

THE DIGITAL RECONSTRUCTION OF HYPER-REALITY IN POSTMODERN ICT LEARNING ENVIRONMENTS

Constantine Andoniou
Australia

Abstract

The paper calls for a fresh new perspective in thinking about the application of ICTs in post-modern learning environments. Adopting a Lefebvrian view of *theoretical approximations*, it sets the challenge to reconsider the value of available information and knowledge in the context of global electronic communication. It aims to establish a spatial theoretical understanding of the digital reorganization of information and knowledge by ICT systems. It is argued that the reconsideration of our daily digital environments and informational landscapes must proceed from an in-depth analysis and a 'framing' of the organization of information systems.

'The world we have created is a product of our thinking;
it cannot be changed without changing our thinking'
(Albert Einstein)

Advances in applications of information communication and digital technologies have rapidly accelerated the pace of human social learning and progress. The global system of information which comprises our knowledge of the social and defines our individual and collective existence is digitally reconstructed and reproduced in hyper-real configurations by ICT systems. This continuous reorganization of information and consequently knowledge makes the traditional quest for true and absolute realities problematic. Such a quest generates confusion and disillusion, which simply add up to the recycling process of already inadequate and insufficient justifications to explain the contemporary world or to educate its future citizens. A spatial theoretical understanding of the digital reorganization of information and knowledge by ICT systems is needed.

Postmodern ICT Learning Environments

Information communication and digital technologies and their applications are guided by a new kind of probabilistic logic which upsets learning processes and environments. Technologies, new forms of knowledge, and changes in the socio-economic system are producing new social formations. Postmodern ICT learning environments emerge as such formations, characterized by technologically diverse and informationally complex learning experiences where electronic communication and digital applications and technologies prevail. These environments constitute and sustain a worldwide digital culture characterised by the intensification of the availability and use of information. They are mutated

cultural configurations of postmodernity which can be more accurately termed as *postmodernity-and-beyond*. This is the culture of the information explosion which defines the societies of digital capitalism and which secures the conditions for the flow of information by reproducing itself through digital regenerations in hyperspace.

Within this hyper-spatial version of logic, human existence is reproduced by means of digital cloning and mutation. Fresh theoretical perspectives along with innovative learning experiences are needed, accepting that there can only be variations of given facts and realities. The challenge is to reconsider the content and value of available information and knowledge in their learning contexts of global electronic communication, and, of their application through digital technologies in ICT based learning environments. This involves a re-examination of our ways of analyzing and processing information to reach a sufficient degree of understanding of the constant regeneration of our hyper-real selves within our daily digital environments and informational landscapes.

Hypotheses

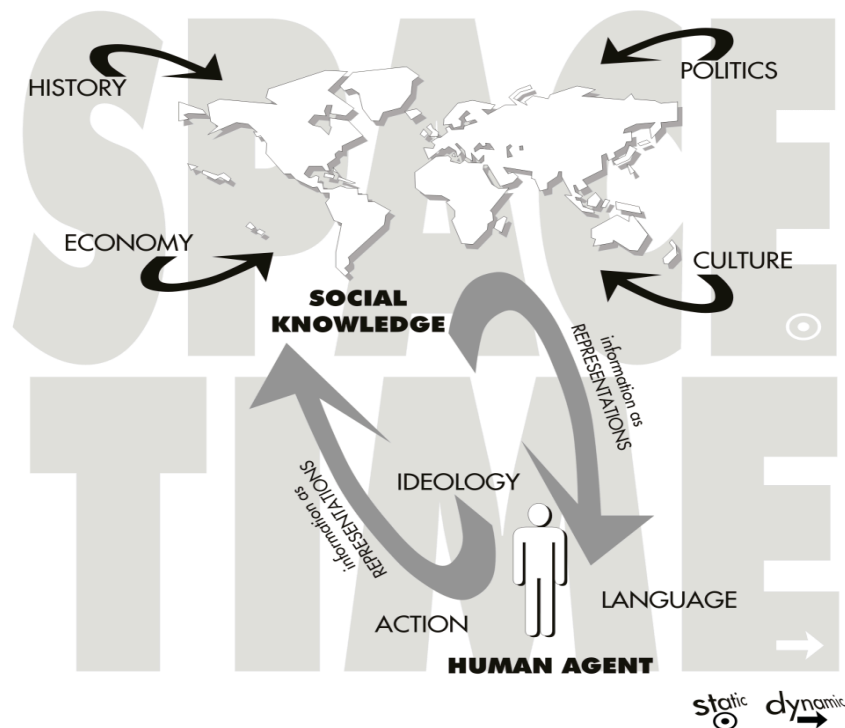
This re-examination, I contend, must proceed from an in-depth analysis and a 'framing' of the organization of the system of information which comprises our digital learning and communication environments, and which in effect organizes our existence within, and in relation to it. Such an analysis will provide the theoretical observations and justifications for the argument of *the digital reconstruction of hyper-reality* in post-modern ICT environments, and can proceed along four inter-related hypotheses: The *Information Flow hypothesis*, establishes the historical and socio-cultural conditions which sustain the argument of *the digital reconstruction of hyper-reality* in post-modern ICT environments. The *Social Knowledge hypothesis* identifies specific informational patterns of organization in structures, discourses, ideological systems, and cultural trends, which can be reflexively applied to describe the organization of the dominant system of information. The *Code of Information hypothesis* aims in establishing a theoretical framework which can account for diverse aspects of the organization of the system of information. To this end it focuses on systemic properties, and interdisciplinary analogies and isomorphies as well as principles of information theory, cybernetic control and human communication. Finally, the *System of Information hypothesis*, offers a new philosophic description of the current epoch. It consists of theoretical approximations, more speculative and futures-oriented, regarding the organization and implication of the system of information in the era of global electronic communication and information communication technologies.

The Information Flow Hypothesis

Our view and perception of the social, the world out there, are shaped by our accumulated life experiences which exponentially add up to our banks of social knowledge. The discourses of history, politics, economy and culture, as separate, though inseparable to each other, as discourses of representational information, construct a real and imagined at the same time vision of this world within the human mind. Social knowledge is constructed at the subjective and collective levels of human information processing, and is therefore dependent on the organization of the system of information within which it is produced.

Informational representations take form and shape in language and visual images, are reflected and manipulated in ideology, and finally they are expressed through patterns of social communication and action as a response to historical, political, economic and cultural conditions (Figure 1).

Figure 1: The Information Flow hypothesis

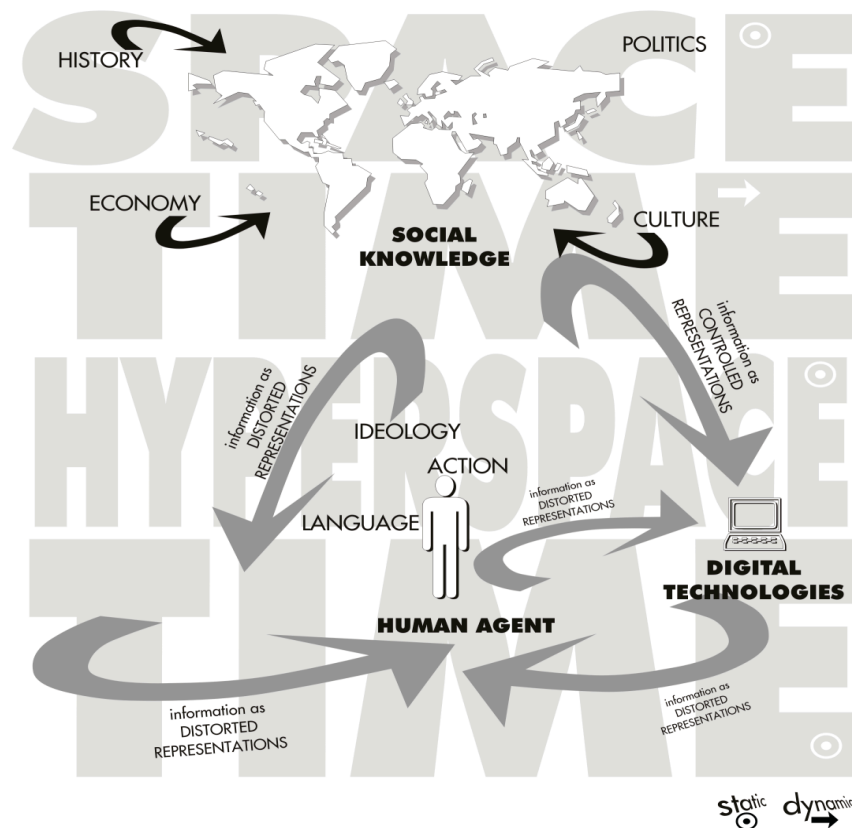


The Social Knowledge Hypothesis

Within the boundaries of our physical space and across the arrow of time our perception of what constitutes (collectively and/or individually) acceptable social knowledge is to a great extent controlled by the global communication

technologies and media of all forms. The system of information entails controlled representations of the intentions and the financial interests of transnational media corporations and their affiliated corporate and governmental infrastructure. At another level of spatial consciousness, that of hyperspace, human and machine information processing and communication, converge and align along fractal levels of distortion of the system of information. This in turn shapes our knowledge of the social — often in distinctive corporate interests. Let alone the nature of knowledge per se, more importantly, events of social change and decisions of social action, in this respect, become ambiguous and questionable, as to whether they are expressions of individual choice and freedom or reproductive of well-established patterns of exploitation and domination (Figure 2).

Figure 2: The Social Knowledge hypothesis



The development of ICTs and telecommunications networks has intensified the production, generation, regeneration, circulation and exploitation of the system of information in an endless vicious circle. Human interaction and communicational practice with computer technologies form and recreate new social attitudes and modes of spatial thinking. The increasing flow and management of the system of information reconstructs social knowledge and re-organizes social life. Its

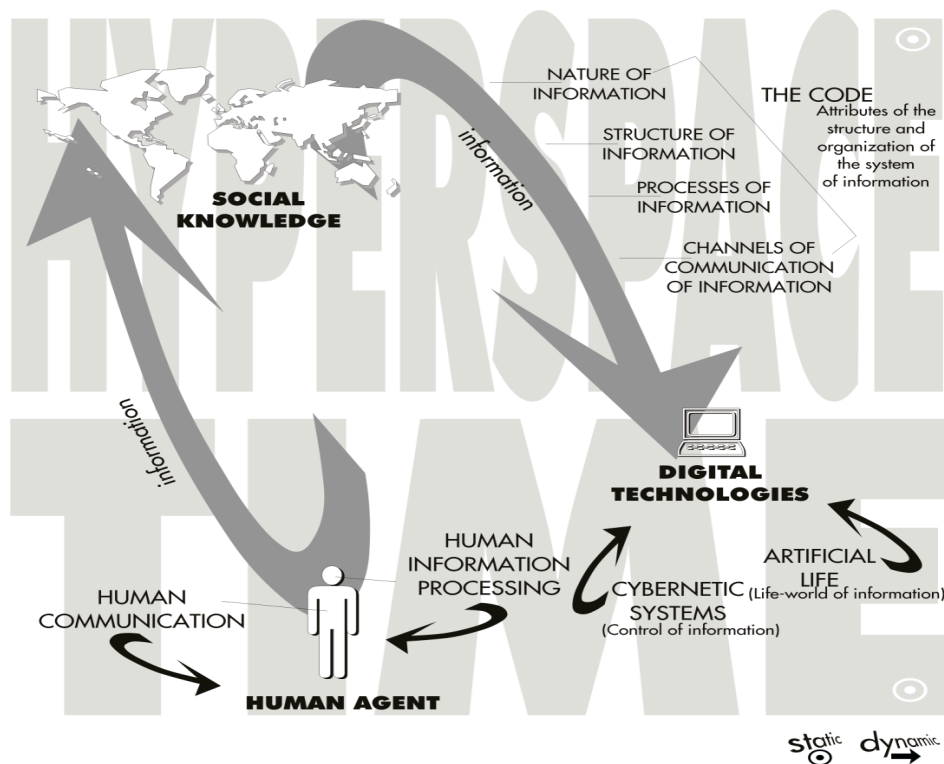
mechanics are characterized by interactivity, networking and flexibility. The new relations of human experience and construction of meaning are re-negotiated in the hyper-real cultural environments. They are globalized through economic systematization, the design and promotion of a global culture and consciousness, which seemingly integrates and unifies the world on the surface, but leaves the particular details of the validity of the underlying changes and transformations unresolved.

The Code of Information Hypothesis

The emerging new forms of postmodernity are dominated by the code of information. These forms do not consist separate historical periods, rather they are manifestations of the intensification of certain cultural attributes because of the ever-increasing surplus of information. New relations between spatiality and time are generated by the code of information in the hyper-real cultural environments.

In our traditional physical world, the past exists in the form of memories and as practiced and acknowledged experience that has been interweaved in programmes of intended future action. The future exists only in the sphere of our imagination, and exists only as a projection of calculated evaluation and desired outcomes (Figure 3).

Figure 3: The Code of Information hypothesis

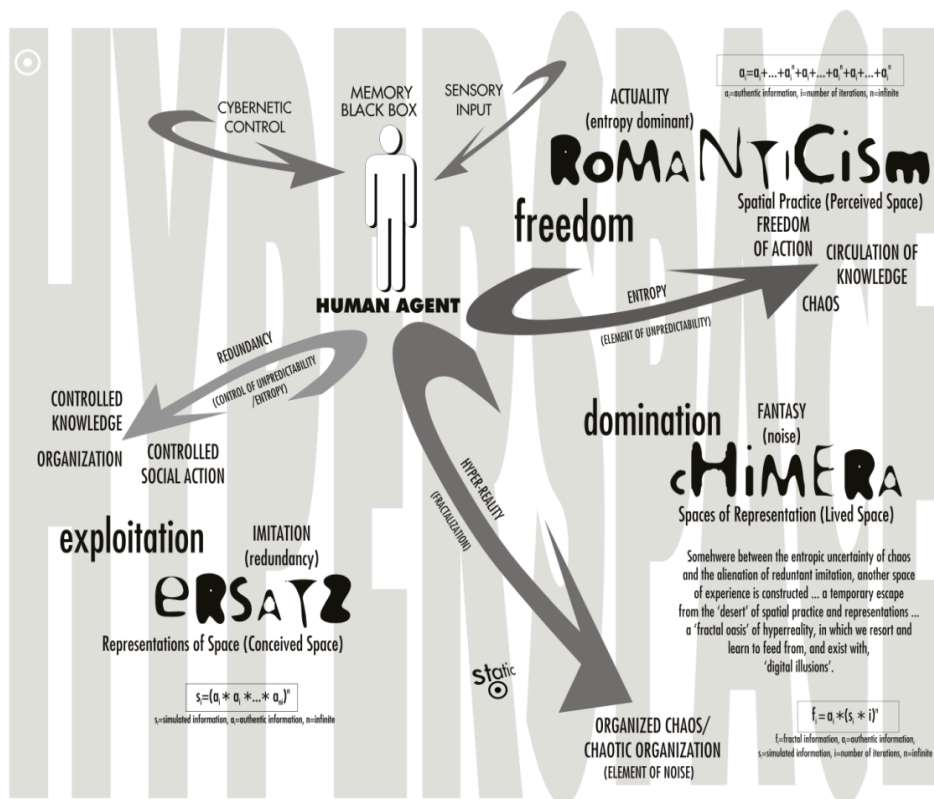


The concept of information in the age of information communication and digital technologies can be distinctively identified to have systemic characteristics, the organization and structure of which can be analyzed through the code of information. The *Code of Information hypothesis* refers to general patterns of organization of the system of information, and with regard both to content and relationships. The digitalization of the system of information makes the code vulnerable to control and programmability. The code of information is also susceptible to the weaknesses of human information processing but also to the exploitative tendencies and interests of external interference and disturbance.

The System of Information Hypothesis

The system of information spans along multiple coexisting spatial levels of organization across the arrow of time, which represent conditions of freedom, of exploitation and of domination of the system of information, respectively. These organizational levels of the system of information (corresponding to entropy, redundancy, and noise of its volume and intensity) coexist at any time at different levels of intensities, and which mark certain socio-cultural and historical periods. In the contemporary era of information communication and digital technologies, of hyper-real landscapes and fantasy worlds, the fractalization the system of information establishes new relations of meanings and understandings (Figure 4).

Figure 4: The System of Information hypothesis



Information communication technologies are digitally constructing reality, or to put it in another way, *they are digitally reconstructing hyper-reality*. The re-organization and transformation of the system of information is taking place within the boundaries of hyperspace or cyberspace. Still, the human obsession with this electronic spatiality, recreates the conditions of the organization of the system of information in every aspect of contemporary social life. The code of the system of information is structured along coexisting and interacting with each other, levels of organization, each characterized by various degrees of intensification of information.

At any point in the arrow of time, the system of information presents coexisting and alternating degrees of authentic, simulated and illusionary segments of information which are reflected in the organization of social life and the world. In the era of digital communication and computer technologies, the system of information implodes towards fractalization. The meaning that justifies the relation of the system of information to the social configurations and entities which reflexively are organized by it is undergoing a gradual transformation of deconstruction, differentiation and reconstruction. Consequently, all logical justifications and confirmations of social reality in the postmodern world and beyond, are destroyed, intensified, transformed, reborn, and set free of the tyranny of reason.

The virtual implosion of the system of information in the digital era is an exemplification of the fractal fate of postmodern societies (Baudrillard, 1990). Social change and transformation is powered up by the catastrophe of non-conformity to the dominant ideology and status quo of digital capitalism. Societies are led to an orgasmic state of intensities and extremes, promoted and marketed through media imperialism. The world is metamorphosed along opposing landscapes, one of secure existence and futuristic technological progress and one instability and misery and of no visibly better future. New epigenetic social structures and forms emerge continually, only making contemporary life and the solutions to its problems more complicated. We live in an anomic world, both in terms of structural architecture and of social interaction, where we are programmed informationally and we become the virtual representations of our imaginary and desired selves.

Trialectics, heterotopias and thirdspace. The argument for *the digital reconstruction of hyper-reality* directly challenges and intends to deconstruct conventional modes of spatial thinking. A conceptual shift is needed in order to proceed and theorize the system of information and this is based on assertions of alternative envisionings of spatiality, as illustrated in the “trialectics and thirdings” of Lefebvre (1991), the “heterotopologies” of Foucault (1986), and Soja’s (1996) concept of “thirdspace.” They are briefly mentioned next.

For Lefebvre (1991) each field of human spatiality — the physical, the mental, the social — is seen as simultaneously real and imagined, concrete and abstract, material and metaphorical. Similarly, the philosophical discussion in this article envisions the system of information as ‘real’ and imagined, physically present but absent or invisible in an abstract way. Lefebvre’s “production of space” in a dialectically linked triad (spatial practice — representations of space — spaces of representation) define a perceived spatiality that embraces the production and reproduction of the system on information, a conceived space of representations constituted via control over and exploitation of knowledge, signs, and codes, and the lived informational space of complex and imaginary symbolisms, coded and not. I contend that the social space of the system of information is defined by, across time, a ‘trialectic’ of spatial configurations — what I term elsewhere as “level-states” of the system of information (Andoniou, 2008).

In Foucault’s (1986) spatiality of “other places,” “heterotopias” are defined as those real and singular spaces to be found in specific social environments and whose functions are different or even the opposite of others. Assumptions, analogies and isomorphies from diverse analyses which support the hypotheses stated in the current argument, suggest that the system of information can be considered as a “heterotopia.” As such, it is characterized by principles of “heterotopology” and it is identified in worldwide signification and representational systems in differentiated forms, it can alter and transform over time in synchronization to specific environments it occupies, it can exist in different spatial configurations, even incompatible to each other, it presents heterochronic formations, it can be closed and isolated or open and permeable at the same time, it is responsible for creating illusionary ‘other’ spaces.

Soja’s (1996) “Thirdspace” project called for a different way of thinking about the meanings and the significance of our already established spatial or geographical imaginations. Thirdspace can be seen as a new approximation, a different way of looking at the same subject, a sequence of never-ending variations on recurrent spatial themes. This is what, in my point of view, is what characterizes the system of information and because of this we need flexible and dynamic open-ended theorizations, based on frequent reconsiderations and re-combinations of alternating conceptualizations of its structure, organization, and communication.

Soja’s “trialectical” thinking challenges all conventional modes of thought and taken-for-granted epistemologies. It is disorderly, unruly, constantly evolving, unfixed, never presentable in permanent constructions, denoting a shift from existential ontology to an epistemology of space. Thirdspace provides the spatial perspective needed to consider and understand social reality and the organization of the system of information and a closer understanding of social change and of emerging hyperrealities in the Digital era.

The Digital Reorganization of Information

The theoretical considerations and observations in the four hypotheses and the philosophical positions above indicate a pattern of structural and organizational characteristics of the system of information which, I argue, provide the background to develop an argument for *the digital reorganization of information* in hyper-spatial environments.

It is then suggested, that the system of information is a whole, irregular, non-linear dynamic system flow characterized by pervasive points of instability, This system exists in a continuous dynamic transformation (implying quantitative alterations and qualitative mutations) of abstract flows of coded and uncoded electronic signals, which produce irregular, contradictory, and habitually chaotic, informational simulations. Moreover, the system of information is constantly produced and regenerated by means of informational simulations of fractal nature, that is, simplified, controllable and programmable versions of an original archetype. 'Reality', 'meaning', and 'truth', as well as social structures, social phenomena and discourses, and human agents, because their organization is dependent or relying on information, they all mutate to simplified, controllable and programmable versions of themselves.

The system of information is a complex system of accumulated data which usually refers to a set of combined data concerning particular constructions of knowledge and 'reality'. But information, in the digital environments of the postmodern-and-beyond world, can also refer to abstract and undefined data formations (considered otherwise as pure noise), when the abstract and undefined become accepted and parts of a legitimate logic. Information in this sense, is pure data or sets of data combined into a message entailing some 'relation to meaning'. Because in the postmodern digital world the referents of meaning are difficult to locate, if any, I suggest we can only refer to 'relations of meaning'; this means, that 'new' accepted meanings can be — according to traditional modernist logic — variations of 'meaning', such as 'meaningless', 'non-meaning', 'meaningful', 'me%a&ni*n(g)', and so on. Data, in contrast, are quantities, characters, or symbols used in performed operations, and which may be stored or transmitted in different forms. Data can be termed information when coupled with context and made relevant, although this is not always the case. Data can also convey 'relations of meaning' without having to relate.

The system of information presents certain emergent properties, which are often the result of the communication of interactions and associations, and which have contingent effects, that is, they can act back and influence the elements from which they are produced. Information is a system under continuous communication with the environment through processes of feed-forward as well as

feedback, which are responsible for quantitative and qualitative changes of the phase spaces in the system of information itself. Such changes, though, may also emerge due to internal fluctuations or due to interacting external and internal processes, but always a less coded form of “a temporary homeostatic equilibrium of entropy” is necessary. The transformation of the system of information, random or otherwise, is characterized by disorder, paradoxically organized in complex ways produced by iterations of information itself. The iterative process refers to functions that are repeated. Multiple interactions between feed-forward and feedback, act as chaotic or strange attractors that cause non-linear trajectories of change, producing a chaotic system of different levels of complexity, occurring within states, ‘phase spaces’ of complex irregular informational patterns. These, in turn, have different levels of impact, depending on the frequency of their reoccurrence or stability. Although generally unstable, under constant change, and unpredictable long-term, still, the genesis and proliferation of these phase spaces can be described, investigated and possibly predicted.

The mutation of the system of information is based on a pattern of relationships, internally exhibiting some degree of organization within limits, which maintains — rather than separates — the interconnections with the environment. The growth of this pattern of relationships is what justifies the system of information as a self-organizing system, differentiated from its environment. This means that the system of information may be in constant active relation to the environment but is not purely determined by it. Rather, through feed-forward and positive and negative feedback, components of the system of information, are used during communication to organize both internally and in relation to the environment. The result is non-predictable but ordered patterns of change, which reproduce their existing conditions and move along trajectories from one phase space to another. Locally occurring interactions in the process of the transformation of the system of information create chaotic mutations, which can be a source of global change in a wider context. An important feature of this chaotic behaviour is that small changes in initial conditions can produce very large differences in outcome. Environmental properties condition and constrain the system of information, which remains in a relatively stable condition of processing and accumulation, until dynamic attractors, emerging from feedback processes, produce state cycles of transformation which disturb the temporally equilibrium and generate a trajectory.

The system of information is shared in a variety of ways within networks of exchanges, where internal communication, along with communication with the environment, enables its content to organize. In this sense, the system of information is a self-referential system that exists in a differentiated environment with differentiated relations to itself and to the environment. The result is a complex system with substantial internal differential integration and co-ordination that exists in a state that is neither totally ordered nor totally chaotic. Alternating

between order and chaos it settles into patterns associated to 'relations of meaning'. The distribution of the elements of information patterns is unpredictable; still they do not disperse outside the boundaries of the pattern. Breaking apart the elements, that make up the code of information, and looking at the individual pieces and their interrelationships, is the key in understanding the complexity of the system of information, and coming to a closer understanding of social 'reality'. Informational patterns revolve around a central strange attractor (i.e., theme) that organizes the points within it, producing order. This dynamic state is based upon mutative iterative cycles whereby output and input among cycles interact with each other.

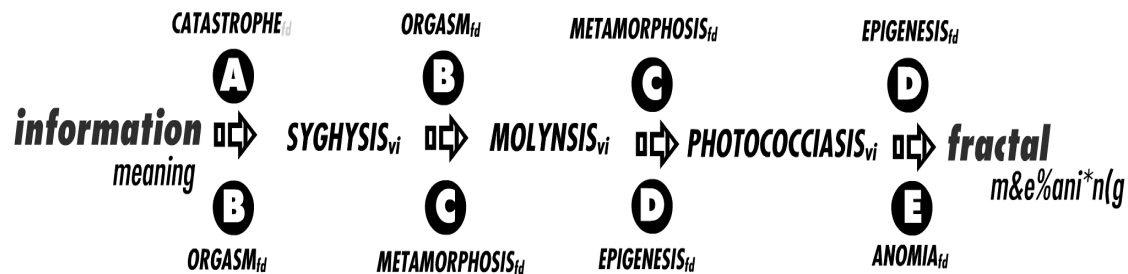
The Fractalization of Information

The result from iterations is sets of complex components of information, that is, fractal information, characteristic properties of which are, self-similarity of components and fractional dimensionality. Self-similarity refers to the same element of information that at level after level repeats itself, like multiple copies. The fractal dimension of the system of information means that smaller magnifications (simplified versions), or arbitrarily partial components of information, appear to be the same as the original ones. In other words, scaling down does not change the appearance of the 'original' system of information. The relative instability of a system of information, towards order or disorder, creates potential fractal conditions.

This dynamic retransformation or *fractalization* of the system of information is termed below as *Virtual Implosion* and develops in distinct phase spaces (spatial changes across time). Through virtual implosion, information mutates to a fractal, continuously alternating phase space. *Virtual Implosion* is empowered by *Fractal Dynamics* (Figure 5). The later refers to interconnecting micro-processes that support and make possible the process of implosion, and they become a pattern of powerful organizing principles of societies, social processes, of human agents, into entities of unpredictably programmable identity and 'consciousness'.

Moreover, the impact of this process of *Virtual Implosion* on both society and individuals is the development of interrelations, which directly affect the construction of the cultural environment within which, *Virtual Implosion*, acts as a potentially controlling force of change and transformation of the world-society. It emerges in hyperspatial environments and powers up social change of worldwide societies and the reconstruction of homo-sapiens to an emerging global digi-sapiens.

Figure 5: Phase spaces of virtual implosion and microprocesses of fractal dynamics



Conclusion

The end result of the fractalization of information, that is, the mutation of information to electronically distorted and repetitive hyper-realities, needs to be addressed. In doing so, our prevailing empirical so-called orthodoxies are bound to be challenged by the appearance of paradoxes and controversies, the non-absolute of 'reality' or the partial availability of 'truth'. In our contemporary global information society, of hyper-real landscapes and fantasy worlds, *the digital reconstruction of hyper-reality* establishes new relations of meanings and understandings of the world. Understanding how the global system of information is digitally reconstructed within ICT learning settings will reveal to us how systems and bodies of social knowledge, based on it, they all mutate to *digital illusions*, altered states of reality which come to dominate our so-conceived real and conceptual imaginations through our daily interactive practices and learning and experiences with information communication technologies.

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