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Introduction

This is a book about (among other things) information and entropy, cybernetics and thermodynamics, mailing lists and talk shows, the electronic Ummah and chaos theory, web rings and web logs, mobile robots, cellular automata and the New Economy, open-source programming and reality TV, masses and multitudes, communication management and information warfare, networked political movements, open architecture, image flows and the interplay of affects and meanings in the constitution of the common. It is a book, that is, about a cultural formation, a *network culture*, that seems to be characterized by an unprecedented *abundance* of informational output and by an *acceleration* of informational dynamics.

In this sense, this is a book about information overload in network societies and about how we might start to think our way through it. Because of this abundance and acceleration, the sheer overload that constitutes contemporary global culture, it was necessary to assemble and reinvent a method that was able to take in this bewildering variation without being overwhelmed by it. This method has privileged processes over structure and nonlinear processes over linear ones – and in doing so it has widely borrowed from physics and biology, computing and cybernetics but also from philosophy, and cultural and sociological thinking (from Baudrillard to Lucretius, from Deleuze and Guattari to Stuart Hall and Manuel Castells, from Michel Serres to Henri Bergson and Antonio Negri). Above all, however, this book is an attempt to give a name to, and further our understanding of, a global culture as it unfolds across a multiplicity of communication channels but within a single informational milieu.

To think of something like a ‘network culture’ at all, to dare to give one name to the heterogeneous assemblage that is contemporary global culture, is to try to think *simultaneously* the singular and the multiple, the common and the unique. When seen close up and in detail, contemporary culture (at all scales from the local to the global) appears as a kaleidoscope of differences and bewildering heterogeneity – each one of which would deserve individual and specific reflection. However, rather than presenting themselves to us as distinct fragments, each with its own identity and structure, they appear to us as a meshwork of overlapping cultural formations,

of hybrid reinventions, cross-pollinations and singular variations. It is increasingly difficult to think of cultural formations as distinct entities because of our awareness of the increasing *interconnectedness* of our communication systems. It is not a matter of speculating about a future where 'our fridge will talk to our car and remind it to buy the milk on its way'. It is about an interconnection that is not necessarily technological. It is a tendency of informational flows to spill over from whatever network they are circulating in and hence to escape the narrowness of the channel and to open up to a larger milieu. What we used to call 'media messages' no longer flow from a sender to a receiver but spread and interact, mix and mutate within a singular (and yet differentiated) informational plane. Information bounces from channel to channel and from medium to medium; it changes form as it is decoded and recoded by local dynamics; it disappears or it propagates; it amplifies or inhibits the emergence of *commonalities* and *antagonisms*. Every cultural production or formation, any production of meaning, that is, is increasingly inseparable from the wider informational processes that determine the spread of images and words, sounds and affects across a hyperconnected planet.

Does that mean, as Paul Virilio has recently suggested following a prediction by Albert Einstein, that an unbearable catastrophe has struck the planet – that we are the victims, today, as we speak, of an informational explosion, a bomb as destructive as the atomic bomb?¹ Information is often described as a corrosive, even destructive and malicious entity threatening us with the final annihilation of space–time and the materiality of embodiment. Echoing a widespread feeling, Virilio suggests that we see information as a force able to subordinate all the different local durations to the over-determination of a single time and a single space that is also emptied of all real human interactions. From this perspective, contemporary culture is the site of a devastation wreaked by the deafening white noise of information, with its 'pollution of the distances and time stretches that hitherto allowed one to live in one place and to have a relationship with other people via face-to-face contact, and not through mediation in the form of teleconferencing or on-line shopping.'² As will become clear in the book, I do not believe that such informational dynamics simply expresses the coming hegemony of the 'immaterial' over the material. On the contrary, I believe that if there is an acceleration of history and an annihilation of distances within an informational milieu, it is a creative destruction, that is a *productive* movement that releases

(rather than simply inhibits) social potentials for transformation. In this sense, a network culture is inseparable both from a kind of *network physics* (that is physical processes of differentiation and convergence, emergence and capture, openness and closure, and coding and overcoding) and a *network politics* (implying the existence of an active engagement with the dynamics of information flows).

The first chapter is a lengthy engagement with information theory with the stated intent of understanding more about this mysterious physical entity as it has come to pervade the language and practices of contemporary culture. I will start by freeing up the concept of information from two prejudices that have actually hindered our understanding of informational dynamics: the idea that information is 'the content of a communication'; and the notion that information is 'immaterial'. This interpretation of information theory (and in particular of Claude Shannon's 1948 paper on 'The Mathematical Theory of Communication') will play up those aspects of information that correspond to or explain the informational dynamics of contemporary culture (and hence the field of cultural politics). I have thus put forward a series of propositions linking information theory to something that we call 'the cultural politics of information' and have tried to understand how such a shift has transformed and affected the cultural politics of representation (both linguistic and political). The relationship between physical concepts such as entropy and negentropy, noise and signal, micro and macro, nonlinearity and indeterminacy determines the production of a 'materialistic' theory of information that could help us to make better sense of the 'chaos of communication' in which we live.

The second chapter discusses the architecture of networks, and more specifically the architecture of the Internet. In this case, the Internet is taken as a technical diagram able to support the development of an informational space that is driven by the biophysical tendencies of open systems (such as the tendency towards divergences, incompatibilities, and rising entropic levels of randomness and disorganization). Here I take the Internet to be not simply a specific medium but a kind of active implementation of a design technique able to deal with the openness of systems. The design of the Internet (and its technical protocols) prefigured the constitution of a neo-imperial electronic space, whose main feature is an openness which is also a constitutive tendency to *expansion*. The chapter explores how the informational dynamics instantiated by the design philosophy of the Internet is actualized in a series of

topological figures and cultural experimentation in phenomena such as blogging, mailing lists, and web rings.

Chapter three is an investigation into the question of the 'digital economy' or the 'New Economy' (as it has become more commonly known). In particular, the chapter looks at the phenomenon of 'free labour' – that is the tendency of users to become actively involved in the production of content and software for the Internet. The difficulties inherent in the relationship between such forms of volunteer and unpaid technocultural production and our understanding of contemporary capitalism will be a central focus of the chapter. In order to understand this relation I will draw on the Marxist notion of 'real subsumption' of society under capitalism. In particular, I will follow the Autonomist Marxist suggestion that the extension of production to the totality of a social system (the 'social factory' thesis) is related to the emergence of a 'general intellect' and 'mass intellectuality' pointing to capital's incapacity to absorb the creative powers of labour that it has effectively unleashed.

Chapter four is devoted to the problem of 'control' in chaotic and self-organizing systems – a leitmotif of early literature on the Internet and a field of intense controversy between the human and natural sciences. Recent developments in biological computation (such as research on artificial life, neural networks and mobile robots) imply the production of a kind of 'technical diagram' of control that takes as its content the autonomous productive capacities of a large number of interacting variables. Such a diagram entails the interconnection of the many; the decentralization of command; the modulation of local rules and global behavior; and a kind of 'unnatural selection' in the form of predesigned aims and objectives that operate to capture the powers of emergence through the reconstitution of individuality. The chapter suggests that the dynamics of flows – once understood in terms of nonlinear relations between a larger number of simple bodies – is far from constituting a utopian state of pre-Oedipal bliss but has become the field of operation of a new mode of cybernetic control (or soft control).

Finally chapter five looks at the implications of such distributed and internetworked informational milieus for our understanding of the political dimension of communication. Is it still possible to talk of the media as a 'public sphere' in an age of mass propaganda, media oligopoly and information warfare? Is the world splitting between an educated and internetworked public opinion and a passive and manipulated mass of TV junkies? The chapter suggests that a

reappropriation of the properties of the 'mass' (or the implications of 'forming a mass') can help us to untangle the semantic properties of communication (the meaningful statements that it transmits) from its intensive, affective ones. If the mass is a field for the propagation of affects, it does not exclude but *includes* and *envelops* within itself the segmentation of specialized audiences and their further microsegmentation over the Internet. This common milieu, interconnected by the flow of images and affects, is the site for the emergence of new political modes of engagement (such as Internet-organized global movements against neoliberal economic policies and the Iraqi war). The chapter concludes by proposing such network culture as a site of the political constitution of the common through the biopower of communication.

Throughout this book, I have tried to find a way to map these transformations, not simply as *technologies* but also as *concepts*, *techniques* and *milieus*. These are concepts that have opened up a specific perception and comprehension of physical and social processes; techniques that have drawn on such concepts to develop a better control and organization of such processes; and milieus that have dynamically complicated the smooth operationality of such techniques. In no case have I noticed a linear relation of cause and effect between technologies and social change, or, for that matter, between concepts, techniques, processes and milieus.

From another perspective, I also have to warn the reader that I have willingly overemphasized the dimension of communication and information over other aspects of social and cultural change. In no way should this be taken as an indication of an alleged obsolescence of other aspects of contemporary culture or politics. This overemphasis works in this book as a kind of methodological device to temporarily isolate a specific type of process for the purposes of analysis. In particular, the exceptional dynamism of such informational milieus might lead one to overlook the persistence of stratifications and structures across the domains observed. On the other hand, it is this dynamic character that has drawn my attention to the subject and kept our interest throughout this project and I cannot but hope my readers will feel the same.

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