The Network is the Message

The Internet is the fabric of our lives. If information technology is the present-day equivalent of electricity in the industrial era, in our age the Internet could be likened to both the electrical grid and the electric engine because of its ability to distribute the power of information throughout the entire realm of human activity. Furthermore, as new technologies of energy generation and distribution made possible the factory and the large corporation as the organizational foundations of industrial society, the Internet is the technological basis for the organizational form of the Information Age: the network.

A network is a set of interconnected nodes. Networks are very old forms of human practice, but they have taken on a new life in our time by becoming information networks, powered by the Internet. Networks have extraordinary advantages as organizing tools because of their inherent flexibility and adaptability, critical features in order to survive and prosper in a fast-changing environment. This is why networks are proliferating in all domains of the economy and society, outcompeting and outperforming vertically organized corporations and centralized bureaucracies. However,

in spite of their advantages in terms of flexibility, networks have traditionally had to reckon with a major problem, in contrast to centralized hierarchies. They have had considerable difficulty in coordinating functions, in focusing resources on specific goals, and in accomplishing a given task, beyond a certain size and complexity of the network. For most of human history, unlike biological evolution, networks were outperformed as tools of instrumentality by organizations able to muster resources around centrally defined goals, achieved through the implementation of tasks in rationalized, vertical chains of command and control. Networks were primarily the preserve of private life; centralized hierarchies were the fiefdoms of power and production. Now, however, the introduction of computer-based information and communication technologies, and particularly the Internet, enables networks to deploy their flexibility and adaptability, thus asserting their evolutionary nature. At the same time, these technologies allow the coordination of tasks, and management of complexity. This results in an unprecedented combination of flexibility and task performance, of coordinated decision-making and decentralized execution, of individualized expression and global, horizontal communication, which provide a superior organizational form for human action.

In the last quarter of the twentieth century, three independent processes came together, ushering in a new social structure predominantly based on networks: the needs of the economy for management flexibility and for the globalization of capital, production, and trade; the demands of society in which the values of individual freedom and open communication became paramount; and the extraordinary advances in computing and telecommunications made possible by the micro-electronics revolution. Under these conditions, the Internet, an obscure technology without much application beyond the secluded worlds of computer scientists, hackers, and countercultural communities, became the lever for the transition to a new form of society—the network society—and with it to a new economy.

The Internet is a communication medium that allows, for the first time, the communication of many to many, in chosen time, on a global scale. As the diffusion of the printing press in the West

created what MacLuhan named the 'Gutenberg Galaxy', we have now entered a new world of communication: the Internet Galaxy. The use of the Internet as a communication system and an organizing form exploded in the closing years of the second millennium. At the end of 1995, the first year of widespread use of the world wide web, there were about 16 million users of computer communication networks in the world. In early 2001 there were over 400 million; reliable forecasts point to about 1 billion users in 2005, and we could be approaching the 2 billion mark by 2010, even taking into consideration a slowing down of diffusion of the Internet when it enters the world of poverty and technological retardation. The influence of Internet-based networking goes beyond the number of users: it is also the quality of use. Core economic, social, political, and cultural activities throughout the planet are being structured by and around the Internet, and other computer networks. In fact, exclusion from these networks is one of the most damaging forms of exclusion in our economy and in our culture.

Yet, in spite of the pervasivenes of the Internet, its logic, its language, and its constraints are not well understood beyond the realm of strictly technological matters. The speed of transformation has made it difficult for scholarly research to follow the pace of change with an adequate supply of empirical studies on the whys and wherefores of the Internet-based economy and society. Taking advantage of this relative void of reliable investigation, ideology and gossip have permeated the understanding of this fundamental dimension of our lives, as is often the case in periods of rapid social change. Sometimes this has been in the form of futurological prophecies based on the simplistic extrapolation of social consequences from the technological wonders emerging from science and engineering; at other times, it appears as critical dystopias, denouncing the supposedly alienating effects of the Internet before even practicing it. The media, keen to inform an anxious public, but lacking the autonomous capacity to assess social trends with rigor, oscillate between reporting the amazing future on offer and following the basic principle of journalism: only bad news is worthy news.

The volatility of the stock market contributes to this ambivalent feeling toward the Internet. Once upon a time, before April 2000,

any business related to the Internet was greeted by the market with staggeringly high valuation, regardless of its performance. By the beginning of 2001, most technology stocks were battered by the flight of investors, again without much discrimination between good and bad management and business prospects. The new financial markets are strongly influenced by crowd psychology and information turbulences, rather than by a sound evaluation of the relatively new conditions under which business currently operates. The effect of these developments is that we are entering, full speed, the Internet Galaxy in a state of informed bewilderment.

And yet, while we do not know enough about the social and economic dimensions of the Internet, we know something. This book presents some of this knowledge, and reflects on the meaning of what we know. In the pages that follow you will find no predictions about the future, since I think we barely understand our present, and I deeply distrust the methodology underlying these predictions. You will not find moral admonitions either—or, for that matter, policy prescriptions or management advice. My purpose here is strictly analytical since I believe that knowledge should precede action, and action is always specific to a given context and a given purpose. But I hope that by rooting my reflection in observations concerning various domains of the practice of the Internet I will be able to shed some light on the interaction between the Internet, business, and society. Furthermore, I hope that this will help to illuminate the path to better our society and to stabilize our economy—since volatility, insecurity, inequality, and social exclusion go hand in hand with creativity, innovation, productivity, and wealth creation in these first steps of the Internet-based world. The improvement of our condition will depend on what people do, including you and me. But in this book, as the academic researcher I am, my job, and indeed my responsibility, is to provide you with the best possible intellectual tools I can, within the limits of my knowledge and experience.

The point of departure of this analysis is that people, institutions, companies, and society at large, transform technology, any technology, by appropriating it, by modifying it, by experimenting with it. This is the fundamental lesson from the social history of technology,

and this is even more so in the case of the Internet, a technology of communication. Conscious communication (human language) is what makes the biological specificity of the human species. Since our practice is based on communication, and the Internet transforms the way in which we communicate, our lives are deeply affected by this new communication technology. On the other hand, by doing many things with the Internet, we transform the Internet iself. A new socio-technical pattern emerges from this interaction.

Moreover, the Internet was purposely designed as a technology of free communication, for historical and cultural reasons that I will present in this book. It is not the result of this project that we are free at last thanks to the Internet—as I hope I will be able to show: it all depends on context and process. But it follows that the Internet is a particularly malleable technology, susceptible of being deeply modified by its social practice, and leading to a whole range of potential social outcomes—to be discovered by experience, not proclaimed beforehand.

Let me provide some examples to illustrate this statement. Take the new economy. If e-business is understood as the commercialization of the Internet by dot.com firms, this would be an interesting, innovative, and sometimes profitable business, but rather limited in its overall economic impact. If, as I shall argue, the new economy is based on unprecedented potential for productivity growth as a result of the uses of the Internet by all kinds of business in all kinds of operations, then we are entering, probably, a new business world. A world that does not cancel business cycles or supersede economic laws, but transforms their modalities and their consequences, while adding new rules to the game (such as increasing returns and network effects). In one perspective, the new economy is the economy of Internet industry. In another approach, we observe the growth of a new economy from within the old economy, as a result of the use of the Internet by business, for its own purpose and in specific contexts.

Consider a very different issue. I believe that the Internet is a fundamental instrument for development in the Third World. And so do some of the people who can really make a difference, such as Kofi Annan, Thabo Mbeki, and Ricardo Lagos. However, this does

not mean that by diffusing the Internet without altering the context of its appropriation we can reverse the current situation, in which about 50 percent of humankind barely survives with less than two dollars a day.

Unless we act on a broader development strategy, we could find ourselves in the situation I found myself on landing in Bogotá in April 1999. I was initially thrilled by the headline of *El Tiempo*: "New uses of Internet in Colombia." I care very much about Colombia, so I was eager to see any small sign of light at the end of its tunnel of violence. Yet, it turned out that, confronted with the flight from Bogotá of the upper middle class, barricaded in its suburban gated communities, extortionists and kidnappers had resorted to the Internet to distribute their threats by the hundreds through electronic mailing lists; then had proceeded to selective kidnapping to enforce their threats, so cashing in on their Internet-based, mass-produced extortion business. In other words, some sectors of Colombian society were appropriating the Internet for their own purposes, their criminal practices, rooted in a context of social injustice, political corruption, drug economy, and civil war. The elasticity of the Internet makes it particularly susceptible to intensifying the contradictory trends present in our world. Neither utopia nor dystopia, the Internet is the expression of ourselves— through a specific code of communication, which we must understand if we want to change our reality.

This book proposes a number of ideas on the interaction between the Internet, the economy, and society, on the basis of selective observations. It does not exhaust the sources of available information because research cannot be completed when the object of the research (the Internet) develops and changes much faster than the subject (this researcher—or, for that matter, any researcher). It does not deal either with all the relevant themes, simply because I did not have the time or energy to write another encyclopedic book covering most dimensions of social life. I want to mention two particularly blatant omissions. I do not deal with the uses of the Internet in education, and particularly in e-learning, a key domain of activity that is transforming the world where I live; that is, the world of educational institutions. And, because of the complexity

of the matter, I could not finish the work I had undertaken on gender and the Internet, although there are some remarks on this issue in different passages of the book. I have vowed to myself (and to the reader) to continue working on this topic, and to have it ready for a possible second edition of this book.

The pages that follow simply try to anchor current discussion of the Internet in documented observation, thus laying the ground for further research in an open, interactive process. This observation is limited in terms of its social and cultural context. Most of the data and sources refer to North America. This is partly because it is where the practice of the Internet is most developed, and partly because it is the area about which we have most information. I have tried to compensate for this bias by gathering information on other countries, and by familiarizing myself, during 1998–2001, with discussions on the social and economic dimensions of the Internet in a variety of contexts, beyond my Californian hub, including Spain, England, Finland, France, The Netherlands, Sweden, Portugal, Germany, Ireland, Russia, Brazil, Argentina, Bolivia, Chile, Colombia, Mexico, and South Africa. I have not undertaken a systematic investigation in all these contexts, and so I do not have specific findings to report. However, by interacting with researchers, social actors, business managers, technologists, and politicians in these countries, and by asking them the questions I consider in this book, I was able to record a differential feedback, which I have tried to take into account when reaching my conclusions. The Internet is a global communication network, but its use and its evolving reality are the product of human action under the specific conditions of differential history. It is up to the reader to filter, interpret, and use, according to his or her own context, the analytical contribution I can offer on the basis of my own theory and observation.

The book is organized along a sequence of topics, covering some of the most important areas of Internet use. I start with the historical and cultural process of the creation of the Internet because it provides the clues to understanding what the Internet is, both as a technology and a social practice. Then I examine the role played by the Internet in the emergence of the new economy, considering

the transformation of business management, capital markets, work, and technological innovation. Next, I invite the reader to move from economy to society by assessing the emergence of new forms of sociability on-line on the basis of available evidence. This will lead us to analyze the political implications of the Internet: first, by studying new forms of citizen participation and grassroots organizing, secondly, by analyzing the issues and conflicts related to liberty and privacy in the interplay between government, business, and Internet-based communication. In order to understand new communication patterns, I then probe the famed convergence between the Internet and multimedia, exploring the formation of a multi-modal hypertext. Then, down to earth: the Internet does have a geography. I will show you which one, and what are its implications for cities, regions, and our urban life. Finally, I will address the fundamental issue of inequality and social exclusion in the age of the Internet by analyzing the contours and dynamics of the digital divide in a global perspective.

So, let us depart on this intellectual journey. It is my hope that it will give the reader a better understanding of a significant dimension of our world, and our lives, at the onset of their transformation.