
OTHER WORLDS ARE (ALREADY) POSSIBLE

SELF-ORGANISATION, COMPLEXITY, AND POST-CAPITALIST CULTURES

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This paper* is a call for greater awareness of the theoretical frameworks that we use to understand the world and what to do about it. It stems from the realisation that there is always a tight connection between social reality, the theoretical framework we use to interpret it, and the sense of politics and hope that emerges from such an understanding. This connection is often overlooked. Our hopes and politics are largely the result of a given framework. It is particularly important that we reflect on this fact in times of profound transformations, such as today. Here, my intention is not so much to critique established frameworks (say, Marxism and liberalism), as to present the elements of *another way* of looking at social reality that can at least provisionally explain some of the social dynamics we are witnessing today — and in a novel way. The implications for politics should be apparent.

This new way of seeing is emerging from unsuspected quarters, chiefly, a set of alternative (but increasingly visible) theories that find their source in mathematics and the natural and physical sciences, which usually go under the label of ‘complexity theory’. One of the most interesting and controversial claims of this theory is that the same dynamics and processes might be at play in many domains of material, biological, and social life. Categories such as self-organisation, non-linearity, strange attractors, and non-hierarchy are used to spell out these processes. In addition, for many, complexity in natural and social life unveils an underlying and until now largely uncharted, principle networks. This principle is clearly revealed in the domain of cyberspace, and is increasingly visible in the domain of global movements.¹

The Argument for a New Way of Looking at Reality

Over the past few hundred years, economic and social life has tended to be largely organised on logic of order, centralisation and hierarchy building. Pushed by capitalism and its drive to accumulation, this logic has resulted in systems in which the few

benefit at the expense of many. What has remained largely hidden, however, is that this logic is present not only in those social structures that are evidently exploitative but that similar logics have animated allegedly alternative systems, including socialism and most organisations on the Left. A different logic of social organisation (which was always at play, albeit marginalised) has become increasingly visible in the most recent decades. This logic seems most clearly manifested in two domains : digital technologies (cyberspace, as the universe of digital networks, interactions and interfaces); and the sciences of complexity, particularly in biology and other aspects of natural life. I would like to describe what I believe is the appeal of complexity and its potential for explaining and providing clues for social movements opposed to neoliberal globalisation. As a prelude, however, I would like to introduce briefly the argument for looking at cyberspace.

Cyberspace : Towards Subaltern Intelligent Communities ?

The concept of cyberspace is based on a model that is very different from that of modern media. In the conventional model, information flows one way from a world of active emitters to that of passive receivers; there is tight ideological control so that the media reflects the world as seen by those who rule it. In other words, modern media operates on the basis of a top-down, action-reaction model of information. The model fostered by information, computer and communications technologies (ICTs) contrasts sharply with this dominant model. First, it is based on 'interactivity', which refers to an altogether new framework of interaction — a profoundly relational model in which negotiated views of reality may be built, where all receivers are also potential emitters, a space of truly dialogical interaction, as in the best examples of net art. Second, at least in principle, cyberspace can be seen as a de-centralised archipelago of relatively autonomous zones in which communities create their own media and process their own information.

Third, ICTs and cyberspace tend to promote the creation of networked cultures without the homogenised identities assumed by the mass media; they foster routes for the circulation of ideas that are not so subject to centralised controls and the irruption of sub-cultures that are aware of the need to re-invent social and political orders. As a space for inter-cultural exchange and for the construction of shared artistic and political strategies, cyberspace affords unprecedented opportunities to build shared visions with peoples from all over the world (in this sense, the WSF can be seen partly as a result of this dynamics). At play is a micro-politics for the production of local knowledge made possible by the 'fluid architecture' of cyberspace, emphasising the 'molecular' (as opposed to molar, or characterised by large, homogeneous conglomerates) nature of cyberspace. This micro-politics consists of practices of mixing, re-using, and re-combining of knowledge and information.

In other words, cyberspace may be seen as embodying a new model of life and world-making. Various called a knowledge space, a space of collective intelligence, and a 'noosphere' (sphere of collective thought), cyberspace, in these views, constitutes a signifying space of subject-subject interaction (individually and collectively) for the negotiation of visions and meanings. The resulting systems of networked intelligence could be of great cultural, social, and political potential. They could make up an inter-networked society of *intelligent communities*, centred on the democratic production of

culture and subjectivity. Rather than at the service of capital, this new economy of knowledge would be at the service of an emerging humanity of co-operation, pluralism (singularity), and collective learning. It would be receptive to a multiplicity of life forms and cultures rather than contributing to the flattening of identities affected by capital's steam-rolling media. For cyberspace visionaries, this realisation could enable a re-signification of social and biological life and of freedom, a platform for the self-production of social and natural worlds.²

Networks, Complexity, and the Principle of Self-Organisation

In its utopian conception, cyberspace can thus be seen as enacting a de-centralised, non-hierarchical logic of self-organisation. Self-organisation is also at the heart of complexity in biological and social life. Ants, swarming moulds, cities, and certain markets are among the entities that show what scientists call 'complex adaptive behaviour.'³ These examples evince the existence of bottom-up processes in which simple beginnings lead to complex entities, without there being any master plan or central intelligence planning it. In these cases, agents working at one (local) scale produce behaviour and forms at higher scales (eg., the great anti-globalisation demonstrations of the last few years); simple rules at one level give rise to sophistication and complexity at another level. Scientists have a new word for this discovery, *emergence*, when the actions of multiple agents interacting dynamically and following local rules rather than top-down commands result in some kind of visible macro-behaviour or structure. There is more : these systems are (sometimes, not always) 'adaptive' — they learn over time, responding more effectively to the changing environment.

Emergent behaviour — such as, in the examples mentioned above — usually shows a mix of order and anarchy, self-organising networks and hierarchies (eg., myriad encounters on sidewalks vs. rule-governed behaviour, to mention the example of cities). The important issue is to recognise the self-organising potential of diverse agents or multiplicities. It is important to respect and build on this logic (some new software and interfaces attempt to do just this, by learning to recognise complexity). This entails building on the logic of distributed (neither centralised nor de-centralised, but mesh-like), bottom-up intelligence as opposed to unified, top-down forms.

Complexity theory points at a pervasive logic underlying many domains of biological, social and economic life, and of networks and interconnection. Networks constitute the basic architecture of complexity. Networks are 'in' at present in the explanation of many types of processes; from nature to computers, from business to movements, anywhere one looks there seems to appear a web-like universe. Physical and natural scientists are currently busy mapping networks of all kinds, and trying to ascertain network structures, topologies, and mechanisms of operation. Social scientists are beginning to get onto the bandwagon of complex network research. As a pioneer and advocate of this research said in a comprehensive introduction to the subject, "... networks will dominate the new century to a much greater degree than most people are yet ready to acknowledge...Network thinking is poised to invade all domains of human activity and most fields of human inquiry".⁴ Be that as it may, the fact is that network thinking is here to stay, at least for a while, and it has interesting lessons for re-

thinking many aspects of Left (and perhaps all kinds of) politics, from organisational structures to movement dynamics.

Often, networks assemble themselves by following the logic of self-organisation. The scientists' most striking claim, however, is that there are some basic laws governing all networks. For instance, networks are highly inter-connected, so that huge networks constitute 'small worlds' in the sense that all elements in the network are only a few links away from all others, particularly due to the presence of clusters, hubs and connectors. And of course not everything goes in networks, since some sites and hubs are much more connected than others are, so that there are hierarchies of inter-connection. Often, an entire network topology is determined by a few large hubs, as in the case of the World Wide Web, where links such as Google, Yahoo or Amazon have a much greater weight in defining the web's architecture than millions of much smaller nodes. These hubs determine preferential attachments; in the emerging global economy, large corporations have a profound role in shaping the networked economy. Something similar happens in global movement networks, in which Zapatista and a few other key nodes (including the WSF) are crucial to the structuring of the overall network. In sum, even if self-organised, networks of this type follow certain rules, which scientists refer to as 'power laws'.⁵

The Mexican theorist, Manuel de Landa, has introduced a useful distinction between two general network types : *Hierarchies*, and flexible, non-hierarchical, de-centralised and self-organising *meshworks*.⁶ This is a key distinction that underlies two alternative philosophies of life. Hierarchies entail a degree of centralised control, ranks, overt planning, homogenisation, and particular goals and rules of behaviour; they operate under the tyranny of linear time and tree-like structures. The military, capitalist enterprises and most bureaucratic organisations have largely operated on this basis. Meshworks, on the contrary, are based on de-centralised decision making (such as the 'swarming effect' described above), self-organisation, and heterogeneity and diversity. Since they are non-hierarchical, they have no overt single goal. They develop through their encounter with their environments, although conserving their basic structure. Other metaphors used to describe these phenomena are tree-like structures or 'strata' (for hierarchies) and 'rhizomes' or 'self-consistent aggregates' for meshworks (by philosophers Deleuze and Guattari).⁷ The metaphor of rhizomes suggests networks of heterogeneous elements that grow in unplanned directions, following the real-life situations they encounter. Hierarchies shun heterogeneity and diversity, meshworks welcome it. In short, they represent two very different life philosophies. An open question is whether rhizomatic meshworks escape the power laws that characterise most ('scale-free') regular networks.

These two principles are found mixed in most real-life examples. They could also give rise to one another (as when social movement meshworks develop hierarchies and centralisation). The internet is a case in point : having grown mostly on the model of self-organisation, it became increasingly colonised by hierarchical forms (from the military to e-business), which have attempted to turn it into another space of mass consumption of commodities and information. Today, the internet can be said to be a hybrid of meshwork and hierarchy components, with a tendency for the elements of command and control to

increase. The reverse could be said about the global economy. Twentieth century corporate economy was based on a tree-like hierarchical model; today, corporations are seeking to evolve towards a networked form with flexible command structures. This contradicts the trend towards large conglomerates, so that capitalist economy continues to be a mixture of de-centralised networks and hierarchies. As de Landa put it, “the new view of markets stresses their de-centralisation (hence corporations do not belong there), and this can hardly justify globalisation which is mostly the result of corporations”.⁸ Global movements could get ahead of the game by opting decidedly for the meshwork logic.

To sum up, I am suggesting that in cyberspace and complexity we find a viable and at least potentially meaningful model of social life (in terms of, say, less hierarchical and more meshwork-like possibilities). This model is based on self-organisation, non-hierarchy, and complex adaptive behaviour on the part of agents, a model that contrasts sharply with the dominant model of capitalism and modernity, particularly in their incarnation as neoliberal globalisation. It is closer in spirit to philosophical and political anarchism and anarcho-socialism and may provide cues for internationalist networking. The model of self-organisation finally constitutes an *entirely different form* for the creation of biological, social, and economic life. Without proposing it as the only model and for all efforts worldwide, I suggest that leftist and progressive people in many parts of the world should consider this model seriously in their organising, resistance, and creative practices. In the long run, this may amount to re-inventing the dynamics of social emancipation itself. The Left is thus confronted with a novel sociology and politics of emergence from this perspective.⁹

Some Questions of Strategy

The transformation in question may already be happening as anti-globalisation social movements indicate. These movements may be seen as fostering a sort of ‘emergence’ in their attempt to counter the deadening, hierarchy-laden systems of neoliberal globalisation. None of the movements making up the anti-globalisation movement can by itself tackle the entire ‘system’ or the global situation, yet they have shown that they can work together in some fashion. They do not take their cues from any central committee, but act largely in response to local / national concerns, albeit having in mind some global issues.¹⁰ In short, with anti-globalisation movements we have a case where local collective action results in global behaviour at least sometimes.¹¹ In other words, no single movement can ‘see the whole’ (eg. for an Italian movement it is hard to see the complexity of a local movement in a Colombian rainforest, and for both, hard to see the complexity that their combined action might create, let alone when linked to a greater number of more diverse movements). But the fact that there are forms of globally emergent behaviour affects what particular movements think and do. In other words, place-based and other local movements contribute to emergent behaviour, that is, to forms of macro-intelligence and adaptability, even if the ‘overall state of the system’, or the character of ‘the enemy’ might be difficult to assess. Such assessments are in fact always a perilous reduction; even if having some strategic sense of the whole might be important. In these cases, global forms of knowledge and strategy making cannot be reduced to the individual movements making it up. The ‘global

movement' may indeed develop its life and adapt over a much longer time span than any individual movement that contributes to it.

In other words, anti-globalisation movements can be thought about in terms of self-organising networks (a meshwork) of movements that produce behaviour that goes beyond each individual movement. There have to be means for enabling suitable interactions (through face to face encounters, cyberspace, flexible and innovative organisational structures, etc.). These interfaces would have to foster complex learning that does not happen just locally. And it is important to think about two dynamics : the day-to-day lives of individual movements, and the historical scale of collective movement over the years. To this we might add the macro-scale of human society over long periods. Movements (and persons) are not very good at keeping these various levels in mind and at responding to changing patterns over time, for good reasons. It is important to recognise the role of self-organising behaviour so as to foster it, to the extent that is possible or desirable.¹²

Of course, not every interface or collection of agents is likely to produce adaptive, emergent behaviour. Many environments suppress such behaviour, hence the need to nourish it. There has to be both connection and organisation that promote higher-level learning. Self-organisation needs to be steered in specific ways to produce the kinds of collective intelligence that are needed. The greater the inter-connectedness, the greater the likelihood of positive feedback. Negative feedback is also important in attempting to steer a system into particular goals, making it into a complex adaptive system. From a theoretical perspective at least, a combination of ever-widening positive feedback and some negative feedback is needed — again, self-organisation with some measure of leadership, structure, and regulation. Theoretically again, the need for a measure of self-regulation and de-centralised control arises when the community / system cannot reach a constructive balance on its own. Movements would need to learn to 'read the signs' and adapt, but also learn to capitalise on the swarming behaviour and positive feedback of self-organisation. To foster interactivity conducive to these ends it is necessary to think about the rules of interaction. In the jargon of ICTs, the system needs to be wired accordingly.¹³

This double dynamic seems already present in principle in the proposal for a Social Movements World Network. Taking advantage of the virtual and real spaces created by the WSF, this proposal aims at creating a minimal basis for a world network of social movements. The proposal stems from the recognition of the need for "new structures, decision-making processes and new formations to articulate and drive a radical democratic, feminist, internationalist and anti-imperialist agenda".¹⁴ The network "would help us develop the conditions so that the diverse social movements of the world can exchange analyses, opinions and information on the present conjuncture and establish some shared priorities and necessary tasks".

The objective is to go beyond episodic encounters among the movements, to construct a deeper political debate, to establish horizontal structures that facilitate exchange and common actions, and to extend the reach of the movements in all the continents. At this level, the proposal resonates with the logic of complexity and self-organisation, combined with some elements of structure and regulation just described.

As Adamovsky has rightly warned, however, the danger could start if and when those facilitating the process — themselves working within hierarchical organisations — attempt to create a structure that claims to represent ‘the totality’ of the social movements, or impose agendas instead of letting each node enter and exit network coalitions in terms of their own interests and needs.¹⁵

To get back to movements, anti-globalisation movements could be thought about as building de-centralised intelligence partly with the help of and following the non-colonised logic of ICTs, particularly cyberspace. Adaptive self-organisation is the best alternative available. This ‘politics of emergence’ shows that there can be collective intelligence and ‘real results’ (in terms of power) in self-organising behaviour. If it is true that global capitalism and information society are attempting a re-structuring towards the network form, movements could be better off by building on this logic and getting ahead of the game. Movements have the advantage since, unable to really pursue a strategy of collective intelligence, capitalism will progressively lose out to an anti-globalisation movement which, when all is said and done, will have learned to “think like a swarm”.¹⁶ Movements will develop a degree of self-awareness that only distributed intelligence can muster, of contributing with every action and political act to long term processes of alternative world-making.¹⁷

In conclusion, can anti-globalisation movements create a sort of collective intelligence that opposes the sociology of absences of neoliberal globalisation? If so, social movements would exhibit complex adaptive and emergent behaviour of their own, and would promote it for society as a whole out of their own local work. The ‘behavioural ecology’ of anti-globalisation movements shows that they have indeed developed adaptive behaviour to the changing environment of cyberspace. Leftist visions of the future could then build on the relational, radically self-organising principle of networking as the one most appropriate to the social movements of today. Perhaps it is on this basis that an internationalist challenge and alternative to neoliberal globalisation can be most effectively advanced.

A final caveat is in order. What does all this have to do with power? Is there a sense of power in complexity? For the vision presented above to have a chance it has to be accompanied by an ineluctable obligation: “To the local / locale; to the marginalised; to the public sphere; to a constant critical self-examination.”¹⁸ This is not easy to accomplish since the very same ICTs foster a disregard for locality, body and place, plus tremendous forms of inequality; they produce a degree of global de-localisation and erasure of place perhaps greater than ever before. Some feminists and environmentalists are very much aware of this fact:

Who are most marginalised and disempowered by these trends? Often women, ethnic minorities, and the poor. We need to pay special attention to the political economy of ICTs and to the capitalist, patriarchal, and ethnocentric tendencies and structures that regulate ICTs and net practices today.¹⁹

This analysis should also give us clues about which agents should be — and at times actually are — at the forefront of struggles over ICTs.²⁰

There is a political ecology of cyberspace that suggests that the ‘cultures’

developed out of ICTs-supported networking need to be conscious of the double character of the struggle : over the very nature of cyberspace and ICTs, and over the real re-structuring of the world effected by ICTs-led transnational capitalism. This means that if the aim is to create subaltern intelligent communities, these need to be ecological and ethical in the broad sense of these terms. There is thus a cultural politics of cyberspace that resists, transforms, and presents alternatives to the dominant real and virtual worlds. Consequently, this cybercultural politics can be most effective if it fulfils two conditions : awareness of the dominant worlds that are being created by the same technologies on which the progressive networks rely; and an ongoing tacking back and forth between cyberpolitics and place-based politics, or political activism in the physical locations where networkers or netweavers sit and live. This is precisely the politics that some of today's movements are attempting to develop in creatively combining local and global strategies for action, local and global goals, local and global interaction.²¹

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Arturo Escobar — See 'Editors' (this volume).

NOTES

*I have preserved the general spirit of the 'Life After Capitalism panels', organised by Peter Waterman, that is, focus on the vision ('What do we want?') and strategy ('How do we get it?') Hence the generally utopian and tentative character of the piece, which is here offered as food for thought more than an accomplished proposal.

¹ Calls for a new way of looking at reality came initially in the mid-eighties, from scientists advocating for a transition from the rationalistic, linear, and predictability assumptions of classical science to positions highlighting irreversibility, unpredictability, non-linearity, becoming, and the like. The most well known statement in this regard was Prigogine and Stengers's book, Order out of Chaos (1984). At about the same time, Boaventura de Sousa Santos was calling for a similar paradigmatic transition in the social sciences (1992).

² Pierre Lévy (eg., 1997) has most powerfully articulated this thesis in recent years. The liberation theologian Leonardo Boff's recent work on *religación* (2000) — a "reconnecting" of humans with nature, each other, the earth, the cosmos, God — could also be interpreted in this light (he appeals explicitly to complexity). Discussions of the impact of ICTs on daily life abound, including those examining "cybercultures" (eg., Harcourt, ed. 1999; Bell and Kennedy, eds. 2000; Burbano and Barragán, eds. 2002). Kari-Hans Kommonen and the ARKI Research Group at the Media Lab at

the Helsinki University of Art and Design are developing a framework to study the impact of growing digitalisation on everyday life. For these researchers, the internet is a first step in the development of a far more complex Mediaspace that is emerging as a result of pervasive digitalisation. This Mediaspace will be central to crafting and negotiating ideas, structures and practices, hence the need to develop an explicit approach to designing this space as a means to social, cultural and political innovation. See <http://arki.uiah.fi>.

³ Common examples include : thousands of invisible single-celled mould units which occasionally coalesce into a swarm and create a visible large mould; ant colonies that develop over a long time span with no central pacemaker; local markets which, in the past, efficiently linked myriad producers and consumers, allowing prices to set themselves in a way that was understood locally, without great hierarchies or central control; and the way in which cities developed without much central planning on the basis of interfaces between pedestrians, vehicles, goods and services, etc. See the fine introduction on emergence in complex systems by Johnson (2001). A more technical work that attempts to re-think social structure from the perspective of complexity is Kontopoulos (1993); it pays attention to issues of emergence, stability, scale, and heterarchical forms of organisation in ways that could be useful for thinking about emergent structures and possibility spaces in AGMs. Above all, I have relied on Manuel de Landa's sustained effort at pushing complexity forward by focussing on social systems.

⁴ Barabási 2002, pp 7, 222.

⁵ Barabási 2002.

⁶ de Landa 1997, nd 2003.

⁷ Deleuze and Guattari 1987.

⁸ de Landa 2003, p 5.

⁹ Santos, this volume.

¹⁰ A somewhat similar argument has been made by Osterweil (2002) for Italian movements, Peltonen (2003) for the Finnish environmental movement, and my own studies of the social movement of black communities of the Pacific (2000). Peltonen (2002), Chesters (2003), and Escobar (2002) are among the few applications of complexity to social movements to date.

¹¹ Or is there a global effect *always going on*, besides and beyond the visible global events ? Is there a stifling "Seattle effect" that does not let us see the always on-going swarming that goes on at the local / regional levels, that in some way is also "global" ?

¹² From the perspective of complexity, the theoretical utopia would be a phase transition as a result of AGM activity, that is, a radical change in state and organisation at a critical juncture, perhaps promoted by some sort of non-linear dynamics in the mechanisms of the world economy, ecology, ideology, etc.

¹³ Some of the concerns with the WSF expressed by critics in this volume can be interpreted in this light. What kinds of interfaces and correctives would be needed to foster the movement networks adumbrated by Adamovsky and George, for instance, or for lessening the invisibilities unveiled by Osterweil ?

¹⁴ CUT, World March of Women, ATTAC, and Focus on the Global South, this volume.

¹⁵ Adamovsky 2003.

¹⁶ Johnson 2002.

¹⁷ Electronic art, net art and software design are also fields where great innovation is taking place in the direction of self-organisation, multiplicity, and non-hierarchy. See the original version of this article for some references. See also *Critical Art Ensemble* (1996); Burbano and Barragán, eds. (2002) for recent Latin American experiments. Application of network theory to movements and

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global issues include Waterman (1992), King (2000), and the dissertations on Zapatista networks by Solano-Leyva (2001) and Olesen (2002). A study of networks from a dominant perspective is Arquilla and Ronfeldt (2001).

¹⁸ Waterman 2003.

¹⁹ Harcourt, ed 1999; Escobar 1999; Virilio 1999.

²⁰ See, for instance, María Suárez's work with the FIRE radio and internet network in Costa Rica, 2003, and in this volume.

²¹ See, for instance, the 'Women and the Politics of Place' project, organised by the Society for International Development, SID (www.sidint.org).