigm can be of use in effecting developmental change and of giving voice to the 'silent' elements of our society. In this regard it is useful to review the dynamics of autopoietic systems, which were originally evolved to explain the development of weather patterns. To recap this so-called 'chaos theory', the interconnectedness of all elements within the system means that any alteration of the dynamic system at a temporal/spatial point results in significant changes to the probable outcome of the system. Here we come to the concept of applying technology to the process of empowerment, following the logic of transformative technologies explicated by Jones, who cites her historical antecedents in this regard as Ong (1958; 1971) and Ellul (1964). In this view,

technology may amplify or de-emphasise factors and thus shape symbolic and material culture. This, in turn, shapes the larger conceptual view of reality in a given culture and time. (Jones, 1993; p31)

The application of technology in focusing on specific micro-environment factors can thus effect a culture on the macro scale, affecting its perception of reality and its consequent interactions within the broad pattern of that reality. Significant effects in this regard can also be obtained by relatively small-scale efforts, focused in terms of altering the probable outcome of patterns of behaviour in the conceptualised reality system. Operations within the sphere of hyper-real media and communications networks do not in this sense contribute to 'entropy' in the social sphere, as Baudrillard would have it, but rather alter perceptions of pattern in eliciting meaning about the world and our relationships with its constituent elements. Thus patterns of oppression may be countered by patterns of empowerment, although the very notion of irregularity and permanent fluxes and imbalances of power in dynamic systems mitigate against the utopian socialist vision of universally equalised power relations.

The socialist theorist Enzensberger championed the notion of 'the Left' and 'the masses' appropriating information technologies and applying media/communication theory to further their emancipatory project (Louw, 1982). The weaknesses of Enzensberger's position lie with his uncritical, fundamentalist Marxist notions of emancipation and primarily with his concomitant notion of "the masses" as the means to this end. The 'mass' of a population is inevitably the blunt instrument -- or 'weapon', in Maoist terms (Pandya, 1988) -- of leadership elites in their attempt to gain power and, though 'the masses' may gain some qualitative improvement in their general conditions through revolution, it is always their leaders who win power, prestige and position in the new dispensation.

sition as potentialising a 'mass grassroots leftist information technology, which would make 'everyone of media. However, if one looks to technology for providing a means of mass communication such as Enzensberger suggests, two things are apparent: firstly, that one needs access to the necessary equipment, and this access is circumscribed in capitalist society primarily by the economic factor of cost; to what extent such pressure could be overcome in societies defined by socialist or other alternative modes of production is debatable, because factors of supply, demand, materials and labour costs, not to mention the power interests of status quo elites, must still be accounted for. The second factor is that of operator skill -- not everyone has the will or the talent to become a 'producer' in this sense, as it means having to master the requisite technology and production skills. The balance of knowledge in this regard will gradually change as time goes on and digital technologies become part of everyone's life from schooldays onwards, but the factor of will in gaining the knowledge and skills required to be an effective producer still has to be taken into account. Nevertheless, the notion of appropriation of technology is still a useful one, given the above limitations. It should however be taken into account that in the present context, those who have the wherewithal to utilize these means to empowerment will be limited to small groupings and individuals, but whose effect on the overall order can still be significant because of their impact within the autopoietic framework.

There is however always the danger of technology becoming fetishised, of being perceived as an end in itself. This tends to happen within the scope of capitalist systems where technology is a commodity, used in the production of other commodities, including information. In this context, Freire, that Archdeacon of empowerment theory, proclaims that:

Technology thus ceases to be perceived by men as one of the greatest expressions of their creative power and becomes instead a species of new divinity to which they create a cult of worship. Efficiency ceases to be identified with the power that men have to think, to imagine, to risk themselves in creation, and rather comes to mean carrying out orders from above precisely and punctually. (Freire, 1970; p80)

Freire points to the crux of the matter -- the position of technology as a cognitive tool, rather than a means of control. For the latter is ever the resort of status quo power elites, and as Mao has pointed out one of the tasks of revolutionaries to 'use the enemy as their arsenal', appropriating in this case the very armaments of technological control enforcement mechanisms in order to empower themselves. In addressing social, economic and power imbalances in our present social context, it is clear that technology is a means of empowerment for 'the masses' only in an indirect sense; it can serve to directly empower small groups or individuals by enabling them to gain control over the production of media or information (enhancing what Braman [1994] calls the 'capacity' of the agent), which can then be used in an empowering sense to the benefit of the population at large. The object of such interventions would be to enable a 'sharing' of information in a horizontal fashion rather than a vertical, transmissive, extractive flow which facilitates top-down management. So while not everyone can be a producer, as Enzensberger and Louw would have it, some people can be producers to further the interests of countercultures in opposition to status quo domination. In their efforts to enhance the patterns of thinking and behaviours of such countercultures they can affect the thinking and behaviour patterns of the society at large, creating a dynamic where processes of

shared or communal sense can take place. Key to of autopoietic systems, which diminishes the divisive 'we' terminology (Jones, 1993). Human beings are thus seen as an interconnected whole, both as a species and as part of the total organic 'kosmos', the Pythagorean term for the universe, with its implications of beauty, harmony and order (Fideler, 1993).

Resonance and harmony

In her paper *Harmonization of Systems: The Third Stage of the Information Society* (1993), Sandra Braman argues that our 'information society' in the 1990s is characterized by a 'harmonization' of communication systems with each other, in that broadcasting, telecommunications and other social systems (eg. finance), are linking and fusing with each other into non-hierarchical 'geodesic' networks. Although Braman uses the notion of harmonization to critique the octopus arms of capital and its ready diffusion through the permeable information matrix, the notion of harmonization is an important key in working with information systems. The above arguments note that physical and social universes as governed by an underlying holistic unity where the patterns of energy flows, in the form of information, are the defining characteristic. This is a view of reality distinct from the dualistic Cartesian model, and it is one where the principles of simultaneity, autopoiesis and morphogenesis hold sway instead of linear causality, altering the probability patterns of dynamic systems in an infinitely open-ended manner. The essential component of this view of the universe is energy, which is understood in a physical sense in terms of its wave action. Because energy acts according to the principles of wave function, it is subject to the vibratory laws of harmonics, with the concomitant notion of resonance. This abstraction can be used in an empowering fashion in our digital age, especially through the creative fusion of art and science.

Let us consider how the idea of harmonics might be applied to information systems. Fideler explains harmonics in terms of musical tuning theory. The aim of tuning is to find the vibrational harmonic point within the mathematical limits of the octave. This is the "scale" between low C and high C, which is attained through applying the principle of Logos, ie. ratio or proportion, 'the principle of mediation between ideal extremes.' The foundational principle of music lies in the mathematics of the "perfect consonances" or "perfect intervals" which occur in the harmonic overtone series. These intervals generate overtones because of the resonant frequencies of vibration, ie. chords. This underlying principle of harmony is a universal one and musicologists have found that music in every society accords to the same principles, that these perfect consonances provide the framework for all harmonic locution. Fideler notes that according to the ancient Greeks, the mathematical principles of harmony 'were said to underlie the harmony of the universe', and that these ideas influenced both the Pythagoreans and the Platonists.

Pythagoras was the first to call the universe a kosmos, a term he used on account of its beauty. The Greek word kosmos means "order" or "ornament".... and when Pythagoras applied the term to the universe, he was acknowledging the fact that the natural world is inherently lovely, "ornamented" with beauty. The Pythagoreans also taught that the kosmos is a harmony. Harmonia, in Greek, means a "fitting together" of opposites: spirit and matter, unity and multiplicity, order and chaos. (Fideler, 1993; p22)

urged the guardians of his ideal state to study the nature of justice through an appreciation of the skill required of negotiators, 'the art of finding a common ground between opposing parties and interests'. Fideler recounts how the mythology of Greek culture was transmitted through bardic orality, the stories told to musical accompaniment at various cultural events. The mythic character of this culture utilized a process of 'magical enchantment', which Fideler argues found its most profound expression in the design of temples, embodying in their microcosmic design the harmony of the macrocosm. But the culture as a whole was harmonious, and Fideler states that

This remarkable level of integration of every level and aspect of society was achieved not with force, theocratic rule, or allegiance to a particular dogma. Rather it was an inspired artistic vision, reaching back into the deepest strata of prehistory, which sustained and spontaneously gave form to the rich beauty and harmony of Greek civilization. (Fideler, 1993; p26)

Harmony thus has a double meaning; in the physical sense of vibrational resonance and in the abstract sense an integration, the antithesis of discord or conflict in a society. It is significant that in the Greek context this harmonization took place in the framework of an oral, mythic culture and that it resulted from a creative, artistic vision. McLuhan, in arguing that the effects of technology are felt in their alteration of 'sense ratios or patterns or perception' contends that 'the serious artist' is the only one who is able to be aware of such alterations, and that art may thus provide some immunity to the deleterious effects of these transformations. Jones points to the breakdown of boundaries 'between art and other aspects of life' as a result of postmodern intertextuality and the digital revolution, which has brought concepts such as Boolean logic systems, interactivity and digital/analog converters from the realm of science to that of art. David Tafler and Peter d'Agostino (1993) list art as a 'site of struggle' in the clash between modern and pre-modern ways of being, providing a space for resistance against technological imperialism which nevertheless makes use of technological means. McLuhan defined the concept of 'artist' beyond the scope of 'art', as 'the man who in any field, scientific or humanistic, ... grasps the implications of his actions and of new knowledge in his own time. He is the man of integral awareness' (McLuhan, 1964; p65).

Art, myth & meaning

In the immediate term, we can look to certain practical mechanisms whereby the above theoretical contentions can be played out. As our postmodern technologies advance, opportunities will be opened for the application of creative vision to empowering processes. One means of doing this would be in the artistic sphere, for art is a means of defining meaning in a mythic sense within the context of the information age. This is a time of 'secondary orality' (Ong, 1977), where electronic media/communications 'implode' meaning in hyper-reality (Baudrillard, 1981; Eco, 1989). McLuhan characterises this mythic domain as a

contraction or implosion of any process, and the instant speed of electricity confers the mythic dimension on ordinary industrial and social action today. We live mythically but continue to think fragmentarily and on single planes. (McLuhan, 1964; p25)

The nature of myth has for some years been a significant interest to Twentieth Century theorists. In film, this interest traces back to the post-1968 generation of

an understanding of myth useful in gaining insight
acts on audiences. The deconstructionist theory of
is not myth, but it is constructed as such by
analysis. Claude Levi-Strauss said that there is no logic on a surface level of myth,
but there is an underlying logic in its structure (Baker, 1994). In this view, myth
conceals contradictions and reinforces stasis; but Robert White (1994) identifies
another moment in the evolution of myth, within the context of national
development. This is the time when a particular brand of myth is created within
independence movements, and such myths have traditionally been identified with
the heroic proportions of the movements' 'founding figures' (like Lenin, Mao etc.),
who become iconised as embodying certain great national virtues. The archetypal
embodiment of such leaders in the national (un)consciousness often transforms them
into demagogues in post-independence governments, a fact which has had woeful
consequences for many young nations. As White chronicles, the leader's promise of a
"glorious" future is designed to motivate and unite people under the banner of the
liberation struggle, in transforming the social structure and making the necessary
sacrifices to build their future vision. While White proffers different options for
political mythic structures, eg. "federationist", "corporatist" etc., the problem of a
deified national leader(ship) remains, the 'leaders and followers' syndrome which
stratifies power relations within a society.

The question of democratic transformation an enhancement in such post-
independent societies, like South Africa, is thus of crucial importance to their future
development. In the light of our current electric culture and the mythic structures
which are translated via communications technologies, the question of national
myth-making is particularly pertinent to theories of empowerment. If, say, the
democratising power of technology can be harnessed in a democratic way to
influence the nature of national myths in a fundamental fashion, a democratic culture
can be effected which is relatively free of the constraints which demagoguery and
bureaucracy may attempt to impose upon it. To synthesize some of the above-
mentioned theoretical terms, this could be described as the field of resonance within
the cultural matrix, a morphogenetic field subject to the co-evolution of autopoietic
systems. This vibratory energy matrix would be subject to harmonic structuring,
aimed at avoiding discord and constructing a coherent, unifying vision of the future.
Such a dream could resonate with what White calls 'a kind of sacred history', and
even with a resurgent notion of "tribalism" to build the national dream. Such a
project would inevitably involve the most creative individuals and groupings within
the society, those 'artists' defined by McLuhan who can pop up in any field of
endeavour.

Fideler credits such insightful individuals in history as being involved in the practical
application of harmonic principles to practise, in order to realize a 'common ideal',
that being 'the dream of living in true harmony with both the laws of nature and
human society' (Fideler, 1993; p27). He contends that the harmony of the universe
can always be invoked in tangible ways, saying that cultural factors shape our
experience of the Logos and that 'high cultural epochs' are saturated with harmonic
resonances which renew and sanctify the culture. At such times,

A poetic, spiritual vision then takes hold of a generation, and the long-dry channels
of inspiration once again flow with living water. Such periods are also marked by the
discovery, or rediscovery, of the numerical canon -- the natural laws of proportion --

the understanding of universal harmony. (Fideler, 1994) The developed paradigmatic conception of Logos is the fractal set, the geometric mathematical ratios of certain forms of dynamic (or chaotic) systems, which is deeply influencing creative endeavour in every sphere of human thought (Braman, 1994), as well as facilitating the fusion of art and science. Digital technology is once again integral to this process, and must be appropriated by those wishing to play in this postmodern concerto, filling all of media space with the resonant rhythms of our communal soul and singing the new song of successful evolution. This is a very different project to that of the rationalist enlightenment, but it is high time we found a new way out of our modernist predicaments. In the context of today's global economy, it also makes sense that harmonic social movements are in tune with global cultures, and it is clear that these are taking an increasingly "tribal" tone -- witness for example youth subcultures with their particular styles of music and dress, Internet chat groups and certain varieties of sports fans. Other relatively successful international cultures include the environmental movement and the anti-nuclear movement. If such cultural elements can be successfully integrated with a unique, indigenous culture in South Africa, networks of individuals and groups working in concert to develop this sensibility can have a powerful effect on the national psyche.

The application of autopoietic theories would be central to such a development project. In order to foster such a myth-making undertaking, a grouping of reinforcing ideas must be defined to serve as a 'strange attractor' about which a self-conscious network could coalesce. One such idea has been identified by Alpman (1994) as a 'Cyber-uhuru' movement, a term which would serve as a unifying concept to encompass those working in the sphere of creative digital technology applications. This work would however have to be contextualised in terms of an understanding of holistic social functioning; Enzensberger (1974) rightly attacks McLuhan's view of technology as being intrinsically emancipatory, although the savagery of his attack is unjustified from the perspective of his own tired utopian socialism and its historical failures. Nonetheless, a culture which empowers people to act from the bottom up, rather than the top down, would mediate the tendency of powerful elites to seize the reins of national culture in their quest to dominate in concert with the state apparatus; subverting the status quo's mass media in the generation of a "popular" culture (White, 1994) is thus the prime task of today's media guerilla.

Harmonization and interactive communications

At the level of practical application, or praxis, it is useful to think in terms of the trope of energy or wave theory. The role of autopoietics in relation to harmonics then lies in the application of energy to a particular social nexus point, where harmonic resonances will carry the energy in 'wave packets' to other neural nexus points in the social matrix, so lowering the potential difference between them. This facilitates communication, which is in essence a dialogical flow of energy, enhancing the general energy level of the network system along these particular 'neural' pathways. Thus individuals and groups may be empowered, their energy levels or capacity for action raised, to enable them to attain their goals within the framework of the total harmonic structure, the overtone of overtones which resonates according to the frequency of the original energy -- ie. they will follow the cultural pattern established by the original action. This is what Braman (1994) describes as the translation of

er, a process which takes place through 'specific
ion processing, flows and use' (Braman, p2).

The capacity to control communication is a in a political sense a translation of potential power into actual power which raises the question of who can wield power, especially in the field of broadcasting. Radoby & Bruck (1989) argue that television today is a form of capitalist plot to create passive consumer audiences because it is one-way, transmission type communication, rather than a two-way interactive process. This enables hierarchical 'statist' bureaucracies to also use this system to the advantage of status quo power elites. The promise of interactivity proffered by modern digital communications and media is to a large extent merely the lure of capitalist consumerism, substituting 'shopperspace' for 'cyberspace' (Hultkrans, 1994). Nevertheless, media can be used in a democratic, interactive way, as Mark Surman (1994) points out when he speaks of a "Democracy Channel" on TV, which would for instance enable television viewers to participate in local government meetings.

Interactive television 'obviates spatial distance' in connecting people in a dialogic process according to Tafler & d'Agostino (1993), another factor enhancing its contribution to the potential harmonic resonance of the media-space net which it spreads across geographic and cultural communities. To find a means of involving media audiences and producers in a harmonic, participatory fashion can be used to mediate against vertical, top-down transmission-based communication structures, so limiting the power of elites and empowering others at lower levels of influence.

The argument for two-way, interactive communication is not merely a technological proposition; it is also a political one. What matters are the opportunities for cultural expression and democratic social relations that are either facilitated or inhibited, whatever the type of system. (Radoby & Bruck, 1989; p10)

If the notion of such interactive systems can inform the development of a national culture industry, this could provide a unique element enabling the country to compete against the dominant culture industry of the northern hemisphere (White, 1994). It would however necessitate an adequate economic base being founded upon which the structure of such national cultural engines could be built; this could involve private entrepreneurs in association with the government, or non-profit NGOs, although the role of the latter in South Africa today is circumscribed by dwindling foreign support and government attempts to harness them to the Reconstruction and Development Programme (RDP). Whatever the means of achieving such interactivity, it is clear that the role of communication as an emancipatory process should serve to strengthen individual autonomy, the subject being defined in terms of, a gain in social, cultural and political agency, an increase in expressive possibilities and competencies, and a strengthening of the power to manage one's life within the conditions of society and history. (Radoby & Bruck, 1989; p11)

White (1994) envisages such an empowering process in terms of enabling audiences to 'collectively participate' in the communication process, with broad consensual decision-making regulated through permanent co-ordinating councils ensuring public accountability in information power. Reinforcing this would be forms of financing to protect against minority monopolies, and public education for a more 'responsible' media in normative terms. To stimulate public movements holding such values, links between alternative media and the 'participatory co-ordinating bodies' would be necessary to facilitate structural change. White advocates a 'negative' strategy in

...ion around 'the critical analysis of inequities, of the
repression of communication suggesting an urgent
While such a strategy may be most appropriate for
conditions of extreme authoritarianism and abuse of power, it is probably not the
best method for South Africa at the present time. It would be extremely dangerous
for conflict to upset the development process at this crucial stage, although at the
same time misuse of power should never go unchallenged. In terms of the harmonic
autopoietic theory however, it should be possible to embark on a positive,
constructive programme which can enhance national development, self-sufficiency
and self esteem. Such a process could involve what White terms 'reinventing
technology', in establishing alternative exchange-of-information networks and new
centres for codifying the meaning of identities and events.

Chapter 5: Interactive Empowerment Projects

Introduction

In order to test the applicability of some of the above-mentioned theoretical notions, I embarked upon two projects for practical study. The first was a home-based project to investigate interactive video usage, in the context of the autopoietic paradigm. This project, called SkrOO-TV, was initiated in 1994 with the aid of my course colleagues Atilla Alpman and Liza Bold, Centre Director Prof. Keyan Tomaselli and friends Morgan Kinnear, Jay Simon-Dorsai and various of my fellow commune dwellers at home. The second project was an experimental community access television broadcast called Greater Durban Television (GDTV), which took place from the University of Natal's Durban campus in June and July 1995. This project provided an opportunity for an examination of the practicalities of small-scale broadcasting and enabled me to develop the process of practical and theoretical understanding which the 1994 project had initiated.

Theoretical Context

These projects were not ends in themselves, although they were fun, interesting experiments which contributed experience and knowledge in the field of community electronic media. The activities in question have more long-range implications however, which relate to the evolution of human consciousness. As I have pointed out, consciousness involves an interaction with environment, often through technologies such as language and its derivatives in audio-visual media. Such technologies grant us the means to communicate with one another, to record our history and experience and to represent the world to ourselves, as well as facilitating our exploration of who and what we are in relation to that world. In the long term, media technologies can be used to evolve communication and language forms which will better equip us to communicate with one another and to represent our world, so enabling us to raise our level of consciousness as a species.

In addition to such evolutionary processes, the dynamics of power in society must be addressed if we are to alter our relations to one another as human beings, as well as our relationship with our world, for the better. For people outside of the power elites to combat the uni-directional information flows of mainstream media and their

necessary to seize control of the means of Postmodernism teaches us about the relativism of the grand narratives of modernism have manufactured truth principally through control of media mechanisms. Now is the time for the small story, the individual and community narratives which define truth for knowledge communities, which can celebrate their diversity through a multiplicity of voices. There is no easy answer to the problems which confront us in the latter half of the Twentieth Century, but it is imperative to recover the space necessary for informed deliberation and debate, in the face of the monopolistically inclined, oligarchic power imperatives which define the terrain of both the old world and the so-called 'New World Order'.

We have the means at our disposal to create convivial technologies, and this means valuing the human factor of production at least as much as its technological aspects. Technology is a double-edged blade which can be used for good or ill. As the merger of man and machine becomes more pronounced in the cybernetic age, we must guard against losing our most sacred human dimensions to the Titans of materialism, rationalism, control and profit. In order to do this, we must find empowering ways of using technologies to subvert existing power relationships, which means transforming patterns of information flows so that as many people as possible can participate in the production of knowledge and the generation of images by which we represent our world. Representation through images also unleashes visual imagination and its creative potential. For these reversals of the current order to take place requires in the first place the construction of modalities of technological use such as community media and information services. It is also necessary to defend existing free information spaces such as those afforded by the Internet, which is now everywhere under attack by reactionary forces of government and capital (Buchanan, 1996).

The capacity to generate new images in cyberspace, adding to the plethora of surfaces which characterise hyperreal media, is not in itself empowering. While the convergence of media and communications technologies today hints at a 'metamedium' for the future, mere access to this new dimension is not liberation. 'Cyberpunk' author Bruce Stirling describes the cyberspace of the future:

The Net was a lot like television, another former wonder of the age. The Net was a vast glass mirror. It reflected what it was shown. Mostly human banality. (Stirling in Sunfrog, 1995).

Despite the prosaic nature of many 'alternative' media practices, in community media or on the Internet, the capacity to have a voice to speak out against the blare of the culture industry and its media creates opportunities for temporary autonomous zones in cyberspace. This in turn offers the potential to magnify other temporary autonomous zones created in the field of lived human experience, a return of the real in the face of the ersatz hyperreal. It is through such liberating moments that Mind can manifest itself more fully, and human beings can acknowledge communication, communion and transcendence.

The creative potential of the new media in the hands of those who are not bound to profit-making formulas also potentiates the creation of new mechanisms for communication, in other words the creation of a new language or language forms through which we can communicate and represent our world. This opens the way for self-transcendence of the human macro-system on planet Earth, by altering the

Wanting 'Metaman' (Stock, 1993) the opportunity to consciousness might be escalated to a higher plane requires application of the principle of interactivity, ie. the involvement of people in an active rather than passive fashion. The following media experiments attempt to do just this, making the audience part of the 'show', through mechanisms such as information feedback (eg. the field telephone of SkrOO-TV) or productive participation, like the GDTV volunteers. Participation enables both reflexivity on the nature of the representational process, so facilitating a deconstruction of hyperreality, as well as the production of meaning by an extended base of producers. Through such processes, knowledge can become understanding, rather than simply information (Taylor & Saarinen, 1994).

An understanding of dynamic systems is central to this emancipatory project, for the velocity of change in our time allows little time for reflection on apparently stable social, economic and production forms. It is no small co-incidence that fractal sets have assumed the popularity they have in recent times -- the significance of these attractive patterns lies at a deep, intuitive level, and has important implications for our ability to understand dynamic change and the possibility of altering the probable outcome of dynamic human systems. In the following projects the behaviour of chaotic systems has been explicated on an overt experimental level, eg. through showing the video on chaos theory at a SkrOO-TV performance, as well as on the level of analysis in trying to understand the processes which occurred during the life of GDTV.

In the long term, this theoretical work and its experimental underpinnings supports a three-fold aim:

1. to build social structures which can carry forward the momentum for positive change in our society;
2. to create media vehicles to embody mythic imagery which can affect people's attitudes and beliefs in a constructive fashion; and
3. to perpetuate the notion of the temporary autonomous zone in both media and human experience, through the establishment of alternative media mechanisms and transformative, interactive events.

Ultimately, this document will only achieve its fullest communicative potential in cybernetic form, that is through its translation into a multi-media format such as the World Wide Web or a hypertext programme. In this form it will obtain the characteristics of non-linearity (the 'info-sphere') and a multi-representational capacity in the compaction of text, graphics, still pictures and video footage. The creation of links between information items (eg. paragraphs, words, phrases, chapters, images) as well as the use of images taken from the broadcast experience, will enable understanding of the lived historical experience in a way that a mere textual item cannot match. This will also open the way for explorations into new realms of activity such as those outlined in Chapter Four. Not only will information be made available to a worldwide audience, but that audience will be able to co-create a vision for the future, which can be acted upon in the establishment of new media forums, activities and events. Such a programme would fulfil the iterative criterion of dynamic system change, being in effect a strange attractor about which creative energies can coalesce. For example, creative trance states are unlikely to be generated by mechanisms such as television or the Internet but knowledge about them can be spread by media mechanisms, linking and enhancing attempts to apply

Such communication can also facilitate an
transformative capacities.

Similarly, the notion of empowerment through media can achieve its active expression through the same sharing of knowledge across information boundaries, ie. by means of the globally accessible, interactive conversation forum of the Internet. In this way information about the community media experiments can be widely distributed in a cost-effective manner, and this will happen in an interactive fashion -- ie. the 'audience' will be able to contribute to the body of knowledge through content authoring and debate. In this sense, the broadcast experiments of SkrOO-TV and GDTV are not over, but have only just begun.

SkrOO-TV

The aim of this project was to investigate the impact of technological intervention in exploring the feasibility and functioning of 'interactive television', in the context of developing a model for local television broad- and narrowcasting. This involved introducing a local 'community' to the concept, getting people involved in activities in this regard and involving video technology in an art project which dealt with ideas about representation and media.

The project involved setting up 'interactive' video/television events at the communal house I was living in at the time, in the Durban area. The initial event consisted of a setup in the living room with two TV sets, each with a video player attached, connected to a hi-fi sound system. A 'TV studio' was set up in an adjacent room with a video camera, lights and makeshift backdrops, as well as an old army field telephone for communications with the viewing room. My housemates and assorted hangers-on provided the 'crew' for the occasions, a motley audience was invited to attend, and a group of young stand-up comedians joined in as part of one show. A range of videos were shown, including a discussion of chaos theory and fractal sets, subversive music videos by the 'video activist' group Emergency Broadcast Network (EBN) and confrontational art videos by avant garde film maker Ian Kerkhof. Studio presenters were slotted in between videos from the adjacent 'studio' and interviews were conducted with audience members from this same venue. The audience could ask questions to the presenters via the field telephone. House events of this nature were staged on two occasions, while similar techniques were employed on another occasion involving a local performance art group at a nightclub venue. Details of these events are provided in Annexure 1.

The principal participants and myself believed this project addressed a need in our local Durban 'community' (made up of house dwellers and friends), in looking to the future provision of an electronic media service quite distinct from those offered by the existing media networks, SABC-TV and M-Net. This difference exists in:

- allowing local, non-professional people to engage with the TV medium in an interactive way.
- offering a training function whereby ordinary people and artists can gain an insight into the construction of television programmes and some hands-on experience in their making; this facilitates a subversion of existing genres in the development of more vibrant and innovative programmes.
- providing a media forum where interested individuals and groups can experiment with using video for their own purposes.

power people by enabling them to develop skills,
the medium.

The method to achieve the above points lay in creating a series of events to engage people with video technology in an interactive way and the showing of video productions which would stimulate thought and ideas. These events were intended to both engage the energies of those who were already interested in the project, as well as drawing in other interested parties and popularising the concept generally. Potential members (eg. theatre groups) were also identified and invited to attend/participate. The idea here was to create a series of events which would form a strange attractor in the phase space of the local cultural milieu. Socially motivating factors such as interest in small-scale media, talk and attention would pave the way for other similar attempts. As Sheldrake points out, the creation of a new morphic mould is always a difficult process; but once achieved, it becomes progressively easier for dynamic systems to follow the developmental chreodes now established, and for the fresh morphic form to develop and multiply. So in this instance the potential for more electronic community media to bloom in the South African landscape is potentiated by a small increment, which can in turn affect the country's total information environment. This is not to say that, once established, such media will inevitably be successful. Indeed, the American experience has shown this not to be the case (Bowen, 1996; McChesney, 1996), and community media will inevitably have an uphill battle to survive in the economic jungles of late capitalism.

Empowerment in the above context involves equipping people with the skills and opportunities to articulate their particular concerns and individual creative potential. These aims were obviously limited in the SkrOO-TV context, but nevertheless, certain guidelines to future action could be sought. Those participating in SkrOO-TV had the following basic interests/aspirations:

- acquiring video production skills (eg. scriptwriting)
- experimental media production
- developing creative potential
- creating employment opportunities in this field
- developing alternative communication networks

The factor of participation in this project was crucial for developing understanding of democratic processes, involving people in the creative process of project development. Inevitably in project development the onus is on the originating party to provide the energy to drive the system, so the enthusiasm of others must be called in wherever possible. The SkrOO-TV project was participatory in that:

- plans for the events were debated within the group and consensus reached on objectives and methods.
- audience participation was a vital component of events. Comments, criticism and creative participation were invited from audiences during the course of the event programme.

Autopoiesis and Empowerment

the scope of an autopoietic theory of empowerment. self-organisation would take place once the . It is difficult to evaluate this factor because of the difficulty of developing electronic media, which relates to factors of cost, energy and expertise. Nevertheless, SkrOO-TV in its small way did make some impact on Durban's cultural milieu, as will be shown later.

In order for the project to achieve some measure of empowerment for its community, it can be evaluated in terms of the following points of an empowerment paradigm enumerated by White (1994):

1. Affirmation of personal expression of cultural identity. The project would enable participants to creatively express themselves in the context of sub-cultural activity. It would provide a situation which questions the parameters of television production, ie. what are/are not acceptable images, what is narrative, what other forms could be constructed?
2. Ability to use and critically create a discourse that affirms cultural identity, and to do this create a media group that expresses cultural identity. The group participated in the creation of programmes which expressed, in an artistic fashion, their concerns and ideas about society, the media and video production.
3. Awareness of the discourse tradition that has affirmed and created a cultural identity. Alternative videos dealing with provocative performance and video art were shown to demonstrate how existing formats can be subverted or challenged.
4. Ability to decode and analyze causes behind the construction of our cultural identity. By producing an alternative media format, participants were made aware of the difference between this and conventional formats. This enabled a questioning of the latter, together with an awareness of why they are constructed as they are. The participatory format makes the process inherently reflexive, which enables critical reflection on ideological motivations.
5. Ability to see need for and set in motion movements to create the material conditions for cultural identity. This would involve engagement with the existing lobby groups who are mobilizing action for community television', eg. the projects of the Film and Allied Worker's Organisation (FAWO). In this way our endeavours would be part of an existing broad movement for public access television.
6. "Political participation" base for cultural identity. This programme is political only in as far as it challenges censorship and subverts the status quo.

The project's reference to chaos theory was strengthened through two mechanisms; a) by its constant reference to the 'strange attractors' of fractal patterns and chaos theory, and b) the rather ad hoc, 'home-made' manner of its operation. In this regard it aimed to alter the probabilities of social movement formation by focusing creative and production energies on the 'nodal point' of the interactive television idea. The degree of resonance attained with broader community cultures could encourage others to follow suit with their own ideas for the harnessing of such technological means to their own empowerment aims. The intervention was thus a creative one, aimed at affecting the mass psyche on a long-term basis, by causing currents of recursivity within the cultural environment, leading to patterns of action and probability change. This change would be measured in the amount of ensuing

...adds for bringing the notion of interactivity to the
...paradigms of individual or community media activity.

This harmonic autopoietic effort also involved consciously addressing the 'mythic' element of cultural activity, in structuring interactive presentations in a coherent manner. Thus a 'ritual' was embarked on at the start of any SkrOO-TV event, in which the logo first appeared on screen, followed by a presenter introducing the evening's activities. So even in the most informal environment, a sense of meaningful ritual activity was engaged, which elevated the nature of the activity above that of mere play' into the realms of significance to broader patterns of cultural action, ie. a sense of developing a 'real' model of operations for possible future broadcasts.

University-owned video equipment and a privately-owned computer were used to provide the technological basis for group endeavour. Utilization of these resources enabled group members to develop their skills and creative abilities, as well as investigating the potential for audience participation via communications strategies. Through the process of experimentation, participant's conceptions of what television is and what it could be were redefined. Participants become more aware of what terms such as 'participation' and 'democracy' could mean in term of the television medium.

Project Evaluation

The project history is available for scrutiny in Annexure 1. In evaluating this project, let us consider its effects on local patterns or fields of behaviour and thinking. White (1989) specifies 'access and participation' as cohesive forces defining decentralised alternative patterns of communication in social movements. He notes that 'evolved symbol systems define new media languages and new social contexts', and that democratization involves redefining useful information and its symbolic organization. Interactive media are useful in this context because it is an approach which is 'more user-oriented than source-oriented', facilitating the generation of shared meanings between individuals and groups which are separated in space and time. This is then a collective process where meaning is shared and integrated in the context of new participatory patterns, new forms of expression and practical accountability.

SkrOO-TV aimed at developing a model of interactive television which could inform debates about interactive media in a practical and constructive fashion. In terms of harmonic autopoietic theory, it aimed at the application of energy to a particular social nexus, defined by the intersection of the concepts of 'interactivity' and 'television'. Particular sub-cultural resonance was effected by utilizing chaos theory and fractal set patterns as the strange attractors about which other elements could cohere. In this way it was designed to stimulate other individuals and groups to initiate or reformulate their own patterns of action in ways which would echo the concerns of SkrOO-TV, namely the application of technology to attaining modes of interactivity and social outreach or communication. In achieving these ends, the autopoietic nature of social functioning would set up information flows within the social matrix as a whole. In the long term, sustained harmonic resonant action could have a significant effect on the pattern of social functioning of national cultures. In other words, notions of technological applications to enhance interactivity and dialogic communication would be popularised and ultimately implemented on a more widespread basis. Thus the initial intervention would be amplified through resonance



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ture, ie. through networking with others engaged aims.

The extent to which the project achieved the above aims was limited. Only two participants, Atilla Alpman and myself, continued an active engagement in community broadcasting initiatives. Nevertheless, SkrOO-TV was certainly a precursor in the Durban area for the next project, GDTV, which took place the following year. My own experience of SkrOO-TV production certainly proved salutary in the GDTV production process, where many creative, ad hoc solutions had to be found to problems around equipment and broadcasting procedures.

Greater Durban Television (GDTV)

My experience with producing SkrOO-TV led to my involvement in the GDTV project, which evolved through collaboration between myself, CCMS MA student Mikhail Peppas and a group of other interested parties. This coalition of people interested in furthering the development of community television is consistent with the definition of harmonic empowerment theory outlined in Chapter 4. Here a group of people with similar or 'resonant' interests were drawn together in a joint operation which could apply their collective energies to the project of community empowerment through media. This effort generated resonant energy in the form of public interest, community participation through volunteer efforts and information about the process of community television production and the establishment of a small-scale TV station, which can be of benefit to others interested in the same.

The particular resonance between the GDTV committee members was an interest in transforming the 'info-scape' of the Durban area by establishing a community access television broadcast. In so doing, the pattern of information flows through the region's media would be altered from the simple transmissive model involving professional media producers, to a participatory one involving members of various interest communities in the production process. The resonant effect of a small group of people working together would thus be extended to include others with similar interests, in this case students, community video trainees, independent professional video producers and production facilities.

Historical Background

The genesis of the GDTV project was the establishment of the Independent Broadcasting Authority (IBA), which cleared the way for the formation of electronic community access media. The concept of this national enterprise for South Africa was first proposed at the **Jabulani! Freedom of the Airwaves** Conference, which took place in the Netherlands in 1990. The ensuring framework for community television was enshrined in the Act which established the IBA and which enabled this body to issue broadcasting licences. The IBA Act stipulates that the following conditions must be met for a community broadcasting licence to be granted:

1. The applicant must operate a non-profit entity like a Section 21 Company or a Trust as the governing structure. Any profit that is made must go back into the station or the community which it serves.

3. The community broadcaster must operate with the support and participation of the community it serves.
4. The station should be viable financially and in terms of capacity and the skills of the trustees. Finances can be gathered from a number of sources including advertising, sponsorship, grants and donations, membership subscriptions etc.

Although the IBA legislation opened the way for the formation of community TV stations, there remains a long process of establishing in a more concrete fashion exactly what a community TV station is and how it may be set up and maintained. To this end a grouping of interested parties formed the Community Television Consortium (CTC) in Johannesburg, which aimed at a combined effort to set up community access TV stations. Sub-committees were established to address lobbying and advocacy, research and information, training and advice, fundraising and finances, publicity and marketing in this regard.

From my personal perspective in Durban, the process of transforming the experimental SkrOO-TV experience into an actual TV broadcast was promoted by two local initiatives. One was the community television initiative by the Film and Allied Workers Organisation (FAWO) which brought to South Africa an Australian community TV expert, Tracy Naughton. The brief given to Naughton by FAWO was to investigate the possibilities for setting up electronic community access media in South Africa. Naughton conducted country-wide research in this regard, and addressed workshops in Durban on the subject on two occasions in 1994. These workshops provided an opportunity for those interested in community TV in Durban to come together and discuss the concept, meet one another and establish the relationships which would later lead to a test broadcast.

Naughton played a threefold role in promoting local community access broadcasting. She highlighted the role of technology as a means of empowerment rather than disempowerment; she put community media in a global perspective by citing examples of community broadcasting in other countries, such as Australia and the USA, as well as reporting on global initiatives linking community broadcasters (eg. the Second Olympiad of Local Video and TV Creation); and she assessed and aided local potentials for community broadcasting, eg. by helping a women's group in the northern Transvaal to set up a community radio station.

The second initiative was the Visual Voice Confest, organised two years in a row by CCMS Masters student Mikhail Peppas. The Confest focused initially on visual anthropology, with community media, television in particular, as one of its underlying themes. Naughton gave a presentation on community access television at the first Visual Voice Confest in 1994, an occasion which drew together a number of those who would later contribute to GDTV. Those present included representatives from the SABC's signal distribution subsidiary, Sentech, local video producers, representatives of FAWO and interested students. At this presentation, Naughton related her experiences of setting up a community access television station in her native Richmond, Australia locality as well as her visits to similar stations in the USA. She also discussed her research in South Africa, looking at for example the technicalities of broadcasting and possible relationships between community

service providers like Sentech and its rival company,

Visual Voice '95 was more specifically oriented around the subject of community access media, with the central theme "The Role of Community Access Media in Reconstruction and Development". The stated objective of the confest at an early organising stage (22nd March 1995) was to "help to put community access media and community TV on the map in South Africa", and the event was aimed at "the broader public, media practitioners, the NGO sector and the great majority of people who have never had access to media in the past". The event was also an opportunity to put theory into practice by establishing an experimental community access television station to broadcast in conjunction with the confest. The broadcast component was made possible by a "special event" broadcast licence from the IBA, and various companies, including Sentech, agreed to sponsor the requisite equipment.

The aims of the experimental broadcast, called Greater Durban Television (GDTV) were as follows:

1. to provide a model for community access broadcasting which could inform other such initiatives countrywide. This would include components such as the necessary equipment, negotiating with the IBA, local community involvement, broadcasting procedures, etc.
2. to develop people's skills in a broadcasting environment and to network with local video producers, community organisations and institutions to build up a support base for a broadcast operation.
3. to provide a "voice for the voiceless" in other words to provide a channel for the expression of local community concerns through the medium of television.
4. to display contentious issues which might not receive coverage through other media, in particular national television.
5. to popularize the concept of community access television in the greater Durban region.

The organisation of both the Visual Voice Confest and GDTV was undertaken by a coalition of four organisations: the Centre for Cultural and Media Studies (CCMS), FAWO Kwa-Zulu Natal, Audio-Visual Alternatives (AVA -- a community video training organisation) and Durban Arts (an arts project of the Durban City Council). Both events took place on the University of Natal campus, with the GDTV studio situated in a room atop the Electrical Engineering building, giving a fine view across Durban harbour. This location was particularly advantageous because it gave a clear line of sight for the microwave link to a Sentech transmitter located on the Bluff, on the other side of the harbour. The disadvantage of this locale was that the studio was situated in the Electrical Engineering Department's Radiation Laboratory, a site which was to cause some problems later.

I undertook the functions of publicity, programming, mobilising students from the Natal Technikon's Department of Video Technology (where I was lecturing) to participate in GDTV, programme production and station management. Planning the events took place on a co-ordinated basis over a period of about two months prior to their occurrence. Activities in this regard included organising equipment sponsorships, applying for the broadcast licence, publicity, networking, logistics, advertising on the station, etc.

The achievement of a temporary autonomous zone, in media as anywhere else, involves mobilizing people to support such a venture. The mobilization of volunteers for GDTV was a good experience in this regard, for it pinpointed certain key areas where people could be mobilized to participate in a community media project, as well as highlighting certain weaknesses in the process embarked on for GDTV.

The process of mobilising other people to take part in GDTV took several forms. I encouraged Video Technology students from the Technikon by showing them videos about community access television and by holding regular meetings where I filled them in about GDTV plans, and organised groups around specific video projects. These projects included an environmental group, an animal rights group, and a "What's On in Durban" group. Each group was supposed to research, shoot and edit a video on their topic. Students put their names down to participate in these groups as well as to crew the broadcast studio. The topics chosen for group production arose out of my own interests, the students not being forthcoming with ideas of their own.

The response from the student body in this department was not as enthusiastic as one might expect. The largest response was from first year students, with very few second and third year students participating. This response profile may be due to several factors:

1. the third year students were very pressured to finish their video projects for the semester before going off to do their working internships with various video production companies. Most of them were thus engaged in full-time internship work when the GDTV broadcast took place, although it was during a holiday period for the other years.
2. the second year class responded poorly to an earlier attempt by myself to involve them in activities not in their normal curriculum, in this case an exercise where they were supposed to conduct interviews with one another on camera. Their lack of response to GDTV may be due to:
 - A lack of interest in non-curricula activities.
 - Lack of motivation due to the voluntary nature of the work (ie. no payment involved).
 - Involvement in other video-related activities at the time of the GDTV broadcast; eg. the department sent its Outside Broadcast (OB) van to cover events at a major surfing contest shortly after the GDTV broadcast.
 - Involvement in non-video related activities, ie. going away on holiday or working.
 - Lack of rapport with myself as a lecturer.
 - Lack of empathy with the nature of community television. These students are channelled into the "professional" mode of thinking which equips them for jobs in the mainstream video/broadcast industry. This is a modality which values money above idealism; sophisticated high-technology rather than accessible low-tech; and an elitist approach to media work rather than a "peoples" or access approach.
 - Lack of formal involvement of the department. Although the Department of Video Technology was listed as a convening body, the department's actual involvement was limited to simply allowing student work to be screened, allowing students to participate and

- departmental video equipment to be used before the
or to the actual GDTV event.
- the other lecturing staff. The permanent lecturing
staff of the department showed no more than a passing interest in the
GDTV broadcast, for largely similar reasons as those listed above.
Another reason given on occasion was the racially based perception
that the word "community" referred only to black people, and the
white lecturers had negative perceptions of this population sector.
- A perception that community television is mainly political in nature. I
had two videos which I used to inform the students about community
access television. One, "Whose TV", is an Australian production which
takes a fun approach to the medium. The other, "Deep Dish", is an
American production about the US Deep Dish satellite network of
community broadcasters in the USA, which takes a more serious,
political angle. I was only able to show the latter to the second year
students, while I showed the former to the first years.
 - Student motivation. Many Technikon video students do not appear to
be particularly interested in the medium. Only a handful of students in
each class are really enthusiastic about video. This may be due to their
youth, a choice of the course simply as a "glamorous" career option, a
mainly technical approach to working with video or a lack of
enthusiastic teachers.
 - the enthusiastic response from the first year students is probably due
to (a) their not being as socialised into the "professional" mode and
general departmental torpor as those in later years and (b) they have
little opportunity to actually use video equipment in their first year.

A total of 51 students put their names down for the GDTV crew list, which was posted on the Video Technology Department's notice board. Not all of those listed attended the meetings where the production groups were formed, so those not in a group were simply assigned as studio crew. Students from the Department of Journalism at the Technikon were also invited to participate, and three of them joined the GDTV activities. The process of organising the students began about one month before the GDTV broadcast. Actual production began with the environmental group, because environment-related activities were occurring at this time (about two weeks prior to broadcast).

The problems of organizing the students during this initial period were offset by the success of subsequent production activities. This demonstrates both the difficulties of creating a harmonically resonant social structure, as well as its successes. The achievements of student production crews (see Annexure 6), like those of the CNG, were surprising considering the limited training experience of these groups. Production activities within the two-week lead-in period to the broadcast gave student volunteers the opportunity to work together on concrete video projects, and the fun side of these activities (eg. covering nightclubs and bands), together with the practical experience they gained, encouraged their continuing interest, dedication and enthusiasm.

In terms of Harmonic Empowerment theory, the creation of a working group of volunteers is an example of a harmony of intention, energy and productivity which enhances the aims and objectives of the project. The collective effort in this regard was to create images which could provide viewers insight into the nature of

groupings within the Durban context. This focus of self-reflection for the city, an opportunity for the lens of their 'own' local TV station. This in turn was enabled by the resonance of energies between those involved in the station, from the organizers to the participants and the subject of their gaze, the people of Durban.

Publicity

In order for a communicative medium to exist, it has to be utilized; telephones are no good without a community of users, and the same goes for media. In order for GDTV to function, it had to be both recognised and sought after by its potential audience. The first step along this path towards creating a group of users in the city and surrounds was through publicity. Activities about this particular attractor became one of my central functions in the lead-up to the GDTV broadcast. In this regard I performed the following functions:

1. drew up a number of press releases, sending them to a variety of media print, radio and television.
2. designed the GDTV letterhead and logo.
3. designed and produced pin-buttons which were worn by GDTV volunteers and sold to members of the public.
4. gave a briefing to the Natal Newspapers group about community access television (and GDTV in particular), which resulted in the Daily News electronic media expert providing GDTV with a daily news programme.
5. drew up information pamphlets which were distributed to the public.
6. addressed the local branch of the National Television and Video Association (NTVA), which helped to mobilise support from the professional video sector.
7. briefing the South African Video Camera Club about GDTV. The SAVCC is an organization of amateur video producers who use their home equipment to produce short pieces for their own competitions.
8. after the GDTV broadcast I spoke on the subject of community access television in a radio talk show.

Publicity was also done by Mikhail Peppas, who sent out his own press releases and who spoke on a radio talk show programme prior to the GDTV broadcast.

In order to understand the relevance of this activity to theoretical underpinnings, we can refer to the notion of cybernetic systems. The creation of public awareness about GDTV served to establish a communications network which would utilize the cyberspace communications device of the TV station. We can see GDTV not as simply a TV station or a constituted body (in legal terms a voluntary association), but as one component of a total information system. The basis of this network was the volunteers, because they both produced material to be broadcast as well as forming its audience, together with their friends, families, acquaintances etc. GDTV volunteers were then the core constituency of the station, engaged in a two-way interaction with the mechanism of GDTV itself. This is an intrinsically dialogic flow of information, albeit in this instance a limited one due to the absence of structural

agement by volunteers in decision-making

The core volunteer constituency broadened when the people of Durban started to become aware that something was happening on their airwaves and began to tune in to the station. For this process to occur, information diffusion was necessary through other media. The start of this process was, appropriately, the creation of an image for the station. This took the form of a logo with a grinning cat's face in its centre, emblazoned with the letters C.A.T. and the words 'Community Access Television'. The creation of the logo crystallized an identity for the station, particularly with various rebellious slogans printed on the buttons, such as 'Home Grown', with a picture of the C.A.T. cat smoking a joint. Since dagga (marijuana) is one of Durban's best-known sub-cultural icons, this image was singularly appropriate to its young workers and their peers in the station's prospective audience. These badges were worn by student volunteers on productions in the field, so consolidating their identification with the station and its aims, as well as promoting awareness of the broadcast among the greater community.

Press releases were another stratagem employed to widen interest and participation. A variety of releases were drawn up (see Annexure 7), and public participation was also requested via the media. In this way existing communications networks were invoked in order for GDTV to slip into the consciousness of the city. The communications mechanisms of word-of-mouth, print media, television, radio and the imprint of image were used to insert GDTV into the lexicon of city talk and thereby into the thought of its citizens. Newspaper articles, based on our press releases and reporter interviews, explained the aims and objectives of the station prior to broadcast. Radio interviews both before and after the broadcast did likewise, and a television insert about the station was screened on SABC-TV.

Overall, I did not feel that GDTV received a great deal of coverage by the press, although a visiting American community TV producer expressed the view that coverage was good compared with mainstream media exposure for similar ventures in the USA. The absence of more column inches devoted to GDTV in the local press may have been due to:

1. a desire to minimize publicity for a competing' medium.
2. lack of confidence in a TV station being launched with no financial backing.
3. lack of any hype' for GDTV through major marketing campaign, high-profile personality involvement etc.
4. lack of interest in a public service medium.
5. the station being a temporary experiment rather than a long-term installation.
6. the station having an amateur rather than professional status, with attendant perception of poor quality programming and corresponding lack of public interest.

newspaper articles:

Publication	Date	Length	Picture
<i>The Mercury</i>	19th June	2 columns, 18 lines	No
<i>Daily News</i>	21st June	3 columns, 30 lines	No
<i>The Mercury</i>	23rd June	4 columns, 80 lines	Yes
<i>Mail & Guard.</i>	Jun 30 - July 6	4 columns, 100 lines	No
<i>Sunday Tribune</i>	2nd July	3 columns, 40 lines	No
<i>Daily News</i>	6th July	1 column, 24 lines	No
<i>Daily News</i>	7th July	??	Yes
<i>Daily News</i>	21st July	2 columns, 33 lines	No

Other articles:

Publication	Date	Length	Picture
<i>Videazimut Clips</i> (International audiovisual newsletter)	June 1995	2 columns, 69 lines	GDTV logo
<i>D'Arts magazine</i>	April	1 column, 49 lines	No
<i>D'Arts magazine</i> (publication of Durban Arts)	July	1 column, 33 lines	Yes
<i>Sub Text</i> (publication of the Centre for Cultural & Media Studies)	Winter 1995	3 columns, 41 lines	No

The news angles given by the press releases which obtained coverage included the granting of a temporary broadcast licence by the IBA and the civic reception given to Visual Voice international delegates by Durban's Metropolitan mayor. Articles generated by journalists themselves were concerned with the station being 'up and running', ie. they were written after the station had started broadcasting. Positioning in the newspapers was fair; The Mercury article on 19th June was on the front page; the Daily News article of 21st June was just under the editorial column; The Mercury article on 23rd June (the longest article printed, with two colour pictures) was on the paper's feature page which appears opposite the editorial page. The Daily News article of 6th July appeared in the paper's entertainment supplement 'Time Out', being well positioned to catch reader's attention under a colour picture of some scantily clad showgirls from an erotic revue. The Tribune article of 2nd July was positioned on the paper's media page, just above an article on internal conflicts besetting a local community radio station. Fortunately for GDTV, no journalist picked up on the difficulties experienced by the station and all the articles which appeared put the station in a positive light.

GDTV began broadcasting on Thursday 22nd June 1995. This first day of broadcasting had not been widely publicised because the station was to be 'officially launched' at the mayor's civic reception the following night. This also enabled the first day to be a testing ground for using the equipment, which was only set up the day before and for getting everyone involved into the routine of broadcasting procedures. The fact that the broadcasting equipment was set up immediately prior to the broadcast meant that we had no time to train our volunteers in its use. This late setup was due to the IBA having delayed the granting of a broadcast licence, without which the equipment sponsors would not provide the equipment. Those volunteers who did studio duty on that first day were thus thrown in at the deep end, finding themselves going out live on air as presenters as well as learning to use the equipment at the same time.

The studio was crewed by students from the Natal Technikon's Video Technology Department, with other more experienced video workers from a local video production company overseeing the broadcast as studio managers. Presenter links between programmes were done live in the studio, initially with the studio crew doing the links. Later the presenters selected through the auditions process came in and did the links, sitting against a makeshift backdrop, using the studio camera with one redhead light.

The GDTV broadcast process can be examined in the light of the preceding theoretical presuppositions; these are 1) whether GDTV fulfilled the criteria of a convivial technology; 2) did it exemplify the characteristics of a self-organizing system and 3) was it an example of a harmonic empowerment project? To address these questions, we can consider GDTV in terms of a functionalist perspective of cybernetic systems, asking the fundamental question of whether or not GDTV achieved its objective of providing useful, empowering information to its constituency of users, both viewers and producers. I will firstly deal with the notion of GDTV as a convivial system in relation to its structure and usage of technology. The station's status as a self-organizing system is dealt with in terms of programming and problem areas in the broadcast process. The question of harmonic empowerment is addressed in a discussion of the station's relationship to the various communities which it involved.

Conviviality

Firstly, in order for GDTV to be considered convivial, it would have to fulfil the criteria set out by Illich (1973), as specified in Chapter 1. In this context, GDTV as a social and technological mechanism would have to extend the productive capacity of its participants in a non-hierarchical fashion. Certainly the technology utilized by GDTV served this function, being readily usable by people with only a minimum of video production training. Technical proficiency was never awarded any particular importance in the broadcast, and the many technical mistakes which were made were readily excusable in terms of the station's nature as (a) an experiment and (b) a community project.

However, the lack of technical proficiency raises the question of how sustainable such a station could be if it were not an experimental broadcast, staffed largely by students and trainees. For a community television station to be viable in the South

Commercial funding is scarce, it would have to be dependent on government. The media norm for advertisers/marketers is that professionalism guarantees the impermeability of the media surface, ie. the slickness with which the product is presented in its media 'packaging'. For example, in my own experiential training in SABC-TV, it was considered the height of professional incompetence for the screen to be left blank for even a moment the flow of images had to be continuous, a seamless current of flickering forms to hold the viewer captive in the illusion of continuity.

The problematic of funding for a community TV station reveals the tension between the needs of the various parties involved -- on one hand, producers drawn from the community, on the other, the advertisers who might pay for the broadcast. So while a convivial technology, in Illich's conception, guarantees access to the means (or "tools") of production, the question arises of how these tools are to be used, and to what ends. While the Technikon students at least could view their involvement in the GDTV broadcast as a means to an end in gaining experience which would stand them in good stead in future careers in the professional broadcast industry, others among the presenters and FAWO trainees viewed GDTV as a potential job opportunity, were the station to gain a permanent broadcast license. The 'tool' afforded these people by GDTV would then have to be used to generate income, rather than simply being a communicative mechanism for 'the community'. A community broadcaster might also be viewed as primarily a training ground for future broadcast professionals, and hence funded along similar lines to other training institutions. However, the fact that government, one of the major funders of education, is precluded by the IBA from active involvement in a community broadcaster, even through funding mechanisms, tends to narrow this possibility.

Ownership of a station by tertiary institutions could be another possibility, although such institutions in South Africa are also currently facing an economic squeeze. Nevertheless, a focus on educational broadcasting for a community station could be one solution to the funding problem, as the example of the educational video service Africa Growth Network (AGN) demonstrates. Although AGN is a commercial operation, it delivers a 'product' which is not linked to advertising, but rather has a value in itself -- ie. education/training.

The relation of conviviality to alienation is also a significant factor in community broadcasting. Unlike most modes of industrial production, the relationship between producer and product in community broadcasting is far more immediate and intimate. All of those in the GDTV production teams participated in various aspects of programme production, including decision-making and even broadcast. So a presenter might suggest items to be covered as well as going out on shoots, and then be the studio presenter at the time the insert is broadcast. Similarly, other members of the production teams often fulfilled multiple roles, for example doing directing, camerawork and editing on their inserts.

Production teams had a lot of discretion as to what they would shoot and how they would shoot it, enabling them to bring their own initiative and creativity into play in the production process. Their involvement was limited mainly by their inexperience and lack of adequate skills -- although at the same time, one of the major problems of GDTV was the lack of involvement of production personnel in the major decisions affecting the running of the station. No provision was made for involving these people in GDTV's decision-making process as far as overall policy decisions were

necessary to have a management team for a
n personnel cannot be consulted on every aspect of
those 'in charge' of GDTV were not really
accountable to this primary constituency. This factor then limited the social
conviviality of GDTV, an aspect which made itself felt in the lack of 'team spirit' in
the station, or a sense of belonging to a real community.

Although the technology of GDTV fulfilled the first criteria of a convivial medium, that
of a 'human friendly interface', the station failed to adequately fulfil the second
requirement, that of 'interactive, dialogical cybernetic systems which enable people
to participate in the process of meaning construction'. While production personnel
were able to participate effectively in production processes, power relations at this
level being relatively horizontal in nature, they were not able to participate at the
level of station management. This precluded a sense of 'ownership' of the station,
and can be attributed to two main factors; the first being the logistical exigencies of
the experiment, and the second being the lack of formal structure of the GDTV
organization. These factors will be dealt with in more detail later in this chapter.

Equipment

In order to provide an accessible and convivial television service to local
communities, two factors had to be taken into account. The first was to set up a
broadcast station with available resources, ie. without spending millions of rands on
the kind of equipment used by professional broadcasters. Linked to this was the
second factor, that of providing a facility where videos made by non-professionals,
such as students and NGOs, could be broadcast, as well as providing a broadcasting
setup which could be easily mastered by inexperienced users. To achieve these ends
required setting up a broadcast station using a basic set of equipment items obtained
through sponsorships. The broadcast video format utilized was the readily accessible
VHS format, which is of significantly inferior quality to the global professional
broadcast standard of Betacam.

The broadcast utilized the following equipment:

- 2 x S-VHS video players
- 9 x video monitors
- 1 x audio-visual mixer
- 1 x edit controller
- 1 x video camera with genlock
- 1 x 486 PC
- 1 x overlay patch board
- 1 x microwave link
- 1 x audio mixer

This is a very basic setup for a television broadcast, the most complicated pieces of
equipment being the audio-visual mixer and the PC. The former was used for
switching between the video tapes being played on the video players, while the latter
was used for generating the animated test pattern, the GDTV logo which appeared in
the top left-hand corner of the screen during programmes, captions and programme
information (during off-air times).

...nt because it was the first time in South Africa that (5-VHS) were used in a television broadcast. The results clearly demonstrated the myth of broadcast quality perpetuated by commercial broadcasters, who insist on using expensive, high-quality equipment for video production. The expense of such high-quality prohibits access to those who cannot afford it, and GDTV's successful use of low-quality formats was a significant step in opening convivial access to the airwaves for communities and individuals with only small budgets to back their productions. The successful implementation of VHS formats is due to improvements in video technologies over the past few years, as well as the limited range of the broadcast. The reception quality of the GDTV broadcast varied considerably in the Durban area, but this was apparently due to the low strength of the transmitter rather than the video format used.

Programming: Chaos and Creativity

The question of GDTV as a self-organizing system can initially be addressed by examining the processes of production during the broadcast, as well as the principal problem areas which beset the experiment and attempts at their resolution. This sector of the discussion will be a fairly lengthy exposition, and we begin with the aspect of programming.

Problems with GDTV's scheduled programmes surfaced soon after the broadcast commenced, these being of a two-fold nature; firstly the scheduled panel discussion on censorship could not be shown, because permission still had to be obtained from the Censorship Board to screen the film "Necklace". This presaged one of the major ongoing problems with the broadcast, that being that programme schedules often did not match the available video tapes. In order to fill the gaps other video tapes were slotted in on an ad hoc basis, programmes being selected from whatever tapes were available in the studio at the time. In the enthusiasm of the first day's broadcast, some personnel got carried away and ignored the scheduled broadcast times, putting tape after tape into the machines and transmitting anything that came to hand. This led to some creative programming: local video producer Andre "Budgie" Smith brought in some of his unedited video footage and broadcast it, giving a voice-over live on air. Smith also went out that evening and visited various locations such as the Technikon's graduation ceremony, asking people about what was going on and informing them about the GDTV broadcast, using a very freestyle, camera technique in a rather *cinema verite* mode.

While there seems little harm in this kind of random programming taking place during the first day's 'test' transmission, it led to problems the following day, when certain parties insisted that programmes be broadcast continually, without regard to scheduled broadcast times. The problem here was that we did not have enough programme material to fill the entire broadcast period, even during the limited hours of scheduled broadcast times, which meant that many programmes had to be repeated a number of times during the broadcast period. The insistence on continual broadcasting would have meant that this shortage would have been compounded tenfold with the station broadcasting a never-ending cycle of reruns. While it is not an entirely bad idea to have reruns, so that viewers who miss one programme screening can catch it at a later date, it would be counterproductive to overdo this, leading to a very boring broadcast pattern.

Programming had been divided according to particular development, land and housing, women and gender. Behind this was that these divisions facilitated the placing of available programmes as well as to identify gaps where particular programmes could be called for. In addition to these categories, which were allocated on a daily basis, each day's broadcast periods were assigned to the following criteria:

Morning educational
Afternoon topical
Evening late night viewing

Programming was taken from a variety of sources to fill these slots and provision was made for daily slots to be filled by ongoing production processes, specifically from the groups of video production trainees and other independent producers. Other material included international public access television programmes, footage from the Visual Voice Confest, videos from local media and development groups such as AVA, FAWO and the Culture and Working Life Project.

However programming did not stick exactly to the above guidelines, and it became apparent soon after actual broadcasts began that there was not nearly enough programme material to fill the gaps. Production of 'community inserts' and the like could not happen fast enough to fill the slots which had been left open to them. It was only by the second or third week of broadcast that most of the CNG programmes were ready. In the first nine days of broadcast it was largely left up to the Technikon students and some independent producers to provide local material. The public requests for contributions also had little effect until well into the broadcast period, although one or two people did pop into the studio with suggestions for programmes.

The discrepancies between scheduled programmes and available tapes in the studio was an ongoing one. This had both positive and negative consequences; on the negative side, it precluded the advertising of programmes in the press, a problem which was compounded by the eleventh hour nature of programme scheduling. This lateness was due to both the pressure of work on AVA's Lou Haysom who became solely responsible for programme scheduling (everyone else was too busy with other things) and the way in which programmes came to the station -- some were promised but never arrived, others arrived late or at the last minute, etc. This uncertainty was countered to some extent by leaving 'open times' for programmes produced during the GDTV broadcast period by students and CNG members and other contributors. On the positive side, studio managers were able to engage in 'creative programming', simply selecting from the videos which were present in the studio and slotting them in as programmes as they saw fit. This was an advantage because studio managers were often able to come up with more interesting and appropriate programming than that which had been scheduled, and in this manner participation in the programming process was broadened.

These hiccups in the programming process were very indicative of the types of problems which beset GDTV as a whole. If we analyze these factors in the light of the project's theoretical framework, the nature of the GDTV experience can be better

back to the notion of cybernetic systems and problems such as lack of scheduled tapes in the programming were indicative of disturbances to the overall pattern of information flows, ie. of information coming into the studio and that going out on air. In this way there was a creative, dynamic interaction between studio programmers and the programme environment, ie. the available tapes.

Although this situation led to what I have termed "creative programming", the problem was that the programming environment was too limited to sustain ongoing programming of this nature. Nevertheless, there is an element of self-organization within this seemingly chaotic process, because the dynamic nature of the system as a whole precluded stasis and encouraged creative and appropriate decision-making on the part of studio managers. The system was thus able to organize itself (to a limited extent) onto a higher level of operations, ie. it was more 'in tune' with its environment than was the case in the programme planning stage.

However, another problem lay in the disjuncture between programming and public expectation, in that people did not know when they could tune in to GDTV to catch a particular programme which interested them. Not only were the programmes often broadcast in a random fashion, but the public were not informed about the programming schedule, as is usually the case in television programming, through the media. The capacity of audiences to participate in the total information system, of which GDTV was a part, was thus limited. The situation might have been eased if a measure such as informing the public of broadcast times for programme categories, then slotting in available tapes in that category during those times, but unfortunately this wisdom is only available in hindsight.

Programming: Programming Analysis

We must ask then how the notion of chaotic or dynamic systems and their potential for self-organization can relate to the above programming problems. In the first place, it might seem that the programming was 'chaotic', and so in full accord with chaos theory; however this is not the case, for there is a difference between disordered chaos (entropy) and 'ordered' chaos (negentropy). The symmetry of fractal patterns reveals an ordering principle which underlies certain dynamic systems, and it is this kind of symmetry which should be sought in order for dynamic systems to attain a self-organising capacity. In terms of the GDTV programming, there was a dynamic interaction between the exigencies of the situation and the decisions which were made within that situation. However, in order for such creative enterprises to be successful, an aesthetic element is required; this principle, which is expressed in fractal sets, music, art and science is that of harmony, the balance of factors which creates an overall aesthetic, which can also be understood as meaning. In audio-visual mediums such as video and film, this aesthetic is attained through combinations of image and sound, the composition within frames, editing techniques, narration, interviews and music combining to create meaningful communication. It is these aspects of aesthetics, meaning and communication which were often lacking in the GDTV broadcast.

The precedent of showing unedited footage on the first day's broadcast turned out to be to be a mixed blessing. On the one hand, some people took this as a license to show reams of unedited footage without the benefit of an accompanying voiceover or other device to provide a meaningful context for the images. Examples of this were

mayor's civic reception, various clips documenting and footage of the inside of an outside broadcast. TV audiences are not likely to watch such raw, uncontextualised footage; as one volunteer studio manager put it, he could "hear people out there switching over to the other channels" when these pieces were repeatedly shown as "programmes" during the broadcast period.

However, Smith's free-flowing *video verite* mode of broadcast worked in its own unique way, providing an innovative way of combining live broadcasting with pre-recorded footage. Another method of contextualising visual imagery was employed in experimental broadcasting techniques, which took place after the late night scheduled broadcast programmes were done. This took the form of trying out mixing and layering techniques using the Panasonic video mixer and an assortment of video source material. The technique is the televisual equivalent of what Youngblood (1970) calls 'synaesthetic cinema', which occurs when images are superimposed and the dramatic (ie. theatrical) is excluded. A variety of input sources were used to generate streams of images, ie. the two video players and the studio camera. Some video tapes, for example an ambient music video which I had previously compiled, already had layers of images built in to their structure. Using such source material, combined with the other video inputs, I was able to achieve up to seven layers of images at once. This type of mixing was generally accompanied with music, although other sound layers could also be used.

Youngblood explains the synaesthetic audio-visual mode as a means by which people attempt to express the 'total phenomenon' of their consciousness. This phenomenon has occurred primarily because of television, which for Youngblood is a means of representing dominant tendencies within the collective human consciousness. Youngblood sees television as the 'software' which describes the 'hardware' of the real world, because television

shows the human race itself as a working model of itself. It renders the social and psychological condition of the environment visible to the environment (Youngblood, 1970; p78).

The effect of synaesthesia occurs in terms of the 'simultaneous perception of harmonic opposites', that is a combination of opposites rather than an exclusory dwelling on one or the other. This is a movement from the binary to the triadic, or from 'bistable logic' to 'triadic logic', which encapsulates a yes/no/maybe scenario (or both/and) rather than a simple yes/no one. To see this relationship requires a 'syncretistic vision', which comprehends the totality rather than just its constituent elements; syncretism is 'the combination of many different forms into one whole form' (Youngblood, p84), eg. mandalas, nature, Persian carpets. There is in such vision a focus on relationships, rather than on the elements which relate. The effect of such syncretistic ways of seeing is one of poetic evocation, as opposed to the exposition of narrative cinema. This cinematic poetry facilitates the viewer's experience of what Youngblood terms 'oceanic consciousness', a mystic consciousness akin to the Zen 'no mind', which occurs through meditations on mandalas and mantras. It is a different experience to that of narrative cinema, for 'in evocative synaesthesia an experience is being created' (Youngblood, p92).

I have used the synaesthetic mode in video in a variety of settings; the nightclub performance art event during SkrOO-TV, the late-night experiments during GDTV

traves. In combining different types of video and sound, in addition to the sound dimension of music and meaningful experiences for the viewer/participant through the juxtaposition of meanings, conveyed through images and sounds. This represents a creative, artistic use of the video/television medium. It can be used to reflect upon situations in both a premeditated way as well as in an unstructured, free-flowing manner using live material as it happens. So for example in my ambient music video, Mandala Dance, I combine flowing fractal patterns with images of an embryo in the womb and the earth spinning in space, to convey ideas of life, growth, the planet and organic connectedness. The GDTV experiments were in themselves not particularly significant in this regard because of their generally unstructured nature, but it did provide an opportunity to experiment further with this technique in the broadcast context. In this way an attempt was made to develop the medium of television as a means of meaning generation or language form construction and devices such as this can be used to good effect in ways outlined in Chapter 6.

The fact that screenings of unedited footage did not achieve a synaesthetic effect is due to the one-dimensionality of these images, ie. they were not combined with other elements such as other images, music or narration which could lend them meaning. These factors limited the station's harmonic effect, constraining the efficacy of empowering information flows to its audience.

One could say there was some degree of self-organization inherent in the relatively haphazard selection of programme material because of the interaction of studio managers with the exigencies of the situation. However, for this to be the case in any effective sense would probably necessitate a wider interaction between the system and its environment, ie. a scenario in which audiences themselves play a greater role in the programme selection process. This could be achieved by feedback mechanisms such as phone-ins or computer communications, where audiences vote for particular programmes from a programme list.

Programming: GDTV Problem Areas

The question of GDTV's self-organizing capacity also relates to several key problem areas which emerged within the GDTV process and attempts at resolving them. Certain of these problem areas caused major disruptions during the broadcast period and had serious implications for the success of the project. Some of these problems have caused a good deal of ill-feeling concerning the broadcast, which has a negative impact on the possibilities of similar broadcasts being initiated in the future. In the light of this I will try to explicate these problem areas as fully as possible and suggest ways in which they might be avoided by community access broadcasters, as well as assessing their impact on GDTV as a self-organizing system.

In the main, the problems which beset GDTV were of both a logistical nature (lack of time, personnel and funds) and structural (organisational). In terms of our cybernetic model, these factors point to insufficiencies in optimizing information flows both within the system of GDTV and between that system and its environment. These cybernetic blockages inhibited the functioning of the system and its capacity for self-organization. In making this point, I have been criticized for supposing that an organized structure is necessary for efficient information flows, and that this is apparently in opposition to the free flow of information on the Internet. However, I

is essential for information to flow, and in fact the
hout such organization.

To follow the Internet example through, the Internet requires multiple levels of organization to function, from the computer hard- and software of its constituent components, to the national and international telecommunications networks which link these components, and on the macro-scale, to the economic networks which support the manufacture, supply and installation of these various components. Although the Internet is often characterized as 'chaotic', ie. there is no overall regulation of it, it is in fact far from chaotic. Although everyone on the Internet has a 'voice' in the medium and theoretically can say anything they like, there are social rules (referred to as netiquette') which govern interactions between cyber citizens. In addition to various government attempts to limit access by their nationals to certain categories of taboo information, citizens of the net have to abide by the rules of their particular service providers to gain access -- even if such access requires only payment of a monthly fee, the following of logon procedures, etc. What this demonstrates is that an ordered, formal structure is necessary for information to flow effectively, just as in a public meeting, rules of procedure prohibit everyone from shouting their opinion at once.

In requiring a community medium to have a formal structure, I am not suggesting that it be governed in a dictatorial, authoritarian, top-down manner; I am simply suggesting that particular mechanisms be put in place to a) ensure that it is run in a democratic manner and b) to limit the power of those making key decisions on its behalf. Chaos does not mean disorder, any more than anarchy means chaos. By this I mean that they dynamic systems described by chaos theory have certain underlying ordering principles, which result in the harmonic symmetry of fractal sets, for instance. Similarly, anarchy as a political system does not mean that people have license to run riot, but rather that there are particular social and political mechanisms in place which differ substantially from those currently applied under other models of social organization. We should remember that democracy is not possible without order, nor can a voice be heard over bedlam. Hence my plea for order and structure in GDTV are entirely consistent with the theoretical concerns expressed in preceding chapters, and the particular problem areas of GDTV will be examined in this light.

Personnel and Organization

The limited number of organisers was a key area which weakened GDTV's organization. From the time when the work of organizing the station began in earnest, in late April 1995, there were six people who formed the core organizational group. These were GDTV initiator Mikhail Peppas, Lou Haysom from AVA, Lindi Gross from Durban Arts, FAWO representatives Chuck Scott and Dumi Ngubane and myself from CCMS. The small number of organisers meant that a vast quantity of work had to be done by a few people, most of whom had other major work commitments.

The lack of formal structure in GDTV was an enduring problem. Although tasks were divided among the organizers, work was either duplicated (eg. press releases being sent out by different people), or not done (eg. fundraising). This structural incoherence together with other pressures on key personnel hindered the internal democratic process of the organisation, leading to a situation where decisions were made by individuals without prior discussion or mandate. This problem arose through

affairs of GDTV were conducted. The lack of the organisational inefficiency of GDTV, which was the first week of broadcast. This occurred staff members of the Electrical Engineering Department complained that the hospitality they afforded GDTV through the use of their laboratory space was being abused by certain negligent practices. This conflict between GDTV and its departmental hosts made two factors apparent: (i) the process of the community access TV broadcast was an organic one, which concentrated an assemblage of personnel in an area which was logistically important for broadcast related activities and (ii) the nature of the GDTV process and those participating in it was foreign to the university community in which it took place.

Organic Process

In any practical activity there is a balance between conceptualisation and practice, this being the conjuncture between abstraction and the practical exigencies of the real world. The process of television production is a complex one, involving an assortment of technical equipment and a variety of personnel organised into teams. In order to co-ordinate these various elements, pre-planning is essential and as such planning is a standard part of the production process. All those involved in organising the GDTV experiment were aware of this fundamental requirement, but the nature of the experiment made it difficult to implement such planning in concrete way. The reasons for this were as follows:

1. The organisers were hard-pressed for time in the lead-up to broadcast, with other pre-existing work requirements demanding much time and attention; GDTV organisation thus took place on a largely part-time basis.
2. None of the organisers had ever run a television broadcast before, despite fairly extensive experience of video production; it was thus difficult to conceptualise all eventualities of the broadcast situation.
3. There was great uncertainty about the availability of equipment; some equipment which had been promised failed to materialise (an edit suite from National Panasonic); the university's Audio-Visual Centre remained uninvolved in the broadcast until it happened, apparently due to a process of mis-communication between the organisers and the AVC; the available equipment (not that provided by AVC) often proved to be both faulty and in great demand; equipment came from several sources and it was difficult to co-ordinate its availability.
4. Production requirements were specified on both a weekly and a day-to-day basis, and it was difficult to anticipate the precise nature of these beforehand.
5. GDTV had minimal financial resources to draw upon, which precluded hiring equipment from outside sources.
6. Production took place both on and off campus, with independent production companies providing some logistical support; this was an additional co-ordination demand.
7. There was no central co-ordinator who could control the flow of personnel and equipment; again this was a shortfall from GDTV's lack of coherent structure.

In addition to these difficulties, GDTV had to contend with a lack of full-time organisers, a floating population of volunteers and makeshift studio facilities. The volunteers were largely inexperienced; the majority of Technikon students were in their first year of study and the FAWO trainees had but a few days of training and

example was divided between managing the studio and managing video tapes from independent producers, co-ordinating and going out on shoots myself, which added up to about 16 hours of work every day. Added to this was the pressure of broadcasting with unfamiliar equipment, inexperienced crew, a barely adequate equipment setup and live broadcasts where things went wrong pretty much all the time. There was one other experienced volunteer to share the burden of studio management for most of the broadcasts (independent video worker Peter Speed); AVA's Lou Haysom undertook the task of programming schedules and writing presenter links, while FAWO's Dumi Ngubane co-ordinated the activities of the CNG group.

Structurally, communications among the organisers was hampered by their dispersal across several locations on campus, these being the broadcast studio, CCMS and AVA. The use of the Audio-Visual Centre, the Media Resource Centre (edit facility) and the containerised edit suite provided by the broadcasting company Orbicom over the first week of the Visual Voice Confest added to this communication/co-ordination problem. The broadcast studio as the focal point of the exercise thus became the central hub around which all activities revolved, a meeting place where equipment was stored, personnel co-ordinated and productions planned. The pressure of events, the scarcity of organisers and the structural dispersal of contributing facilities led to the situation where the broadcast studio space in the Electrical Engineering laboratory became overused, at least in the context of its usual sacramental function as a shrine to orderly scientific endeavour.

This conflict highlights the difference in ethos between the highly pressurised, informal process of the community broadcasting experiment and the orderly process of scientific enquiry. From our side, we were concerned primarily to get the job done by whatever means possible, in the face of great difficulties. Unfortunately for all concerned, this drive was necessary because of the nature of the project, but incommensurate with the facility in which it occurred. For example many of the Lamontville Arts & Culture Organisation volunteers were former UmKhonto We Sizwe soldiers who affected a dress of camouflage fatigues and army boots, which must have seemed very out-of-place in the sober laboratory setting!

GDTV's logistical problems were exacerbated after the conflict with the Electrical Engineers, after which we were deprived of a central locale from whence to co-ordinate activities as well as the studio telephone. The encounter also had a very debilitating effect on the morale of personnel who were already stretched to the limit by the plethora of logistical difficulties. In addition to those outlined above, presenter links could no longer be done live in the studio because of the limited number of personnel allowed in this space, as well as a ban being placed on our one studio light being there due to its effect on the room temperature. The edit suite which had been provided by Orbicom for the Visual Voice Confest had to be sent back to Johannesburg on Wednesday the 28th June, which forced us to find other edit facilities both on and off campus.

In the face of these logistical difficulties, the course taken by GDTV was a mixture of planning and ad-hoc action, according to the requirements of the day. This aleatory method utilizing chance conditions and probability is not new in the annals of video production, though its particular application in the broadcast context is somewhat unusual. As it turned out, order did emerge from the chaos of the first eight days of broadcasting, after a somewhat stormy co-ordination meeting on the 29th June. The

ing days, including the encounter with the Electrical
vere strain on all those involved in the broadcast.
o space crisis a consensus of opinion among the
organisers that the broadcast should cease on Sunday the 31st of June, due to the
severe logistical problems caused by the hostility from the Electrical Engineering
department and the stretching of equipment, personnel and organisational
resources. This feeling was however not shared by those who were not closely
involved in events on campus, and a heated debate ensued upon which, I'm afraid to
say, I walked out in frustration and disgust, having had to deal with too much chaos
even for my taste during the preceding period.

I felt at this time that much of the problems experienced by GDTV resulted from
inadequate co-ordination, which related to both pre-broadcast arrangements for
equipment provision and to the lack of a formal organisational structure, particularly
in regard to the absence of a central organiser/co-ordinator for the project. I
pinpointed the various problem areas I felt needed to be addressed by the conveners
in a memorandum dated 3rd July 1995, which I presented to a co-ordination meeting
on that same date ([Annexure 2](#)).

Conflict with the university community

The occurrence of the GDTV broadcast on the University of Natal campus was
problematic for several reasons. Firstly the broadcast did not take place through the
official university channels. The university has an audio-visual advisory committee
which meets only once or twice a year, and this committee was not consulted by the
GDTV conveners because (i) they were not aware of its existence when GDTV was
initiated and (ii) the committee did not meet during the GDTV organisational period.
This lack of official sanction meant that (a) the university as an institution provided
no financial or logistical support for the broadcast; (b) some members of staff were
apparently annoyed at not being consulted in their capacity as members of the AV
committee and (c) certain university departments were aggrieved at the pressures
placed on them due to the broadcast's logistical problems.

The GDTV project did however highlight two aspects of the university which were
problematic for an experiment of this nature. In the first place, the aleatory nature of
the GDTV production process came as a rude shock to the quiet, orderly life of
university functionaries. Those in control of edit facilities at both MRC and AVC were
annoyed by GDTV staff approaching them to use their facilities with no prior notice, a
situation demanded by the logistical exigencies outlined above, but which is in stark
contrast to the normal manner of pre-booking. These pressures on university staff
led to a very irate letter from AVC head Jasper Cecil to Mikhail Peppas, circulated to
the university authorities, wherein he complained about GDTV's use of his facilities in
this manner. It is unfortunate in this regard that Cecil had not seen fit to respond to
repeated invitations from the GDTV conveners to attend organisational meetings
prior to the broadcast, which would have gone a long way to obviating the problems
experienced by GDTV. The Audio Visual Centre has a sophisticated production studio,
several edit suites and a range of cameras and other equipment which could have
provided the GDTV broadcast with the structural support it so sorely needed.
However, as the preceding footnote regarding miscommunication between the GDTV
committee and Cecil indicates, the cause of this omission is under some dispute.
Cecil did in fact offer the use of facilities, and indeed certain AVC facilities,

and edit suites, were used on occasion at no cost to

Nevertheless, the AVC letter also had an inimical effect on perceptions about GDTV within the university community, which are contextualised in a post-event letter from Faculty of Humanities Dean Prof. MJF Chapman to the Campus Principal, Professor CF Cresswell:

Judged by 'classic' University norms, there were several problems (with GDTV). Judged by the actual circumstances of change in South Africa, important developments were underway. Perhaps the event was in a way paradigmatic, and suggests the challenges awaiting us in matters of adjustment and tolerance. The hope is that such events will result in important shifts of thinking, the real measure of University participation. (Internal memorandum, 25 July 1995).

This comment is very pertinent in the context of a university which sees itself as serving a community which consists "of all people in all social circumstances, developed and developing, urban and rural" (University of Natal Mission Statement, 1989), and which aims to integrate development initiatives "into the mainstream of academic life". The opening of South Africa's airwaves seems a particularly strategic intervention in view of the history of repression to which they have in the past been subjected, as well as the manner in which the broadcast media, television in particular, have been used to perpetuate the system of apartheid which the university has for so long publicly abhorred. The historic nature of GDTV is particularly pertinent in this regard, it being one of the first community access broadcasts in the history of South Africa, and the first independent television broadcast in Kwa-Zulu Natal. The absence of support from the UND is disappointing, and may represent a distant relationship between the institution and the broader community. A contributing factor was however the speed at which the GDTV initiative happened. The university is a large bureaucracy which takes time to process information and make decisions. It may have been more strategic in this regard for the GDTV initiative to have spent more time on lobbying and planning, perhaps delaying the broadcast for a year in order to involve the institution more fully. On the other hand, given the nature of the committees and bureaucratic process which governs this institution, had the matter gone through the relevant channels, the broadcast may well have been delayed for some considerable time, or even not have taken place at all.

Structural Analysis

In terms of GDTV's self-organizing capacity, despite the limitations which GDTV experienced in terms of information flows, inhibitions and blockages, the system nevertheless demonstrated some degree of development. Out of the disorder of the first two weeks, some semblance of order emerged; student production activities ceased, which obviated production pressures, morning co-ordination meetings were held to deal with day-to-day issues and the station settled into a relatively smooth-flowing routine. These meetings, instituted after the explosive co-ordination meeting of June 29th, became the station's iterative principle where information concerning the current status of the system was fed back into the 'equation', thus providing the ordering factor which had hitherto been lacking. In this way GDTV showed itself to be an 'open learning system' of the kind elucidated by Jantsch, a self-organizing system which exchanged energy with its environment in a dynamic way, enabling

to suit its circumstances. As Jantsch points out, and directs energy into action ([see Chapter 1](#)).

Given time, GDTV might have successfully evolved into a functioning 'organism', i.e. a structure which could be self-sustaining. This would have required that the information equation which supported that information organism be optimised through mechanisms such as full-time staff, effective marketing and relevant programming. These factors would have ensured that a) operations within the organization were carried out efficiently; b) that energy, i.e. finance, would come into the system and c) that the system would provide useful information to its constituency.

That the station did not achieve a successful evolutionary transition was primarily a result of its lack of cohesion. Although the IBA only granted a temporary broadcast license, and has not yet granted any permanent community television licenses, I feel that GDTV could have given those involved the impetus to continue the initiative. However, the foundation of the station was weak in that there was no founding structure which could continue an existence after the broadcast; instead, the founding members simply went their separate ways, the problems which beset the station having overwhelmed the fragile alliance of interests out of which it had sprung. Although GDTV showed signs of self-organization, it did not prove to be an evolutionarily successful organism, and so expired!

Clearly, the logistical factors of dispersal across campus, inadequate co-ordination and conflict with the staid bureaucracy of the university all played a part in the station's demise. These factors inhibited the effective cybernetic functioning of the station, generating disharmony, rather than harmony, among its participants. On the other hand, the experiment did generate much useful information which can be applied to similar initiatives. In this way it established a morphic field for a local community television station, and so should facilitate the establishment of other such stations in South Africa. In order for such stations to be successful however, a crucial factor is that their relationship to the community which they serve must be effective.

Community Participation

The notion of GDTV as a device to effect a harmonic resonance in empowering its community must be assessed in terms of the station's relationships with the various sectors which it impacted on. If the university institution has a problematic relationship with its community, what then of the interface which GDTV provided to this selfsame community? The first problem facing GDTV was to define the 'community' which it was to serve. The IBA legislation demands a specific community be identified for a community broadcaster to be granted a licence, a criterion which could present a difficulty for a station which aims at regional broadcasting. The term 'community' for the IBA can however mean a geographic community or a community of interest. As the name "Greater Durban Television" implies, GDTV was aimed at Durban and its surrounding areas rather than at any particular area or community within this region. In a replying letter to the IBA, Peppas designated GDTV's 'community' as being defined by both geographic location, "viewers and users reside in the Greater Durban area" and by interest, "attendees at Visual Voice Confest '95".

The above definition, while it is indicative of the general community interests of GDTV, does not adequately define the station's actual reach. In the first place, GDTV

on, which came from a 100W transmitter located on the Bluff. This gave the station a footprint which covered a central city area bounded by Morningside to the north, the ridge to the northwest and Chatsworth to the west. The signal was also reportedly well received by people living further north in Durban North and La Lucia; however many people within the footprint area received poor reception due to the transmitter's low intensity and geographic features such as hills and tall buildings which blocked signal reception. The geographic definition provided by the station's footprint covered the city and surrounds more than the 'greater Durban' region, which implies the more extensive area of the Greater Durban Metropolitan region.

Within the geographic region served by GDTV, there are many communities of interest to be found and GDTV did its best to identify and serve a number of such groupings. The participants of the Visual Voice Confest were in themselves a very limited grouping, which could not be defined as a community, despite being cited as the major interest group served by the experimental transmission. The question then arises of whether those who participated in the GDTV broadcast could be classified as the community, since it was primarily their interests which were served by the broadcast by way of research, experience and training. Community in this sense could refer to those bound together by a common interest in community access broadcasting, which includes the service providers, equipment sponsors, video production companies, educational institutions, community video organisations, students, trainees and other volunteers. It should be noted that this community interest favours more the transmission of programmes than their reception, though at the same time this does not exclude concerns with the effect of such transmissions on audiences.

It may be that the IBA is too restrictive in its insistence on a specific community to be served by a community broadcaster. The problem with this stricture for a television station in particular lies in the infrastructure and cost required to run and sustain such a service, which may necessitate a number of communities being involved in the broadcast, not least the core group who participate directly in setting up and running the service. The point here is that the broadcaster provides community access to the airwaves, and it may well be that having one broadcast service provider to service a number of communities is the most effective way of structuring such an arrangement.

This raises the question of to what extent various communities actively participated in the GDTV broadcast, another concern expressed by the IBA. In the run up to the broadcast, video contributions were invited from a variety of groupings as well as from the public. Letters requesting video material were sent to universities, technicians and organisations which have video resources. Press releases were sent to newspapers which included an open invitation to the public to submit videos, along with the address to which they could be sent.

An important contribution was made by Rob Greaves of Natal Newspapers, who organised a daily news bulletin which he compiled with the help of various newspaper journalists from the Natal Newspapers publication The Daily News (see report to Natal Newspapers management Annexure 5). These news programmes ranged in length from 5 minutes to half-an-hour, and were put together in a very innovative, 'video verite' style which was eminently self-conscious in its awareness of the role of the camera in recording the news event. The daily news programmes



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on GDTV at the beginning of every broadcast

One of the most significant community contributions came from the Durban Christian Centre, who provided three hours of Christian programming every Sunday afternoon during the broadcast period. The DCC have their own video production unit, and used both existing programme material as well as producing other material especially for the broadcast. The DCC saw GDTV as an opportunity to spread their fundamentalist gospel message as well as to link up with their constituency. They apparently received an enthusiastic response from a number of church groups concerning this broadcast opportunity, and had an eager viewership as a result. One of DCC's associated producers also provided a variety programme on Indian culture.

The DCC's initiative was however the only major community involvement in the GDTV broadcast. Other community involvement came in the form of the FAWO trainees, such as members of the Lamontville Arts and Culture Organisation, who formed part of the production unit which came to be known as the Community News Gathering (CNG) group. Other community input came in the form of (a) a questionnaire which was carried on two occasions by the Technikon students during shoots and (b) phone-ins to the station and to the Daily News newspaper. The questionnaires elicited a total of 28 responses; the station phone-ins elicited a total of 34 recorded responses and probably a similar number of unrecorded ones; the Daily News phone in gleaned about 45 respondents. Most phone-in respondents indicated positive views regarding the broadcasts, with a small number of complaints about individual programmes. The questionnaires indicated what respondents would like to see on a community access station, but were done before the actual broadcast took place.

There was however a lack of contact with other communities and community groupings in GDTV's organisational process. While it was proposed early in the planning process to seek contact with and support from such groupings (eg. unions), this was unfortunately never done. Without such community-based support, GDTV did not have a great deal of legitimacy outside the narrow confines of an experiment, nor will future initiatives enjoy such legitimacy if it is not actively pursued. For a community access station to succeed, I submit that community support needs to be actively mobilised outside of the parameters of the broadcast itself -- ie. it is not enough simply to stage a broadcast and invite participation, but that participation, or at least sanction, should be sought through public meetings and briefing sessions. This process should lead to a formalised structure to manage the broadcast, which would also provide accountability to the public. The draw-backs to this is that it requires a time-consuming process of consultation, much energy spent on motivating communities to spend time and resources on the project, and the possibility of the project being hijacked for personal or political gain by parties with vested interests.

After the GDTV broadcast had ended its brief life on the airwaves, I compiled a summary of what I felt to be the main problem areas as well as some suggestions for future processes and areas of analysis. These points are contained in [Annexure 3](#).

While GDTV managed to achieve a harmonic resonance with certain sectors of the population, this resonant effect was limited. It is significant that other video producers such as Greaves and the DCC were drawn into the experiment. This demonstrates the principle of resonance in action, that groupings which would never

constituting parties of GDTV and the Christian able to work together because of an essentially ion production. The creative and communicative venture of GDTV was then the common ground which enabled these disparate interest groups to work together to achieve their disparate and collective aims.

The creative processes of GDTV were one of its most important achievements. Firstly, the station afforded local video producers, students and trainees the opportunity to engage first hand with the broadcast process. It enabled them to both create images and narratives which imaged local environments and experiences, as well as to transmit these communicative elements to a far wider audience than they could otherwise have reached. In this way these individuals and groupings were able to express themselves creatively as well as to address the people of Durban; in other words, GDTV afforded them a voice which might not otherwise be heard.

Although participation by the wider population was limited to receiving the broadcast signal (in those areas it reached) and a few phone-ins to the station, GDTV nevertheless afforded people in Durban a unique opportunity to see themselves. Although programmes about Durban and its people appear regularly on national television, such images are in many ways removed from the local context. For one thing, control of these images lies in Johannesburg, from whence they are broadcast; for another, they are invariably merely one constituent of programmes covering people and events in all provinces, and which cannot be specific to the Durban region.

In GDTV's off-air hours, the studio camera was focused on the view of the city from the studio and this image served as a constant reminder to the people of Durban that they were the subject of the television station's gaze. Through the participation of local people as well as the subject matter of many of its programmes, GDTV was an act of self-reflexivity for the city of Durban, whereby it came to know itself just a little more intimately. This act of reflection, imaging and communication made an impact on the consciousness of the city through the minds of its individual components.

Feedback

Responses to the GDTV broadcast have been sought from both the viewing public and from those involved in the event. Public reaction to GDTV was invited through phone-ins to the station and to the Daily News newspaper. The reply pattern shows an generally positive response, though this is obviously skewed because those who did not like the broadcast would not have watched enough to see the response request, or may not have bothered to respond to something they found uninteresting or unworthy of further comment. Phone-ins did however indicate an increasing interest or viewership; the first phone-in request was broadcast on the evening of Saturday 24th June, and elicited just one response (the caller wanted more music videos). The next response request was on the afternoon of Tuesday 27th June; this elicited so many calls that not all could be taken, with nine recorded responses and 10 unanswered calls on hold.

Phone-ins were limited by their unstructured nature, the fact that many calls went unrecorded, and the absence of a telephone at the station for much of the broadcast period. Cell phones were used for the phone-ins which did occur at the studio.

e. The first took place in conjunction with a 'street law' videos on Saturday 1st July. Responses in took the form of a competition where human rights T-shirts were given away as prizes. A phone-in was invited to the Daily News offices, which drew a response of 87 calls. Of these, an overwhelming majority of 86 callers gave a positive response to GDTV, with only one caller giving a negative view. Another phone-in (date unknown) to GDTV drew a response of 15 recorded calls.

Research was also done into the attitudes of the Video Technology students at the Natal Technikon regarding the GDTV broadcast and their participation ([Annexure 8](#)).

Assessment

The feedback received by GDTV indicates a positive response overall from audiences to the broadcast. It would appear that overall the people of Durban, at least those who were aware of the broadcast, were at least intrigued with the novelty of the situation and were forgiving of the station's disadvantages, such as poor broadcast quality, numerous technical hitches and inauspicious programming. Whenever GDTV is discussed, people invariably ask whether or not the station was a success. In terms of audience response, the answer would appear to be 'yes', although on the other hand (judging from numerous post-broadcast discussions with Durbanites), the station did not appear to enjoy widespread viewership in the city.

Nevertheless, the experiment has generated a large volume of information which can usefully be applied in future community television initiatives, and in this sense the experiment was successful. Not only did GDTV achieve its aim of broadcasting for its specified period (no matter how controversial and troublesome this matter was for those involved at the time), but it also succeeded in illuminating various theoretical suppositions which otherwise would have had to make do with less striking empirical circumstances in which to be tested.

The above arguments demonstrate that GDTV demonstrated at least some of the characteristics of a self-organizing system, directed towards the achievement of a mechanism for conviviality. Aspects of planning and reaction to random circumstance combined to facilitate the emergence of a functioning entity which was able to generate information regarding the structure and functioning of a community television station, so providing a useful information base which can be drawn upon for similar initiatives in the future. In this sense the experiment served an empowering function in drawing together diverse interests to co-create a functioning model of community, or local level communication.

By examining the information flows which characterised this cybernetic system, we can trace the faults and successes of the model and use this information to prepare for future community broadcasting. The ultimate objective of this initial process of information-generation will be to synthesize various information sources, such as this document, other writings on GDTV, images and video clips from the event, into an information resource on the World Wide Web. By so doing, the information will become a resonator in the global consciousness which can aid the implementation of future communication initiatives in any geographic or social region connected to cyberspace. This will facilitate the experiment's accomplishment as a harmonic empowerment project, as a means of helping to draw together people of resonant interests to create a convivial tool in the realm of communications.

In Chapter 1, I posed the question of how humankind can creatively transform itself in order to deal with particular problematics in our time, with particular reference to harmonizing the relationship between human beings, their technology and the planet. I have argued that the answer to this question lies in our ability to conceptualize and co-create our world, processes which originate in our thought, our ways of thinking and our capacities for data processing and imagination. Thought is mediated through mechanisms such as media, which reflect, record and communicate our experience and conceptions. The mass nature of media indicate another component of thought, its impact upon the collective psyche, which in turn refers to the notion of Mind as the expression of collective thought. Media grants Mind the capacity for self-reflection, and this, combined with experiential access to Mind through the noumenal dimension facilitated by liminal events, potentiates capacities for individual and group change.

We live in a time when we, as individual members of the human race, can see our world as a global system and so be aware of our own small parts in the total drama of planetary thought and activity. It is a time of fragmentation and connectedness, atomisation and collective or mass tendencies, a time of paradox and confusion in a matrix of industrial rationalism and cybernetic control systems. While the individual may feel lost and powerless in the face of Titanic forces, global issues and populations measured in billions, we nevertheless have the power to act in ways which can affect the probable outcome of dynamic systems on the macro scale. We can choose to use this power in joining together with others in a harmonic fashion to actualize our collective potential to transform our world. Such transformation involves altering our ways of relating to the planet and to each other, in order to master our accelerating technological power and reconnect with our spiritual dimensions. It will be through achievements in these areas that we can redirect the course of human history in a positive and constructive direction into the next millennium.

The nature of change in this time indicates, as I have said, a fundamental transformation in the nature of human Being; we are becoming our technology and it is becoming us, a merger of man and machine in a cybernetic realm. This integration is altering our perception of reality, an ontological slippage into the dimension of imagination. This dissolution of the real offers terrifying potentials for human subjugation and liberation -- it is up to us to choose our direction for the future and face the challenge of struggle to attain positive outcomes.

Humankind has made similar evolutionary transitions in the past, both physically and culturally; one of the most critical was the development of language, the acquisition of which has given us our present capacity to think and manipulate the world. Our technologies today offer us the potential for new means of representation; we have only just embarked upon this latest journey of exploration, but at the same time, the rate of change in our time is accelerating rapidly. Now is the time to seize the initiative and do what we can to direct probabilities for change in the future. The significance of experiments such as SkrOO-TV and GDTV lie not so much in what they achieved (or failed to achieve), but in their capacity to act as change agents, nudging the probable direction of change in particular directions.

Empirical Studies

Postmodernist theory offers a mirror of our current reality. The defining feature of this reality is its media or information saturated nature; we live in a world of shifting surfaces, where hyperreality has shifted to a new level of intensity with the coming of digital media. As McLuhan (1964) has pointed out, people have lived in a state of 'virtual reality' ever since the invention of television. The Vietnam war for instance was fought not only on the ground in Southeast Asia, but also in the consciousness of the world, more particularly in the minds of the American people. Global communications were central to this phenomenon, connecting the collective consciousness of America with events as they happened in Vietnam. This instantaneous communication has affected the nature of our ontological perception, particularly with regards to our experience of time.

In the past, events moved slowly -- it took far longer to get from A to B, both physical travel and communication, than it does today. The rapidity of today's information flows creates an unstable boundary of perception. This instability is related to both the amount of information we receive, as well as the rate of its reception. These factors compound the problem of surfaces, those shiny, hyperreal planes which constitute the media, a bombardment of information in the unceasing manufacture of consumption. This is where the postmodern concept of borders, or rather their dissolution, comes into play -- our mirror of reality, cyberspace, has become so permeable that meaning, our ontological understanding, disappears into hyperreality. Gilles Deleuze & Felix Guattari (1989) understand the ideology of capitalism to be,

"a motley painting of everything that has ever been believed." The real is not impossible; it is simply more and more artificial. (Deleuze & Guattari, 1989; p34). In the face of this artificiality, it is vital to recover meaning through spinning counter narratives in cyberspace. This is one function of community media, which find various strategies of representing the experience of local communities. This kind of media production represents the small story, the micro-narratives of individuals, groups and sectors which are obscured, forgotten or ignored by the large-scale commercial media.

Through micro-media, such as community access television or the Internet, the logic of the mass is replaced by that of the individual, community or micro-grouping. In other words, the subject is reconstituted through the lexicon of lived experience defined in the parameters of locality. The terrain of the local, its people and geography, is far more easily assimilable by the individual than more large-scale concerns, eg. the nation or the land (country), which diffuse into the abstraction of symbolic entities. The people imaged on television screens via a community TV station are often, if not the viewers themselves, at least those who are known to the viewers through personal experience rather than through the glamour of mega-media production.

When GDTV's 'What's On' group covered the clubs and music venues of Durban, the performers were often known to the station's viewership through lived experience of attending their live performances, rather than simply through the consumption of their products or media images. Similarly, when the South African national rugby side won the World Cup during GDTV's broadcast period, the station was able to show the reactions of people in Durban to the victory; so these people, their friends,

s) on 'their' own television station. In this way the
to itself via a local medium rather than being
there is a reconstitution of meaning on the local
level.

Moreover, the community medium affords the promise of space for countercultural expression, relatively unhindered by the concerns of commerce and mainstream ideology which constrain commercial or public service broadcasters. To recover meaning on the small scale represents the achievement of temporary autonomous zones in cyberspace, that is, areas of reference which lie outside of 'mainstream' signifiatory grids. This enables both new forms of expression to be developed within the station, such as the presenter techniques developed during GDTV, as well as for the station to interact with its constituency in novel ways -- for example the suggestion for an interactive 'Video Jockey' show with a live music event like a Techno Rave. Practices within the station which involve people in production processes in an empowering fashion, also represent a temporary autonomous zone. The fact that production personnel do not have to be video professionals frees them from the constraints of professionalism (White, 1994); this has its disadvantages too, but nevertheless represents some degree of freedom from mainstream production values, as well as creating a convivial technology which is user-friendly to the non-professional.

Will and Desire

In some ways, SkrOO-TV and GDTV were more exercises than experiments, for they afforded demonstrations of how energy could be applied to particular social nexus points in order to generate particular patterns of behaviour. Deleuze and Guattari conceive the universe as being made up of what they call 'desiring machines', which produce and consume, driven by the fundamental imperative of desire. Perhaps it is the desire for freedom which drives people to strive for democratic and transformative mechanisms in society, to achieve temporary or even permanent autonomous zones. Deleuze and Guattari develop the thesis of 'Anti-Oedipus', a sign which represents individuals or groups who have freed themselves from the constraints of normative social beliefs. The Anti-Oedipus impulse aims to liberate humankind from both idealism and from nihilism. This occurs through the process of 'desiring-production', where man is in tune with his desires, with the rhythms of the universe, with the currents of life', and this comes about through the freeing of desire from the chains of repression.

Both SkrOO-TV and GDTV were liberating moments in local media history, as well as in the social fabric of Durban culture. They expressed moments in time when people other than the usual small groupings of national professional broadcasters had some input into the airwaves, or at least into the process of transcribing ontological experience through the medium of video. Constructions such as these television experiments are then Anti-Oedipal mechanisms which free certain desires from their constraints -- the desire to create, to be seen, to communicate, to express -- all these are freed from the bonds of the culture industry, albeit temporarily. This is not to say that there are no limitations on a community medium, for social convention, societal norms, morality, laws and commerce still serve to constrain yet at the same time there is a new potential for free expression, experimentation and creativity.

, let us make the most of those opportunities he hopes that such moments will affect the individuals. Just as the Counterculture of the 1960s sparked corresponding changes in political movements and social norms, so countercultural phenomena today, whether in the realm of alternative media or techno raves, have their resonances in political, social and other fields.

Deleuze and Guattari's model of human functioning, in terms of the flow of energy or desire, is an apt one for the postmodern and post-postmodern era. The information flows across desiring machines (which include human beings), are motivated by the potential difference of desire.

Desire constantly couples continuous flows and partial objects that are by nature fragmentary and fragmented. Desire causes the current to flow, itself flows in turn, and breaks the flows. (Deleuze and Guattari, 1989; p5). But desire is not enough for liberation. Jantsch points out that it is structure which focuses energy, but for such structure to exist at all, requires will. If desire is a fundamental motivating force, it is will which focuses the intent to fulfil desire into a structured mechanism for achieving this end. When will begets a harmonically resonant structure, it potentiates change in the fluid medium of the information universe. When a focused goal is activated through the energy inputs of individuals and groups, a harmonic environment enables energy flows to be optimized. Ideally, people in such a situation will work together to achieve their common end, which has a beauty or symmetry in both its internal consistency and its relation to the external environment.

Such nodal focus must be the basis for social transformation, and hence for the transformation or transcendence of consciousness. We are plunging headlong into the cybersphere, realm of the mind and the imagination -- but it will take coordinated efforts to free ourselves from the strictures of outdated paradigms and power valencies. As Deleuze and Guattari point out, for collective action against power to occur, the norm must be singled out as the enemy as well as the ego. In order to counteract the norm of capitalism and its construction of the ego in the form of atomisation, we must create a celebration of multiplicity in the face of the internalised fascist which promotes the struggle to power in each one of us. The temporary autonomous zone is the site of struggle where this conflict takes place, or rather where this drama plays itself out.

Liminality is the door to imagination, self-knowledge and self-transcendence, and it is ultimately towards this goal that transformative events such as SkrOO-TV and GDTV must be directed. These two experiments provided valuable information concerning mechanisms for the achievement of autonomous media zones which can facilitate social transformation on the wider scale. It is through examination of this information that significant trends can be identified in order to actualise the vision of iterating such zones in the future.

Harmonic Communications

The GDTV experience showed that communications are an essential prerequisite to the effective functioning of a television station. This pertains to information flows both within the organisation and between the station and outside bodies, as explicated in [Chapter 5](#). This particular issue has been a contentious one after the

...s such I feel it warrants some investigation. One of co-ordination, which has implications for the power (Lippas, 1995). Can a co-ordinator act as an authority figure to suppress democratic practice in an organisation? Clearly this is so, and any non-profit organisation must take steps to guard against tyranny from its leaders, as must society as a whole. An important factor here is the notion of accountability, that a co-ordinator is accountable to those in the organisation whom he/she might instruct or organise on behalf of.

However, I contend that it is essential to have either one person or, if people cannot live with this, a tightly functioning co-ordinating group who meet on a regular basis in a central location, in order to ensure that entropy rather than negentropy rules the outcome of the dynamic system. In this regard it is useful to return to the most efficient information processing mechanism known to humankind the brain. Antonio and Hanna Damasio (1995) have identified what they call 'convergence zones' in the neural networks of the human brain, which act as mental switching stations that provide access to the information and relate it to other relevant data' (Lemonick, 1995). It is this 'switching' or co-ordination of information which is the key role of a co-ordinator. Participants in the GDTV broadcast continually refer to their inability to contact relevant personnel within the organisation, as well as complaining that they were not informed about intentions/plans which involved them (Stuart, 1995; Cecil, 1995).

If one examines processes from the perspective of information flows, it is important to note that information may be (a) insufficient -- ie. certain necessary information may be omitted in transmission and (b) false, in that it is distorted or conveys a misleading impression. The nature of information processes has been investigated at length by theorists such as Ambrose Pierce, and I will not examine them in any depth here; the point is that the function of co-ordination involves constantly assessing the value' of information in respect to the above factors, as well as providing an efficient means whereby the necessary information is provided to those both within and without the organisation. It is clear that this did not happen in an efficient manner with GDTV, as can be seen from my report of 3 July 1995 [Chapter 5](#); however it is notable for any future initiatives of this nature to look at such processes both in building the capacity to set themselves up, and in ongoing feedback from their 'environment', ie. their audiences together with their financial and logistical support bases. The most critical factor for a community broadcaster in this respect is liaison with the community or communities which it serves. The IBA seems if anything to be insufficiently strict in this regard -- while the organisation stresses such stations must act 'with the support and participation of the community it serves', this stricture may not be sufficiently enforced by the body.

A community broadcaster should be able to prove that a process of consultation with its constituent community has taken place. As I have pointed out in [Chapter 5](#), GDTV's 'community' seems to have been those who wished to broadcast. While I do not feel this is a particular problem in terms of an experimental broadcast, which in this case has provided a wealth of useful information, it is a factor which needs more serious consideration for future initiatives. With a commercial broadcaster (or any other commercial media for that matter), this legitimisation process takes the form of market surveys to determine market requirements in terms of both audiences and advertisers. This is a different process of 'consultation' to that required of a community service, which has the additional demand of some form of democratic

It is this process which I point to in my paper [Aspects \(Annexure 3\)](#).

In terms of the idea of harmony, GDTV was of limited success. There was a singular lack of harmony during the broadcast period, with many a personality clash, probably occasioned by the stresses of the process and the accompanying disorganization. I believe that communication is the key factor to facilitate any harmonic process, as can be seen from the success of the negotiation process which led to the emergence of a democratic dispensation in South Africa after the trauma of the apartheid years. Similarly, in order to facilitate the efforts of other groups who might have interests which resonate with those of process initiators, it is necessary to provide information which can be effectively communicated in order to ensure that 'the application of energy to a particular social nexus point ([Chapter 4](#)) has the desired effect. The result of the GDTV broadcast has been a resonant effect with other would-be broadcasters, both nationally and locally.

Local video producers in the Durban area have expressed interest and enthusiasm for setting up a community television station, having investigated the matter themselves prior to the GDTV broadcast. It is through linking up with initiatives such as these that a harmonic convergence can be achieved, with the application of energy from various individuals and groups synthesizing a viable local television station. In order for such a station to succeed, it must be in harmonic resonance with the needs of society as a whole, ie. with business, community and local government sectors. I have discussed potentials for such development in South Africa in [Annexure 9](#).

A successful community medium also requires creativity if it is to activate mythic structures in the collective psyche to achieve a harmonic society. GDTV was marked by the ongoing creative efforts of those who participated in production processes, doing camerawork, editing, studio control and presenting. My own efforts in this regard were channelled into producing programmes, as well as in the 'experimental sessions' after official broadcast times. The relation of such techniques to television is two-fold; on the one hand they can be used as a technique of 'television art' to create an impactful presence on the television screen. On the other hand, they can interface with live music events, a possibility which I investigated during the GDTV transmission. In this scenario, the TV station can provide a 'Video Jockey' show, which is screened at the Rave event. I almost succeeded in doing this during GDTV with a rave event which was occurring at the time, but this didn't materialize due to timing and logistical factors. However, it does demonstrate how a local TV station can interface with events in its locale, providing a vibrant interactive service.

The above situation also lends itself to the two-way exchange of information, with images from the event being sent back to the station, to be combined with other images and broadcast back to the event, so creating a kind of fractal feedback loop, as occurs if you point a video camera at a linked monitor. This is but one means of creating a dynamic, interactive artistic practise in the field of media, an essential prerequisite to harmonic strategies. Multimedia techniques are also characteristic of the World Wide Web hypertext interface, and once the GDTV experience is available in this medium, the information will be available to any group wishing to set up a community television station. Such bodies can also contribute information to the page so that it becomes a 'living document', constantly being updated and growing with the times. In this way it will evolve, as I hope our species will do by creatively

education, both externally with others and internally, the way out of our present predicaments lies not with technologies which provide knowledge of the external world, but rather with those technologies and practices which provide understanding of our inner, subjective realities. The way out is within.

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