Center for Transatlantic Relations

The Network Society

From Knowledge to Policy

Edited by

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Notes on Contributors

Jorge Sampaio was born in Lisbon on September 18th 1939. In 1961 he graduated in Law—Lisbon University. Whilst at university he was involved in various academic activities that marked the start of a persistent political action against the dictatorship. In 1995, Jorge Sampaio stood for the presidential elections. He enjoyed the support of personalities, both independent and from other political areas, who played significant roles in the political, cultural and economic life of the country. On January 14th 1996 he was elected on the first ballot. He was sworn in as President of the Republic on March 9th. He ran for a second term of office and was re-elected on the first ballot on January 14th 2001, for another five-year term. In 1991 he published a collection of his political essays entitled A Festa de um Sonho." In 1995 a new work of his was published under the title *Um Olhar sobre Portugal*, setting out his views on domestic problems in response to concerns expressed by Portuguese opinion-makers in various areas of society. In 2000 he published a book called *Quero Dizer-vos*, in which his present views on the challenges faced by the Portuguese society are laid out. His presidential speeches have been published in a series intitled *Portugueses*.

Manuel Castells is the Wallis Annenberg Chair Professor of Communication Technology and Society at the Annenberg School of Communication, University of Southern California, Los Angeles. He is also Research Professor of Information Society at the Open University of Catalonia (UOC) in Barcelona, professor Emeritus of Sociology and of Planning, at the University of California at Berkeley and Distinguished Visiting Professor of Technology and Society at the Massachusetts Institute of Technology.

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Jane Fountain is Associate Professor of Public Policy at the John F. Kennedy School of Government at Harvard University. She is also founder and Director of the National Center for Digital Government, and Co-Chair of the Information, Technology and Governance Faculty Group. Her research is focused at the intersection of institutions, global information and communication technologies, and governance. Fountain is the author of *Building the Virtual State: Information Technology*

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James Katz is professor of communication at Rutgers, The State University of New Jersey. Currently he is investigating how personal communication technologies, such as mobile phones and the Internet, affect social relationships and how cultural values influence usage patterns of these technologies. Prof. Katz has had a distinguished career researching the relationship among the domains of science and technology, knowledge and information, and social processes and public policy. His award-winning books include *Perpetual Contact: Mobile Communication*, *Private Talk and Public Performance* (co-edited with Mark Aakhus), *Connections: Social and Cultural Studies of the Telephone in American Life*, and *Social Consequences of Internet Use: Access, Involvement, Expression* (co-authored with Ronald E. Rice).

Ronald E. Rice is the Arthur N. Rupe Professor in the Social Effects of Mass Communication at the University of California, Santa Barbara, USA. He is the author of widely cited books and articles in communication and information sciences. Dr. Rice received his Ph.D. from Stanford University. Before coming to UCSB, he was the chair of the Department of Communication at Rutgers University.

Sophia K. Acord is pursuing her doctorate in the sociology of art at the University of Exeter in Britain. Her current work focuses on cultural aspects of the distribution of power. She has previously co-authored articles with Profs. Katz and Rice in the area of social consequences of communication technology.

Betty Collis is head of the research team "Technology for Strategy, Learning and Change" in the Faculty of Behavioural Sciences at the University of Twente in The Netherlands. As leader of a five-year collaborative research project with the Learning and Leadership Development organization of Shell International Exploration and Production (Shell EP-LLD), she is also head of the research team for Shell EP-LLD. In both roles she studies changes in organizations related to their use (or non-use) of technologies.

Geoff Mulgan is the director of the Institute of Community Studies in east London, which had been the main vehicle through which Lord Michael Young created over 60 organizations including the Open

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Marcelo Branco is an advisor to the Presidency of the Brazilian Republic for the Information Society. He is also the coordinator of the "Projeto Software Livre Brasil" (www.softwarelivre.org). In his academic work he has collaborated with the University of Cadiz (Spain), he is honorary professor at the Instituto Superior Tecnológico CEVATEC in Lima (Perú) and a member of the scientific council of the International Master in Free Software of the Universitat Oberta de Catalunya (UOC, Open University of Catalonia, Spain).

Jonathan Taplin is Adjunct Professor at USC Annenberg School of Communication. His Areas of specialization are in International Communication Management and the field of digital media entertainment. Taplin began his entertainment career in 1969 as Tour Manager for Bob Dylan and The Band. In 1973 he produced Martin Scorsese's first feature film, Mean Streets which was selected for the Cannes Film Festival. In 1984 Taplin acted as the investment advisor to the Bass Brothers in their successful attempt to save Walt Disney Studios from a corporate raid. This experience brought him to Merrill Lynch, where he served as vice president of media mergers and acquisitions. Taplin was a founder of Intertainer and has served as its Chairman and CEO since June 1996. Intertainer was the pioneer video-on-demand company for both cable and broadband Internet markets.

Imma Tubella is Professor of Communication Theory and Vice-rector for Research at the Open University of Catalonia (UOC), Barcelona. Her research interests concern the relationship between media and identity. She is a member of the Board of the Catalan Broadcasting Corporation. Among other publications, she is a co-author of *La Societat Xarxa a Catalunya* (2003).

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Jeff Cole joined the USC Annenberg School for Communication as Director of the newly formed Center for the Digital Future and as a Research Professor. Prior to joining USC, Cole was a longtime member of the UCLA faculty and served as Director of the UCLA Center for Communication Policy, based in the Anderson Graduate School of Management. At UCLA and now at USC Annenberg, Cole founded and directs the World Internet Project, a long-term longitudinal look at the effects of computer and Internet technology on all aspects of society, which is conducted in over 20 countries. At the announcement of the project in June 1999, Vice President Al Gore praised Cole as a "true visionary providing the public with information on how to understand the impact of media."

William Mitchell is Academic Head of the Program in Media Arts and Sciences, Professor of Architecture and Media Arts and Sciences, and holds the Alexander W. Dreyfoos, Jr. (1954) Professorship at the

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Erkki Liikanen born in Mikkeli, Finland in 1950. Has a Master in political and economical sciences by the University of Helsinki. Since July 2004 he is Governor of the Bank of Finland. Between 1999 and 2004 he was a member of the European Commission for Enterprises and Information Society.

Pekka Himanen divides his time between the Helsinki Institute for Information Society and the University of California at Berkeley. He has also acted as an advisor on the information society to the Finnish President, Government and Parliament. His books on the network society have been published in twenty languages. They include *The Hacker Ethic and the Spirit of the Information Age* (2001) and (with Manuel Castells) *The Information Society and the Welfare State: The Finnish Model* (2001).

Carlos Alvarez is Secretary of State for the Economy in the Chilean Government. Born in Punta Arenas, in 1962. He is an civil engineer and has a Master in Public Administration from Harvard University. He taught economy at the Universidad de Chile between 1989 and 1993.

Maria João Rodrigues is a Full Professor of Economics at the University of Lisbon, Instituto Superior de Ciências do Trabalho e da Empresa (ISCTE), University of Lisbon. Other current activities are: President of the European Commission's Advisory Group for Social Sciences (6th Framework Programme of R&D); Special Adviser to the Luxembourg Presidency of the European Union, in charge of the Mid-term Review of the Lisbon Strategy; Member of the Board of the European Policy Centre Council, Brussels;Member of the Board of "*Notre Europe*," Paris. recent activities developed in the last five years include being a Member of the Group of Economic Analysis supporting the President of the European Commission (2003-2004); Member of the High Level Group on the Future of European Social Policies, European Union (2003-2004); Member of the High Level Group on Information Society, European Union (2003-2004); Member of the European Employment Task Force, European Union (2003); General rapporteur for the *Global Employment Forum*, ILO, United Nations (2001); Member of OECD network of government long-term strategists (2000).

Acknowledgements

Although dealing with the wide-ranging and manifold tasks and duties that are part of the everyday work of the President of the Portuguese Republic, I have continued to reflect, in recent years, on the nature and direction of the movement that interlinks the information society, the knowledge economy and the network society. Where is it taking us? What demands does it make of the economic agents and political decision makers? How does it affect our daily lives and the way in which we define the everyday horizons of our citizens?

It so happens that the speed at which these developments are taking place is so vertiginous and the work carried out by analysts to come to a proper understanding of what is going on are so intense, that complying with the duty of the President of the Republic—i.e., accompanying and trying to understand the changes going on around us—is not easily compatible with the performance of the normal tasks and duties that come with the office.

In these conditions, taking time out to think is a necessity that makes good common sense. This thinking will be all the more profitable done in the company of those who are best prepared to reflect, with the support of solid theoretical and empirical foundations, on social transformation.

Indeed: stopping to think, one more time, on the limitations and opportunities of our societies in the global context of network societies, was what I decided to do. In this, I have been truly privileged to be able to rely on the support of Professor Manuel Castells, who is, without doubt, one of the most brilliant and acknowledged theorists on social change in the digital era.

During the two days of intense work at the conference organized by Professor Castells, with the support of Professor Gustavo Cardoso, it was possible, thanks to the quality of the national and foreign specialists attending—and I would like to take the occasion of the publication of their contributions to thank them once again for their participation—to present and discuss updated perspectives on the main trends towards development of the network society and its policy dimension. This was achieved without neglecting the fact that

these trends are realized at different speeds and in very different patterns in different countries and areas of social life.

From the contributions made and debates held at the conference, and now published in this volume, it is reasonable to conclude that some of the perplexities aroused in this respect by the Portuguese, North American, Finnish, Chilean, Brazilian, UK, Spanish and Catalonian, Dutch, Belgium and other European and Worldwide cases here addressed are common to other societies, albeit at different levels. Sharing this knowledge and comparing different realities is a necessary condition to the development of policies and their implementation in the world we live in. I hope this book might contribute to a better policy making in the network society and knowledge economy.

Jorge Sampaio, President of the Portuguese Republic

Editor's Preface

This volume explores the patterns and dynamics of the network society in its policy dimension, ranging from the knowledge economic, based in technology and innovation, to the organizational reform and modernization in the public sector, focusing also the media and communication policies. The Network Society is our society, a society made of individuals, businesses and state operating from the local, national and into the international arena. Although our societies have many things in common they are also the product of different choices and historical identities. In this volume we chose to focus both what we have considered to be already network societies and also those who are going through a transition process. Accepting the invitation from President Jorge Sampaio to discuss the knowledge economy and the network society from a policy point a view was a challenge that we and the different authors that have contributed to this book believe was worth it.

Policy is usually a strategic choice in order to deal either with uncertainty or with the reality already faced by populations or countries, in our times policy making is becoming increasingly important and at the same time more difficult.

What defines the collective research effort presented in this book is the conviction that the difficulty is probably more a result of the change, and consequently the need to understand what that change is, rather than of an increasingly difficulty of issues and problems. This volume is a small contribution for a better understanding of our societies, both those in transition and those already on the doorsteps of a network society.

The perspective of this book is cross cultural. A perspective drawn, not just by the diversity of geographical origins of its participants, but due to the very own thematic and the geographical scope that we tried to achieve. This is a book that focus on the transition societies of Portugal, Spain—and its different autonomies, Italy, Greece, Poland, Hungary, Czech Republic, Slovakia, Brazil, Argentina, Uruguay and Chile. This is also a book where the comparison of those transition societies with societies, where the network relations that characterize

informational societies, is present. So this book focuses on informational societies like the US, Finland, UK and several other members of the more developed countries in the European Union and how policy is being developed.

The volume begins with Manuel Castells and Gustavo Cardoso contextualization of the network society in its different dimensions, from knowledge to policy and from those societies in transition to the Network Society to the already advanced informational societies. Part II analyzes the knowledge economy, technology, innovation, productivity, competitiveness: the new productive economy. Dale W. Jorgenson and Khuong Vu focus on the information technology and its relationship with the world economy, analyzing the impact of investment in information technology (IT) equipment and software on the world economy. Following Dale Jorgenson's detailed overview of the evidence on international comparisons among the G-7 nations in productivity growth, Luc Soete tries to answer why "Europe Lags Behind the United States and Why Various European Economies Differ in Innovation and Productivity," focusing on the need to better understand the precise relationship between ICT and the overall policy framework for the European economies.

Part III focuses on organizational reform and technological modernization in the public sector. The chapter starts with Jane Fountain's analysis of the Virtual State, a term that is a metaphor meant to draw attention to the structures and processes of the state that are becoming more and more deeply designed with digital information and communication systems. Jane Fountain focuses her approach on the discussion of the technology enactment framework, an analytical framework to guide exploration and examination of information-based change in governments focusing on current initiatives in the U.S. federal government to build crossagency relationships and systems. In a different policy domain, James Katz analyses the role of the Internet in providing an opportunity to the public and healthcare professionals to access medical and health information, improve the efficiency and effective, timely healthcare stressing that important empirical questions remain to be answered at every level about how effective these systems are, how people in various socio-demographic sectors actually use these systems, what their different effects are on those sectors, and whether their expense justifies the efforts involved. Betty Collis'

analysis of education is another contribution to this chapter where she stresses the major changes that are occurring in society in the ways in which we work and interact with each other, focusing on several of the main characteristics of functioning productively in a knowledge economy and give some examples of how these characteristics can relate to transformations in educational processes in the corporate setting, for ongoing professional education, and in higher education. This chapter ends with Geoff Mulgan's account of both international and UK experience in policy making in the information age and aims to show that the question of e-government is inseparable from broader questions of government: how it is evolving, in response to what forces, with what tools, and taking what shapes. I suggest a framework for assessing impacts in terms of public value.

Part IV deals with another area of policy, that of media, communication, wireless and policies in the network society. In this chapter Jonathan Taplin outlines the critical transition from a media world of analogue scarcity (a limited number of broadcast channels) to the coming world of digital abundance where any maker of content (films, music, video games) could have access to the world's audience through a server based on demand media environment. His analysis seeks to clarify what the new environment would look like and how the transition to IPTV could aid all of the existing media stakeholders. Taplin suggests that the new environment would also enable an explosion of creativity as the distribution bottleneck that has existed for one hundred years of media history could be unlocked.

Focusing on Identity, another dimension of the media policies, Imma Tubella suggests that while traditional media, in special television, play an enormous role in the construction of collective identity, Internet influences the construction of individual identity, as individuals increasingly rely on their own resources to construct a coherent identity for themselves in an open process of self formation as a symbolic project through the utilization of symbolic materials available to them. The logic of Internet suggests a definition of self whose key quality is not so much being closed and isolated as being connected.

Bringing into the discussion the need to address the choices of technology at the policy level, François Bar and Hernan Galperin focus on the infrastructure dimension and its social implications while analyzing the deployment of wireless communication infrastructure,

stressing the differences between the wireless and the traditionally big infrastructures investment programs undertaken by large entities such as telecommunications operators and government agencies. They suggest that three parallel trends are converging to permit departure from that tradition: the emergence of more flexible spectrum policies, which has removed regulatory barriers to entry; the advent of new wireless technologies, which has fundamentally changed the cost equation in favour of wireless solutions; and the entrance of many small business and non-profit actors eager to play new roles in the creation and management of wireless communication networks.

The chapter ends with another policy area, that of software, where Marcelo Branco analyzes free software role on our societies and the implications of following just one trend: that towards universal access of the population to the worldwide computer network with technologies we do not master and contents we have no influence on guarantees neither digital democratization nor the socialization of the economic and social benefits provided by the technological advances. Marcelo Branco defends that the high cost of the software used in computers and the barrier to free scientific and technological knowledge imposed by proprietary licences have hindered and even prevented some regions of the world from benefiting from this revolution in order to provide better quality of life for their citizens.

Part V focuses the need to network knowledge both at the global and local level in order to achieve better policies. Jeff Cole, coordinator of *The World Internet Project* (WIP), argues that since television was the one mass medium expected to be a mass medium, a panel study should have commenced in the late 1940s as the United States and much of Western Europe and Asia acquired television. A long-term study of individuals as they became television users would have done much to answer some fundamental questions about the rise of television and its effects on the audience. Such a study also could have documented television's effects on consumer behavior to determine whether and how it affected consumer purchases, connection to the civic process, desire to travel, career aspirations and much else. Cole argues that we currently need to focus on the uses of Internet in order to understand better our present and consequently be able to design more coherent and social and economic policies adapted to the communalities and differences that cross our societies. William Mitchell,

in a different, but complementary approach, focuses on the local, analyzing what kinds of buildings are required by the network economy and the knowledge society. How should these be distributed spatially within a city?

The final chapter of the book focuses on the policies of transition to the network society. Pekka Himanen looks at the challenges that are going on in the information society and their future evolution on a medium term trend, giving particular emphasis on the situation in Finland and Europe. For Himanen, the most critical aspect in the development of the information *society* is the development of the deep-set structures of society, to which we must now pay close attention, stressing that the development of technology will help only when it is combined with changes in the underlying structures.

Erkki Liikanen's contribution focuses on the European Union policies, namely, why it is important to increase productivity and innovation in Europe across all industry and service sectors, what is the key role ICTs play in improving Europe's economy and how the European Union stimulates this through the eEurope 2005 Action Plan and what should be the political approach to sustain the development of the broadband market. Focusing on South America, namely Chile, Carlos Alvarez analyzes the incorporation of Information and Communications Technologies (ICTs) as a key component of Chile´s strategy for economic growth and social development, giving a context of the global impact of ICT to later concentrate on how ICTs have been embraced as a government initiative in Chile. We then return again our attention to Europe with a contribution by Maria João Rodrigues that asks, "What Europe do we want and for what?" Her argument is that the traditional discourses focusing on the need to ensuring peace within borders are no longer working, namely for the younger generations who take this for granted. Given that, we need a more forward-looking approach to the European citizens aspirations by focusing on sustaining their living conditions in a global economy, making Europe a stronger player in improving global governance and creating a more democratic and effective political system. The paths and objectives for Europe are here discussed under the framework of the Lisbon Strategy.

Finally, Jorge Sampaio, President of the Portuguese Republic, responsible for the fostering of this book by inviting the different

scholars and politicians that contributed to this fruitful exchange of ideas and analysis, provides what he suggests to be guidelines for enacting policies in the Information Age. For Jorge Sampaio, in this context, the clear formulation of strategic guidelines and, above all, making decisions at the right time and on the basis of knowledge of the current economic and social trends are absolutely crucial for stimulating and monitoring the necessary changes. In other words: full exploitation of the information technologies with a view to modernizing companies, the public administration and the state itself can only be achieved if, before this, in each one of the principal fields of economic and social life, the main barriers associated with the conventional organizational models and modes of operation are examined. Without organizational innovation, technological innovation will never constitute a development factor and effective source of competitiveness. Jorge Sampaio argues that in countries characterized by high degrees of dualism and asymmetry, the role of the state in creating the infrastructural and support conditions for industrial activity, paying particular attention to the universe of the small and medium-sized enterprises, becomes perhaps even more indispensable than in other contexts. However, state intervention, though necessary, is far from enough. The role of the business community is indispensable in preparing any national economy for successful entry into the age of the information society and globalization. This is because, in the final analysis, it is the enterprises that, depending on a given institutional framework and the stock of skills available in the employment system, will actively contribute to adding vale to the wealth accumulated by an economy.

This is a book on knowledge and policy, two ends of the same process of managing our lives. Only their fruitful combination can allow a better understanding and a better life for our societies. That is the challenge of the network society.

Gustavo Cardoso and Manuel Castells

Part I:
The Network Society:
From Knowledge to Policy

Chapter 1

The Network Society: From Knowledge to Policy

Manuel Castells

Understanding Social Transformation

Our world has been in a process of structural transformation for over two decades. This process is multidimensional, but it is associated with the emergence of a new technological paradigm, based in information and communication technologies, that took shape in the 1970s and diffused unevenly around the world. We know that technology does not determine society: it *is* society. Society shapes technology according to the needs, values, and interests of people who use the technology. Furthermore, information and communication technologies are particularly sensitive to the effects of social uses on technology itself. The history of the Internet provides ample evidence that the users, particularly the first thousands of users, were, to a large extent, the producers of the technology.

However, technology is a a necessary, albeit not sufficient condition for the emergence of a new form of social organization based on networking, that is on the diffusion of networking in all realms of activity on the basis of digital communication networks. This process can be likened to the role of electricity and the electrical engine in diffusing the organizational forms of the industrial society (eg. the large manufacturing factory, and its correlate the labor movement) on the basis of new technologies of energy generation and distribution. It can be argued that nowadays wealth, power, and knowledge generation are largely dependent on the ability to organize society to reap the benefits of the new technological system, rooted in microelectronics, computing, and digital communication, with its growing connection to the biological revolution and its derivative, genetic engineering. I have conceptualized as the network society the social structure resulting from the interaction between the new technological paradigm and social organization at large.

Often, the emerging society has been characterized as information society or knowledge society. I take exception with this terminology—not because knowledge and information are not central in our society, but because they have always been so, in all historically known societies. What is new is the microelectronics-based, networking technologies that provide new capabilities to an old form of social organization: networks. Networks throughout history had a major advantage and a major problem vis-a-vis other forms of social organization. On the one hand, they are the most adaptable and flexible organizational forms, so following very efficienctly the evolutionary path of human social arrangements. On the other hand, in the past they could not master and coordinate the resources needed to accomplish a given task or fulfill a project beyond a certain size and complexity of the organization required to perform the task. Thus, in the historical record, networks were the domain of the private life, while the world of production, power, and war was occupied by large, vertical organizations, such as states, churches, armies, and corporations that could marshall vast pools of resources around the purpose defined by a central authority. Digital networking technologies enable networks to overcome their historical limits. They can, at the same time, be flexible and adaptive thanks to their capacity to decentralize performance along a network of autonomous components, while still being able to coordinate all this decentralized activity on a shared purpose of decision making. Digital communication networks are the backbone of the network society, as power networks (meaning energy networks) were the infrastructure on which the industrial society was built, as it was demonstrated by historian Thomas Hughes. To be sure, the network society manifests itself in many different forms, according to the culture, institutions, and historical trajectory of each society, as the industrial society encompassed realities as different as the United States, and the Soviet Union, England or Japan, while still sharing some fundamental features that were recognized as defining industrialism as a distinct form of human organization—not determined by the industrial technologies, but unthinkable without these technologies.

Furthermore, because the network society is based on networks, and communication networks transcend boundaries, the network society is global, it is based on global networks. So, it is pervasive throughout the planet, its logic transforms extends to every country in the planet, as it is diffused by the power embedded in global networks of capital, goods,

services, labor, communication, information, science, and technology. So, what we call globalization is another way to refer to the network society, although more descriptive and less analytical than what the concept of network society implies. Yet, because networks are selective according to their specific programs, because they can simultaneously communicate and incommunicate, the network society diffuses in the entire world, but does not include all people. In fact, in this early 21st century, it excludes most of humankind, although all of humankind is affected by its logic, and by the power relationships that interact in the global networks of social organization.

Understanding structural transformation in its morphological form, meaning the rise of the network society as a specific type of social structure, frees the analysis from its promethean underpinnings, and leaves open the value judgment on the meaning of the network society for the well being of humankind. We are mentally framed in an evolutionary view of human progress, coming from the Enlightenment and reinforced by Marxism, according to which humankind, led by Reason and equipped with Technology, moves from survival to agricultural societies, then to the industrial society, and finally to the post-industrial/information/knowledge society, the shining hill where Homo Sapiens will finally make his dignified dwelling. Yet, even a superficial look at the historical record belies this fairy tale of human progress, as the Nazi or Stalinist Holocausts are witness to the destructive potential of the industrial age, and as the wonders of the information technology revolution coexist with the self-destructive processes of global warming or the resurgence of pandemics on a planetary scale.

So, the issue is not how to reach the network society as a self-proclaimed superior stage of human development. The issue is to recognize the contours of our new historical terrain, meaning the world we live in. Only then it will be possible to identify the means by which specific societies in specific contexts can pursue their goals and realize their values by using the new opportunities generated by the most extraordinary technological revolution in humankind, the one transforming our capacities of communication and enabling to modify the codes of life, that is the one giving us the tools to actually master our own condition, with all the potentially destructive or creative implications of this capacity. This is why diffusing the Internet or putting more computers in the schools does not in itself amount to much

social change. It depends where, by whom, for whom, and for what communication and information technologies are used. What we know is that this technological paradigm has superior performing capacity vis-a-vis previous technological systems. But to know how to use it to the best of its potential, and in accordance with the projects and decisions of each society, we need to know the dynamics, constraints and possibilities of the new social structure associated with it: the network society.

As for the actual content of the network society as a social structure, I will now turn to present what academic research knows on the subject.

The Network Society Beyond Myths: Findings of Scholarly Research (*)

In the early years of the 21st century, the network society is not the emerging social structure of the Information Age: it already configures the nucleus of our societies. Indeed, we have a considerable body of knowledge gathered in the last decade by academic researchers around the world on the fundamental dimesions of the network society, including studies that show the commonality of this nucleus across cultures, as well as the cultural and institutional differences of the network society in various contexts.

It is unfortunate that the media, politicians, social actors, business leaders, and decision makers continue to talk about the information society or the network society or whatever they want to call it, in terms that are those of futurology and uninformed journalism, as if the transformations were still in the future, and as if technology was an independent force that has either to be denounced or worshipped. Traditional intellectuals, increasingly unable to understand the world we live in, and thus undermined in their public role, are particularly critical of the advent of a new technological environment without actually knowing much about the processes on which they elaborate their discourses. In these views, new technologies destroy jobs, Internet isolates , we suffer from an overload of information, the digital divide increases social exclusion, Big Brother extends its surveillance thanks to more powerful digital technologies, technological development is controlled by the military, the tempo of our lives is

relentlessly accelerated by technology, biotechnology leads to human cloning and to major environmental hazars, Third World countries do not need technology but the satisfaction of their human needs, children are increasinly ignorant because they are messaging and chatting instead of reading books, nobody knows who is whom in the Internet, work efficiency is hampered by technology that does not rely on human experience, crime and violence, and even terrorism use the Internet as a privileged medium, and we are rapidly losing the magic of the human touch. We are alienated by technology. Or else, you can reverse everything I just wrote in the opposite sense, and we will enter the paradise of human fulfillment and creativity induced by technological wonders, in the mirror version of the same mythology, this time propagated by consultants and futurologists, often on the payroll of technology companies.

And yet we know reasonably well the contours of the network society. There is in fact a big gap between knowledge and public consciousness, mediated by the communication system and the processing of information within our mental frames.

The network society, in the simplest terms, is a social structure based on networks operated by information and communication technologies based in microelectronics and digital computer networks that generate, process, and distribute information on the basis of the knowledge accumulated in the nodes of the networks. A network is a formal structure (see Monge and Contractor, 2004). It is a system of interconnected nodes. Nodes are, formally speaking, the points where the curve intersects itself. Networks are open structures that evolve by adding or removing nodes according to the changing requirements of the programs that assign performance goals to the networks. Naturally, these programs are decided socially from outside the network. But once they are inscripted in the logic of the network, the network will follow efficiently these instructions, adding, deleting, and reconfigurating, until a new program replaces or modifies the codes that command its operational system.

What the network society actually is cannot be decided outside the empirical observation of social organization and practices that embody this network logic. Thus, I will summarize the essence of what scholarly research (that is the production of knowledge recognized as such by the scientific community) has found in various social contexts.

Let us start with the economy. **The network economy** (known at one point as "the new economy") is a new, efficient form of organization of production, distribution, and management that is at the source of the substantial increase in the rate of productivity growth in the United States, and in other economies that adopted these new forms of economic organization. The rate of productivity growth in the U.S. during 1996-2005 more than doubled the rate of productivity growth in 1975-95. Similar observations can be applied to those European economies, such as Finland or Ireland, that quickly adopted a similar form of techno-economic organization, albeit in a very different institutional context (eg, the maintenance of the welfare state). Studies, including the research presented by Dale Jorgenson in this volume, show that the rate of productivity growth in other European economies and in Japan may have increased as well once statistical categories are adapted to the conditions of production in an economy that has gone beyond the industrial era under which these categories were created. Throughout the world, developing economies that articulate themselves to the dynamic nucleus of the global network economy display even higher rates of productivity growth (eg in the manufacturing sectors of China or India). Moreover, the increase of productivity is the most direct empirical indicator of the transformation of a productive structure. Researchers have found that productivity growth in this period has been largely associated to three processes, all of which are necessary conditions for productivity growth to take place: generation and diffusion of new microlectronics/digital technologies of information and communication, on the basis of scientific research and technological innovation; transformation of labor, with the growth of highly educated, autonomous labor that is able to innovate and adapt to a constantly changing global and local economy; diffusion of a new form of organization around networking. Only when the three conditions are fulfilled in a firm, a sector, a region, or a country, productivity rises substantially, and only this surge in productivity can sustain competitiveness in the long run.

Organizational networking is as critical today as was the process of vertical integration of production in the large scale organizations of the industrial era. Networking has proceeds through a number of processes that reinforced each other over the last 25 years: large corporations decentralize themselves as networks of semi-autonomous units; small and medium firms form business networks, keeping their

autonomy and flexibility while making possible to pull together resources to attain a critical mass, enabling them to compete in the market; small and medium business networks become providers and subcontractors to a variety of large corporations; large corporations, and their ancillary networks, engage in strategic parnertships on various projects concerning products, processes, markets, functions, resources, each one of this project being specific, and thus building a specific network around such a project, so that at the end of the project, the network disolves and its components form other networks around other projects. Thus, at any given point in time, economic activity is peformed by networks of networks built around specific business projects. The firm continues to be the legal unit, and the unit for accumulation of capital, but the operational unit is the business network, what I call the network enterprise to emphasize the fact that is a network focusing on performing a project. Besides, since accumulation of capital actually takes place in the global financial market, that is also a network, the firm is simply the connecting node between the networks of production built around business projects and the networks of accumulation organized around global finance.

These networks are those that hire and fire workers on a global scale. It follows structural unstability in the labor markets everywhere, and a requirement for flexibility of employment, mobility of labor, and constant re-skilling of the workforce. The notion of a stable, predictable, professional career is eroded, as relationships between capital and labor are individualized and contractual labor conditions escape collective bargaining.

Together with the feminization of the labor force, we can say, summarizing numerous studies, that **we have evolved from "the organization man" to the "flexible woman."** However, this process of individualization and fragmentation of the labor force does not mean that long term contracts and stable jobs disappear. There is flexibility built into stability. And there are considerable differences for various categories of workers and levels of skill. **The key developments in the transformation of labor and work are:**

> Technological change does not induce unemployment in the aggregate labor market. Although some workers are displaced and some occupations are phased out (eg, traditional typist-secretaries), other occupations appear (eg. assistant managers

instead of secretaries), more jobs are created, and most displaced workers are re-employed, except for those too old to adapt, their fate being decided depending on public policies in each society. In fact, the least technologically advanced is a firm, region or country, and the more it is exposed to layoffs of its workers, since it cannot keep up with the competition. So, there is a correlation between technological innovation and employment, as well as between technological innovation, organizational innovation, and standards of living of workers.

Ability to work autonomously and be an active component of a network becomes paramount in the new economy. This is what I have conceptualized as **self-programmable labor.** Companies will seek to retain this type of labor as much as possible, because this is the main source for its productivity and innovation capacity. This runs against the notion of the unstability of the labor force. However, the self-programmable worker is the one that has bargaining power in the labor market. So, his/her contract may be a stable one, but his/her continuity in the job tends to be reduced vis-a-vis previous cohorts of workers, because he/she is always on the move, searching for new opportunities. And not necessarily to increase monetary gains but to enjoy greater freedom, flex-time, or more opportunity to create.

Most workers are still not employed at the best of their capacity, but as mere executants along the lines of traditional industrial discipline. In this case, they are generic labor, and they can be replaced by machines or by less expensive labor either in the country (immigrants, women, minorities) or across the globe. Under such conditions, companies tend to limit long term commitment to generic labor, thus opting for subcontracting, temporary employment, or part time work. On the other hand, these workers tend to strengthen their negotiation power through collective bargaining and unionization. But being the most vulnerable labor force, they increasingly face an uphill battle that is at the source of offshoring of manufacturing and routine service work.

There is a growing contradiction between the autonomy and innovation capacity required to work in the network enterprise, and the system of management/labor relations rooted in the institutions of the industrial age. The ability to reform this sys-

tem conditions the organizational and social transition in all societies. More often than not, the necessary adaptation of the workforce to the new conditions of innovation and productivity is manipulated by companies to their advantage. It is a self-defeating strategy for management, as workers can only use their autonomy to be more productive if they have a vested interest in the competitiveness of the firm. This interest starts with their stability in their jobs, and their ability to make their own decisions in the operation of the network.

Trade unions do not disappear in the network society. But, depending on their strategies, they might become trenches of resistance to economic and technological change, or powerful actors of innovation on the new meaning of work and wealth creation in a production system based on flexibility, autonomy, and creativity. Organizing labor in a network of networks has very different requirements to organizing labor in the socialized process of work in the large corporation. While changes in the labor force and in the labor market are structural, linked to the evolution of the network society, changes in the role of social actors depend on their practice, and on their ability to situate the interests they defend in the new forms of production and management.

The network society is also manifested in **the transformation of sociability.** Yet, what we observe is not the fading away of face-to-face interaction or the increasing isolation of people in front of their computers. We know, from studies in different societies, that in most instances Internet users are more social, have more friends and contacts, and are more socially and politically active than non users. Moreover, the more they use the Internet, the more they also engage in face-to-face interaction in all domains of their lives. Similarly, new forms of wireless communication, from mobile phone voice communication to SMSs, WiFi and WiMax, substantially increase sociability, particularly for the younger groups of the population. The network society is a hypersocial society, not a society of isolation. People, by and large, do not fake their identity in the Internet, except for some teenagers experimenting with their lives. People fold the technology into their lives, link up virtual reality and real virtuality, they live in various technological forms of communication, articulating them as they need it.

However, there is a major change in sociability, not a consequence of Internet or new communication technologies, but a change that is fully supported by the logic embedded in the communication networks. This is the emergence of **networked individualism,** as social structure and historical evolution induce the emergence of individualism as the dominant culture of our societies, and the new communication technologies perfectly fit into the mode of building sociability along self-selected communication networks, on or off depending on the needs and moods of each individual. So, the network society is a society of networked individuals.

A central feature of the network society is **the transformation of the realm of communication, including the media.** Communication constitutes the public space, i.e. the cognitive space where people's minds receive information and form their views by processing signals from society at large. In other words, while interpersonal communication is a private relationship, shaped by the actors of the interaction, media communication systems sets the relationship between the institutions and organizations of society and people at large, not as individuals, but as a collective receiver of information, even if ultimately information is processed by each individual according to her personal characteristics. This is why the structure and dynamics of socialized communication is essential in the formation of consciousness and opinion, at the source of political decision making.

In this regard, **the new communication system is defined by three major trends:**

Communication is largely organized around media business conglomerates that are global and local at the same time, and that include television, radio, the print press, audiovisual production, book publishing, music recording and distribution, and on line commercial firms. These conglomerates are linked to media organizations around the world, under different forms of partnership, while engaging at the same time in fierce competition amongst themselves. Communication is both global and local, generic and customized, depending on markets and products.

The communication system is increasingly digitized, and gradually interactive. So, concentration of business does not mean a unified, unidirectional process of communication. Societies have moved from a mass media system to a customized and fragmented multimedia system, where audiences are increasingly segmented. Because the system is diversified and flexible, it is increasingly inclusive of every message sent in society. In other words, the technological malleability of the new media allows a much greater integration of all sources of communication into the same hypertext. So, digital communication becomes less centrally organized, but absorbs into its logic an increasing share of social communication.

As the network society diffuses, and new communication technologies expand their networks, there is an explosion of horizontal networks of communication, quite independent from media business and governments, that allows the emergence of what I call **self-directed mass communication.** It is mass communication because it is diffused throughout the Internet, so it potentially reaches the whole planet. It is self-directed because it is often initiated by individuals or groups by themselves, bypassing the media system. The explosion of blogs, vlogs, podding, streaming, and other forms of interactive, computer to computer communication sets up a new system of global, horizontal communication networks that, for the first time in history, allow people to communicate with each other without going through the channels set up by the institutions of society for socialized communication.

Thus, the network society constitutes socialized communication beyond the mass media system that characterized the industrial society. But it does not represent the world of freedom sung by the libertarian ideology of Internet prophets. It is made up both of an oligopolistic business multimedia system controlling an increasingly inclusive hypertext, and of an explosion of horizontal networks of autonomous local/global communication—and, naturally, of the interaction between the two systems in a complex pattern of connections and desconnections in different contexts. However, what results from this evolution is that the culture of the network society is largely shaped by the messages exchanged in the composite electronic hyper-

text made by the technologically linked networks of different communication modes. In the network society, virtuality is the foundation of reality through the new forms of socialized communication.

Since **politics is largely dependent on the public space of socialized communication, the political process is transformed under the conditions of the culture of real virtuality.** Political opinions, and political behavior, are formed in the space of communication. Not that whatever is said in this space determines what people think or do. In fact, the theory of the interactive audience, supported by research across cultures, has determined that receivers of messages process these messages in their own terns. Thus, we are not in an Orwellian universe, but in a world of diversified messages, recombining themselves in the electronic hypertext, and processed by minds with increasinly autonomous sources of information. However, the domination of the media space over people's minds works through a fundamental mechanism: presence/absence of a message in the media space. Everything or everyone that is absent from this space cannot reach the public mind, thus it becomes a non entity. This binary mode of media politics has extraordinary consequences on the political process and on the institutions of society. It also implies that presence in the media is essential for building political hegemony or counter-hegemony—and not only during the electoral campaigns.

Mainstream media, and particularly television, still dominate the media space, although this is changing fast. Because the language of television is based on images, and the simplest political image is a person, political competition is built around political leaders. Few people know the actual programs of political parties. And programs are built by pollsters focusing on what people would like, so they tend to be very similar at least in their wording. People think in metaphors, and built these metaphors with images. Trust and character are constructed around the image of a person. Because of this, character assassination becomes the political weapon of choice. Negative messages are much more effective than positive messages. And the most negative message is to undermine the trust of people in their potential leader by diffusing, fabricating, or manipulating damaging information. Media politics and image politics lead to scandal politics, the kind of politics at the forefront of the political processe almost everywhere in the world.

There is an even deeper transformation of political institutions in the network society: **the rise of a new form of state** that gradually replaces the nation-states of the industrial era. This is related to globalization, that is the formation of a network of global networks than link selectively across the planet all functional dimensions of societies. Because the network society is global, the state of the network society cannot operate only or primarily in the national context. It has to engage in a process of global governance but without a global government. The reasons why there is not a global government, and it is unlikely it will be one in the foreseable future, are rooted in the historical inertia of institutions, and of the social interests and values embedded in these institutions. Simply put, neither current political actors nor people at large want a world government, so it will not happen. But since global governance of some sort is a functional need, nation-states are finding ways to co-manage the global processes that affect most of the issues related to their governing practice. To do so, they increasingly share sovereignty while still proudly branding their flags. They form networks of nation-states, the most integrated and significant of which is the European Union. But they are around the world a number of state associations more or less integrated in their institutions and their practice that structure specific processed of transnational governance. In addition, nation-states have spurred a number of formal and informal international and supranational institutions that actually govern the world. Not only the United Nations, and verious military alliances, but also the International Monetary Fund and its ancillary agency, the World Bank, the G-8 club of leading countries in the world (with the permission of China), and a number of ad hoc groupings.

Furthermore, to connect the global and the local, nation-states have asserted or fostered a process of decentralization that reaches out to regional and local governments, and even to NGOs, often associated to political management. Thus, the actual system of governance in our world is not centered around the nation-state, although nation-states are not disappearing by any means. Governance is operated in a network of political institutions that shares sovereignty in various degrees an reconfigurates itself in a variable geopolitical geometry. This is what I have conceptualized as **the network state.** It is not the result of technological change, but the response to the structural contradiction between a global system and a national state. However,

globalization is the form that takes the diffusion of the network society in its planetary reach, and new communication and transportation technologies provide the necessary infrastructure for the process of globalization. New communication technologies also help the actual operation of a complex network state, but this is a tool of performance rather than a determining factor. The transition from the nation-state to the network state is an organizational and political process prompted by the transformation of political management, representation and domination in the conditions of the network society.

Thus, the network society is not the future that we must reach as the next stage of human progress by embracing the new technological paradigm. It is our society, in different degrees, and under different forms depending on countries and cultures. Any policy, any strategy, any human project, has to start from this basic fact. It is not our destination, but our point of departure to wherever "we" want to go, be it heaven, hell, or just a refurbished home.

Key Policy Issues in the Network Society

People, social actors, companies, policy makers do not have to do anything to reach or develop the network society. **We are in the network society,** although not everything or everybody is included in its networks. Therefore, from a policy standpoint, the key question is how to proceed to maximize the chances for fulfilling the collective and individual projects that express social needs and values under the new structural conditions. For instance, a full deployment of broad band digital communication networks, wired or wireless, is certainly a conditioning factor for business to work on the model of the network enterprises or for virtual education to foster life long learning, a major asset in the knowledge-based social organization characteristic of the society. However, to introduce technology per se does not ensure productivity, innovation, or greater human development. Thus, when in 2000 the European Union approved a strategy known as the Lisbon Agenda to catch up with the United States in economic competitiveness, while strengthening the European social model, much of the emphasis was placed on technological upgrading and enhancement of research capabilities. The European technological infrastructure improved considerably, but effects on productivity, on learning, on creativity, and on entrepreneurialism, were very limited. This is

because acting on the developmental potential specific to the network society requires a combination of initiatives in technology, business, education, culture, spatial restructuring, infraestructure development, organizational change, and institutional reform. It is the synergy between these processes that acts as a lever of change on the mechanisms of the network society.

With this perspective in mind, and observing both the European and international experience in the first years of the 21st century, there are some issues that appear to be conditioning the overall development of a productive, creative, and equitable network society. In other words, policies tackling these strategic issues seem to be the key policies to deliberately advance human well being in the new historical context. Being highly selective and certainly subjective, since we have now left the presentation of research findings to enter the policy debate, here then are what I consider to be the key issues:

- **The public sector is at present the decisive actor to develop and shape the network society.** Individual innovators, counter-cultural communities, and business firms have done their job at inventing a new society and diffusing it around the world. The shaping and guiding of this society is, as has always been the case in other societies, in the hands of the public sector, regardless of ideological discourses hiding this reality. And yet, the public sector is the sphere of society where new communication technologies are the least diffused and where organizational obstacles to innovation and networking are the most pronounced. Thus, **reform of the public sector commands everything else** in the process of productive shaping of the network society. This includes the diffusion of e-governance (a broader concept than e-government because it includes citizen participation and political decision-making); e-health; e-learning; e-security; and a system of dynamic regulation of the communication industry, adapting it to the values and needs of society. All these transformations require the diffusion of interactive, multilayered networking as the organizational form of the public sector. This is tantamount to the reform of the state. Indeed, the rational bureaucratic model of the state of the industrial era is in complete contradiction to the demands and processes of the network society.

- At the source of the entire process of social change there is a new kind of worker, the self-programmable worker, and a new type of personality, the values-rooted, flexible personality able to adapt to changing cultural models along the life cycle because of her/his ability to bend without breaking, to remain inner-directed while evolving with the surrounding society. This innovative production of human beings, under the conditions of the crisis of patriarchalism and the crisis of the traditional family, **requires a total overhauling of the school system,** in all its levels and domains. This refers certainly to new forms of technology and pedagogy, but also to the content and organization of the learning process. As difficult as it sounds, societies that will not be able to deal with this issue will encounter major economic and social problems in the current process of structural change. For instance, one of the major reasons for the success of the Finnish Model in the network society resides in the quality of its education system, in contrast to other areas in the world, for instance the United States, where much of the population is increasingly alien to the system of knowledge management that has been largely generated in their own country. Education policy is central to everything. But not any kind of education or any kind of policy: education based on the model of learning to learn along the life cycle, and geared towards stimulating creativity and innovation in the ways and goals of applying this learning capacity in all domains of professional and social life.

- Global development is now largely a function of enabling countries and their people to function productively in the global economy and the network society. This implies the diffusion of information and communication technologies througout the world, so that networks reach everywhere. But it also implies the production of the human resources necessary to operate this system, and the distribution of capacity to generate knowledge and manage information. **The new, informational model of development redefines the condition of shared growth in the world.** In fact, hundreds of millions of people have benefited from the global competition spurred by the dynamism of these networks. Large sections of China, India, East and Southeast Asia, the Middle East, and

some Latin American areas (Chile certainly, but also some regions of other countries) are now integrated productively in the networked global economy. Yet, more people are switched off from these networks than fully incorporated to them. The global segmentation of the network society, precisely because of its dynamism and productivity, is placing a significant part of humankind under conditions of structural irrelevance. It is not just poverty, it is that the global economy and the network society work more efficiently without hundreds of millions of our co-inhabitants of this planet. Thus, a major contradiction: the more we develop a highly productive, innovative system of production and social organization, the less this core needs a substantial proportion of marginal population, and the more difficult it becomes for this population to catch up. The correction of this massive exclusionary process requires concerted international public policy acting on the roots of the new model of development (technology, infrastructure, education, diffusion and management of knowledge) rather than just providing for the needs arising from social exclusion in the form of charity.

- Creativity and innovation are the key drivers of value creation and social change in our societies—in fact in all societies. **In a world of digital networks, the process of interactive creativity is contradicted by the legislation of property rights inherited from the industrial era.** Moreover, because large corporations have built their wealth and power on the control of these property rights, regardless of the new conditions of innovation, companies and governments are making the communication of innovation even more difficult than in the past. The capture of innovation by an intellectually conservative business world may well stall the new waves of innovation on which the creative economy and a redistributive network society depend. Even more so at the global level, as intellectual property rights become the key issue for latecomers in the global competition. International agreements on the redefinition of intellectual property rights, starting with the well rooted practice of open source software, is a must for the preservation on innovation and the fostering of creativity on which depends human progress now and then.

Dilemmas of Our Time: Creativity versus Rentier Capitalism; Communication Democracy versus Political Control

In this early 21st century we are at the crossroads of the development of the network society. We are witnessing an increasing contradiction between current social relationships of production and the potential expansion of formidable productive forces. This may be the only lasting contribution from the classical Marxist theory. The human potential embedded in new communication and genetic technologies, in networking, in the new forms of social organization and cultural invention, is truly extraordinary. Yet, existing social systems stall the dynamics of creativity, and, if challenged with competition, tend to implode. This was the case of the statist system of the Soviet Union (Castells and Kiselyova, 1995). Now, rentier capitalism of the Microsoft type appears to be blocking the development of a new frontier of expansion of innovation, in contrast to other capitalist business models, eg. the newborn IBM. Thus, reform of capitalism is also possible in this domain, including new models of intellectual property rights, and a diffusion of technological development responsive to the human needs of the whole planet. This is why the issue of intellectual property rights is strategically so important.

But there is something else: the emergence of unfettered communication and self-organization at the socio-political level, bypassing the mass media, and challenging formal politics. This is the case of insurgent political campaigns, such as Howard Dean's campaign in the U.S. in 2003-04, or the exposure of Jose Maria Aznar's lies on terrorism by thousands of Spanish youth mobilized with their cell phones, and leading to the electoral defeat of Spanish conservatives in March 2004. This is why in fact governments are ambiguous vis-a-vis the uses of Internet and new technologies. They praise their benefits, yet they fear to lose the control of information and communication in which power has always been rooted.

Accepting democracy of communication is accepting direct democracy, something no state has accepted in history. Accepting a debate to redefine property rights goes to the heart of the legitimacy of capitalism. Accepting that the users are the producers of technology challenges the power of the expert. So, an innovative, yet pragmatic policy will have to find a middle way between what is socially and politically

feasible in each context, and the enhancement of the cultural and organizational conditions for creativity on which innovation, thus power, wealth, and culture, are based in the network society.

* * *

(*) The analysis presented here is based on a very broad body of research that would overwhelm the thread of the argument if fully cited in this text. Therefore, I am taking the liberty to refer the reader to my recent works on the matter, not because I support my analysis with my own bibliography, but because my recent publications contain an extensive, and systematic bibliography from different areas in the world, that should be considered as the generic references of the analysis.

With this caveat, the interested reader may consult the sources included in the following books by Manuel Castells:

The Information Age: Economy, Society, and Culture, Oxford: Blackwell, 3 volumes, 2nd edition, 2000-2004; *The Internet Galaxy*, Oxford: Blackwell, 2001; *The collapse of Soviet Communism: the view from the Information Society*, Berkeley, International and Area Studies Press, 1995 (with Emma Kiselyova) (updated edition by Figueroa Press, Los Angeles, 2003); *La societat xarxa a Catalunya*, Barcelona: Random House, 2003 (with I.Tubella et alter); *The Information Society and the Welfare State: The Finnish Model*, Oxford: Oxford University Press, 2002 (with Pekka Himanen); *The Network Society: A Cross-Cultural Perspective*, Northampton, Massachussets: Edward Elgar, 2004 (editor and co-author); "Global Governance and Global Politics," *Political Science*, January 2005; *The Mobile Communication Society*, forthcoming (with M. Fernandez-Ardevol, JCL Qiu, and A. Sey). In addition, important references on specific points are the recent books by Peter Monge and Nosh Contractor, *A Theory of Communication Networks*, New York: Routledge, 2004; Frank Levy, *Computers and Work*, Cambridge, MA: MIT Press, 2005; and Ulrich Beck, *Power in the Global Age*, Cambridge: Polity Press, 2006.

Furthermore, the chapters in this book, and their references, have also been used in the elaboration of my analysis.

Chapter 2

Societies in Transition to the Network Society

Gustavo Cardoso

Several analysts have put forward the idea that societies are currently experiencing significant change characterized by two parallel trends that frame social behaviour: individualism and communalism (Castells, 2003b).

Individualism, in this context, denotes the construction of meaning around the realization of individual projects. Communalism, in turn, can be defined as the construction of meaning around a set of values defined by a restricted collective group and internalized by the group's members.

Various observers have looked at these two trends as potential sources of disintegration of current societies, as the institutions on which they are based lose their integrating capacity, i.e. they become increasingly incapable to giving meaning to the citizens: the patriarchal family model, the civic associations, companies and, above all, representative democracy and the nation state. These institutions have been, to some extent, fundamental pillars of the relationship between society and the citizens throughout the 20th century (Castells 2003; 2004, Giddens 2000).

However, another hypothesis is possible. Perhaps what we are witnessing is not the disintegration and fractioning of society, but the reconstruction of the social institutions and, indeed, of the structure of society itself, proceeding from autonomous projects carried out by society members. This independence (i.e. independence from society's institutions and organizations) can be regarded as individual or collective, in the latter case in relation to a specific social group defined by its autonomous culture.

In this perspective, the autonomization of individuals and groups is followed by the attempt to reconstruct meaning in a new social struc-

ture on the basis their self-defined projects. By supplying the technological resources for the socialization of the projects of each individual in a network of similar subjects, the Internet, together with the mass media, becomes a powerful social reconstruction tool and not a cause of disintegration. This social (re)construction, giving rise to the new structure, will not have to follow the same values logic of the late industrial society.

However, as the Internet is a technology, its appropriation and domestication (Silverstone 1994) may also take place in a conservative way and thus act merely to perpetuate social life as it had already existed.

The examples are manifold. If we wish to expand our field of vision we can look at the Internet as, for example, an instrument for the maintenance of a patriarchal society rooted in a fundamentalist interpretation of Islam, when we see it being used for the recruitment of volunteers for al-Qaeda, or as an instrument for the perpetuation of old public administration models, when the websites of the ministries offer nothing more than the telephone numbers of the various services, in what amounts to the mere substitution of the yellow pages, in hardcopy form, by hypertext in a closed institutional circuit. Or when we limit ourselves to constructing a personal page in which we center content around our own personality and identity without any connection to any entities to which we belong or are affiliated, thus rejecting the logic of sharing in a network of interests.

In other words, the hypothesis for the analysis of social development and the role of the Internet in that development is that the Internet is a tool for the construction of projects. However, if it is merely used as one more means of doing something we already do, then its use is limited and is not necessarily different from that of the other media (for example, television, as far as entertainment and news information are concerned).

As one can verify by means of the study of the reality of two societies in transitions—Catalonia and Portugal (Castells et al.2003, Cardoso et al. 2005)—the Internet is appropriated in different ways by different people and not all of them effect uses that distinguish the Internet from what the other media could offer. This is a reality that is, perhaps, more perceptible in societies where the Internet utiliza-

tion levels are still quite low. However, different studies conducted in different societies (Cole 2005) demonstrate that that is a reality that is not directly linked with the character of transition or affirmation as an information society, but with variables such as the education and generation dimensions.

Nevertheless, there is something in societies in transition that accentuates the differences more. In other words, in societies in transition, the divisions between those who use and those who do not use technologies such as the Internet are greater and tend to make utilization of them more a question of the generation to which one belongs: the younger the generation the greater the use and the higher the education level the greater the use.

If it is a recognized fact that societies such as the United States, Finland and Singapore can be classified as "informational societies" (Castells and Himanen 2002), how can we define those societies in transition towards the information society? In other words, societies in which the mark of networked social organization already asserts itself in broad segments of society?

In order to answer that question, we require a more in-depth analysis of a society whose characteristics, though profoundly European, also reveal similarities in terms of relations and values to countries of the American continent: Portugal.

The argument for the choice of Portugal as a typical example of a society in transition towards the network society is that Portugal is a country that shares, to varying degrees, development characteristics and historico-political values and conditioning factors with a group of other societies, for which the common denominator is the fact that they all experienced, in the last three decades, the democratization of their societies and, at the same time, have similar informational development rankings.

All of these societies are classified by different digitalization indexes (ITU 2003) in one and the same group: the high digital access countries. In the concrete case of the DAI (ITU 2003), the group is led by Spain, with Brazil bringing up the rear. It includes, amongst others, the countries we have chosen to study herein, i.e. those that were protagonists of waves of democratization in the last 30 years (Huntington

1991, Altman 2002) in Europe and South America[1]: Spain, the Czech Republic, Greece, Portugal, Hungary, Poland, Slovakia, Chile, Uruguay, Argentina and Brazil.

However, because it is necessary to compare this group of countries with a group of more informationally developed countries, we have also chosen to conduct a comparative analysis herein of Finland, the USA and Singapore. Finally, we will also analyse the case of Italy in this transition context, for, although it is a member of the G7, Italy has a proto-information model (Castells 2002) that is closer, on various levels, to a society in transition than a full informational society.

We will look at Portugal as a paradigmatic example of transition in progress, but at the same time we will seek to identify the characteristics that make societies that differ so much as Spain, Greece, the Czech Republic, Slovakia, Hungary and Poland, and also Argentina, Chile, Uruguay and Brazil, societies in transition towards the network society.

Societies in Transition in the Global Network

An analysis of the different information society models can have as its starting point the individualization of four dimensions (technology, economy, social well-being and values), through which one can better understand what each society's position is in relation to the global information society panorama (Castells and Himanen, 2001). On this basis one can consider that a society is an informational society if it possesses a solid information technology: infrastructure, production and knowledge (Castells and Himanen, 2001).

[1] Huntington suggests that, during the 1970s and 1980s there were transitions from non-democratic political systems to democratic systems and that those changes can be seen in the context of a greater trend towards transition to democracy. Without going into the various premises put forward by Huntington in more detail, I think that his contribution is of interest for the analysis of the societies in transition to the network society due to the fact that he establishes a link between different geographic zones and societies at the values level. In other words, all the societies studied herein have shared one common value in the last three decades—the search for democracy—and seek today integration in the global economy as informational societies, with most of the indicators placing them in a transition zone. Almost all of the countries analysed here as being in transition to the network society are referred to by Huntington as common examples of transition to democracy. Huntington defines three types of transition, which include all the countries analysed here: 1) transformation (for example, Spain, Hungary and Brazil), where elites in power took on the leadership of the transition processes; 2) substitution (as in Portugal and Argentina), where opposition groups led the democratization process; 3) transplacements (as in Poland and Czechoslovakia), where democratization occurred from joint action by government and opposition groups.

Finland, the United States and Singapore are advanced informational societies. They are also dynamic economies because they are internationally competitive, have productive companies and are innovative. But because "(…) technology and the economy are merely a part of the story" (Castells and Himanen, 2001: 31), one can say that a society is open if it is so politically, i.e., at the civil society level, and if it is receptive to global processes. Likewise, its social well-being can be assessed in terms of its income structure and the coverage offered to the citizens in terms of health and education.

When looked at in terms of the evolution of development models, Portugal is a country that is going through a transition process from the industrial society to the informational society. However, we are speaking of an industrial society, which, similar to the Italian and Spanish societies, is to a large extent made up of small and medium-sized enterprises but that has never asserted itself as a large-scale industrial producer (Castells, 2002). In the second half of the 20th century, Portugal assumed what can be termed proto-industrialism and is now seeking to achieve a proto-informationalism (Castells, 2002). As an example of a society in transition, the analysis of Portugal reveals that it is a country which, through its multiple affiliation networks (which range from membership of the European Union to the maintenance of good relations in terms of defence with the USA and to the establishment of partnership networks with Brazil, the former African and Asian colonies and the autonomous regions of neighbouring Spain), seeks to adapt to the conditions of global economic change. And that is a pattern common to all societies in transition.

Nowadays, one can frequently read, in documents produced within the European Union institutions or within the framework of the OECD or even UN, that the equation for the economic and social development of countries, cities and zones in the Information Age is the appropriation of the use of the technological tools and their introduction into the production and personal relational circuits, requiring for this that the whole of the country, city or zone in question realize their effective insertion both into the entrepreneurial fabric and at the State level (in the management of the republic, in education, in management and defence of the territory, etc.).

In the latter half of the 1990s, investment in information technologies as a source of GDP creation in countries such as the USA, United King-

dom and Canada equalled in percentage terms the isolated contribution made by labor or the investment in capital not coming from the information technologies (Jorgensen 2005). The trend towards the convergence of the investment contribution in information technologies with the contribution from other investments in capital or the labour contribution would seem to be a general one for all the more developed countries, albeit in varying degrees. Likewise, there is a trend in all countries towards an increase in the value added provided by the information technologies in the creation of value added in the services sector (OECD 2004).

To clarify this a little, one should add that, contrary to general perceptions, the productive fabric in the information age does not consist merely of the technology companies (the so-called "dotcom" companies) but also that of companies that are able to incorporate the information technologies in their productive, organizational, distribution and promotion processes.

Hence, the new economy is not only the likes of amazon.com, e-bay or the telecommunications companies, although these are indeed part of that economy, but also companies like INDITEX (a Spanish group that owns ZARA and other clothing brands) that have been able to use the Internet to achieve their economic objectives (Castells, 2004b).

Indeed, the new economy includes many more companies from traditional sectors than purely technological companies or those with a direct vocation for online business. It is normal for the productive fabric today, as has always been the case down through the centuries, to be led by one driving force sector, as well as others that will make use of that dynamism to innovate.

In order to triumph in this game, any country or geographic zone also requires a workforce with the capacity to use the new technology to innovate, be it in the private sector or in the state. Workforces that carry out repetitive—or not creative—work but with the use of the technologies, a telecommunications structure, an innovative entrepreneurial fabric, a state that is able to create the appropriate vocational training conditions, conversion of organizational and management models and establishes legislation on regulation, frameworks and incentives.

The data contained in the following tables compare Portugal and the other countries in transition to three information society models.

These models that can be given the names of Silicon Valley, an open society model guided by the market; Singapore, the authoritarian information regime model; and, finally, the Finnish model of an information-welfare society.

If classification of a society as an information society is based on a solid information technology at the infrastructure, production and knowledge levels, what position do these countries have in terms of these dimensions?

Table 2.1 Technological Achievement Index (2001)

Country	TAI Position	Group
Spain	19	Potential Leaders
Italy	20	Potential Leaders
Czech Republic	21	Potential Leaders
Hungary	22	Potential Leaders
Slovakia	25	Potential Leaders
Greece	26	Potential Leaders
Portugal	27	Potential Leaders
Poland	29	Potential Leaders
Argentina	34	Potential Leaders
Chile	37	Potential Leaders
Uruguay	38	Dynamic Adopters
Brazil	43	Dynamic Adopters

Source: UNDP, 2001.

Most of the countries classified here in terms of the technological development index in 2001 (UNDP, 2001) were in what we can call the second division of countries—the so-called potential leaders—whereby this second division is led by Spain (19th place) and Italy (20th). Brazil closed the list of countries in transition to the network society in analysis here.

However, Brazil is worthy of special attention, for, according to the IMD (2004), if we consider the competitiveness dimension for the whole of Brazil, the country occupies 53rd place. If we consider only the state of São Paulo, where a number of high-potential technological centers are centered around the University of Campinas, the contribution to the GDP in 1998 amounted to roughly to one third of the Brazilian total, then the position of São Paulo at the global level places it in 47th place. However, this is by no means a peculiarity of Brazil, as, as far as societies in transition are concerned, there would seem to be geographic differences in terms of integration in the global economy.

Table 2.2a International comparisons in the field of technology

	Finland	USA	Singapore	Portugal	Spain	Italy	Czech Rep.	Advanced economies
Infrastructure								
Machines connected to the Internet (per 10,000 inh.)[1]	1707.25(3)	3714.01(1)	478.18	239.28	133.24	117.28	209.78	819.15
Mobile phone contracts (per 1,000 inh.)[2]	867	488	796	825	824	939	849	740
Production								
High technology exports as a percentage of the total exports[2]	24	32	60	7	7	9	14	21
Electronic commerce (secure servers per 100,000 inhabitants)[3]	14.9	33.28 (1)	17.31	2.34	3.2	2.2	3.8	16.3
Growth rate for secure servers, 1998-2001 (%)	656	397	527	600	358	460	796	555
Ratio between hosts and secure servers (2001)	1144	1139	357	1054	423	527	541	692
Knowledge								
Internet users (%) (2001)[4]	75.95	71.1	40.8	37.79	35.45	53.21	46.51	53
Ratio of participation of the higher education student population in sciences (%)*	37	13,9	24,2	31	31	28	34	25,0
Scientist and engineers in R&D (per thousand persons)[2]	7110	4099	4052	1754	1948	1128	1466	2778
PISA Test—mathematical literacy	544 (2)	483 (25)	–	466 (29)	485 (25)	466 (29)	516 (12)	504
PISA Test—scientific literacy	548 (1)	491 (20)	–	468 (31)	487 (22)	486 (22)	523 (5)	510

*UNESCO definition for the indicator in question: "gross enrollment in tertiary education—total enrolment in tertiary education regardless of age, expressed as a percentage of the population in the five-year age group following the secondary-school leaving age."

Source: 1 Values for all countries taken from World Indicators, ITU, http://www.itu.int/itunews/issue/2002/04/table4.html; 2 Values for all countries take from the UNDP Human Development Report 2004; 3 Values obtained by Netcraft in December 2001: http://www.atkearney.com/shared_res/pdf/Secure_servers_2002_S.pdf; 3 Host values taken from World Indicators, ITU http://www.itu.int/itunews/issue/2002/04/table4.html; 4 ESS Data 2003, WIP 2004 and http://www.internetworldstats.com/stats2.htm ; 5 Adapted from Castells and Himanen, 2002, except for data for Portugal, taken from the UNDP Human Development Report

Table 2.2b International comparisons in the information technology domain

	Slovakia	Hungary	Greece	Poland	Chile	Argentina	Uruguay	Brazil	Advanced economies
Infrastructure									
Machines connected to the Internet (per 10,000 inh.)[1]	134.29	168.04	135.18	126.82	79.20	124.14	210.93	95.31	819.15
Mobile phone contracts (per 1,000 inh.)[2]	544	676	845	363	428	178	193	201	740
Production									
High technology exports as a percentage of the total exports[2]	3	25	10	3	3	7	3	19	21
Electronic commerce (secure servers per 100,000 inhabitants)[3]	1,9	1,8	1,7	1,7	1,2	0,8	–	0,9	16,3
Growth rate for secure servers, 1 998-2001 (%)	1040	936	765	1830	678	1000	–	429	555
Ratio between hosts and secure servers (2001)	697	941	813	743	645	1604	–	1303	692
Knowledge									
Internet users (%) (2001)[4]	–	46,21	25,87	38,68	34,8	14,9	34,5	9,9	53
Ratio of participation of the higher education student population in sciences (%)*	43	32	–	–	43	30	24	23	25,0
Scientist and engineers in R&D (per thousand persons)[2]	1774	1440		1473	419	684	276	323	2778
PISA Test—mathematical literacy	498 (19)	490 (22)	445 (32)	490 (22)	–	–	422 (34)	356 (38)	504
PISA Test—scientific literacy	495 (18)	503 (14)	481 (25)	498 (17)	–	–	438 (33)	390 (38)	510

*UNESCO definition for the indicator in question: "gross enrollment in tertiary education—total enrolment in tertiary education regardless of age, expressed as a percentage of the population in the five-year age group following the secondary-school leaving age."

Source: 1 Values for all countries taken from World Indicators, ITU, http://www.itu.int/itunews/issue/2002/04/table4.html; 2 Values for all countries take from the UNDP Human Development Report 2004; 3 Values obtained by Netcraft in December 2001: http://www.atkearney.com/shared_res/pdf/Secure_servers_2002_S.pdf; 3 Host values taken from World Indicators, ITU http://www.itu.int/itunews/issue/2002/04/table4.html; 4 ESS Data 2003, WIP 2004 and http://www.internetworldstats.com/stats2.htm ; 5 Adapted from Castells and Himanen, 2002, except for data for Portugal, taken from the UNDP Human Development Report

The selective inclusion to which Castells (2003) refers when analyzing the space of flows is a perceptible reality in the case of the relation established between Catalonia and Spain or Lombardy and Italy (IMD 2004) or between the Greater Buenos Aires area and Argentina (Amadeo 2005).

The more populous countries apparently seem to be incapable of effecting, or prefer not to effect, this transition to information and network societies for the whole of their territory and population, at least in this phase of history.

The similarity between the countries listed above is confirmed by other international indices such as that of the ITU (International Telecommunications Union), the DAI (2003). Namely, because the DAI (Digital Access Index) establishes identification categories, such as: infrastructure (relating to telephone lines, mobile phone and Internet subscriptions), cost (Internet access and use prices in comparison to the national income); knowledge (literacy and inclusion in the education system); quality (international bandwidth and broadband subscribers) and utilization of the Internet.

If we compare these categories in the leading countries (such as Finland, USA and Singapore) and the societies defined as transition societies, we see that it is not only the low levels of technology utilization in the latter that makes the difference. Indeed, in recent years we have come to understand that studies carried out by those involved in the technological processes themselves, such as the telecommunications operators, are beginning to accept that the communication infrastructure is not the only element that can explain the differences between countries and that income and education also play a very important role (ITU 2003). Only if we look at society in an integrated manner—taking into account the infrastructure, production and knowledge (Castells and Himanen, 2001)—can we identify the transition processes in progress in contemporary societies.

The analysis of international comparisons in the technological domain reveals an apparently converging reality amongst the different societies analyzed here. They all present figures for machines connected to the Internet that are approximately one quarter of the average for the advanced economies and also one third of the high technology exports achieved by the advanced economies (with the exception of Poland, Uruguay and Argentina), presenting, finally,

Internet utilization values of more than two-thirds of the average for the advanced economies (with the exception of Argentina and Brazil).

In general terms, the countries analyzed here always present better results and more balanced values in the technological "knowledge" dimension than in the "infrastructure" and "technology production" dimensions. However, the irregularity of the performance in these two latter categories would seem, in itself, to be a distinguishing mark of these societies and the fruit of the fact that, in the transition process, they have not yet been able to stabilize good results in all categories.

Examples of this irregularity in terms of results are the percentage values for Brazil (19) and Hungary (25) in relation to the average high technology export figures for the G7 (21) or the number of mobile phone contracts in Portugal, Spain, Italy, Greece and the Czech Republic, which are all above the G7 average, and also the growth rates for secure servers in Portugal, the Czech Republic, Slovakia, Hungary, Poland, Greece, Chile and Argentina, whose figures are close to, or above, those of the three information economies analyzed here (Finland, USA and Singapore).

However, we also have to take into account some peculiarities of the societies in transition, without which it would be difficult to explain some of their performances. By way of example, let us look at the question of secure server penetration. The fact that Portugal and Spain have higher ATMs per million inhabitants rates (AETIC 2004), with 1,047 and 1,230 machines compared to an EU average of 700, has allowed for the development of alternative systems to the use of credit cards and secure servers for online purchases. The fact that Portugal has a debit card system common to the whole banking system, the so-called "Multibanco" system, has made it possible to make online orders with payment through the ATM network, thus creating an alternative and more secure electronic channel for transactions. This is one example of many that help us to understand that, in addition to the common and individual traits, there are sometimes situations common to two or more countries that allow for the identification of some characteristic sub-groups in the context of the transition analyzed here.

If there is something that brings the different societies from two continents analyzed here closer together then it is, as mentioned above, the technological knowledge dimensions. Hence, the figures for the num-

ber of tertiary education students in the sciences is clearly higher than the average for the G7 in almost all of the countries included in the study (Uruguay and Brazil are the exceptions), and the figures for scientists and investigators in R&D are higher than the half of the values for the G7 countries (with only the four South American countries below that average). As far as the PISA literacy test results for mathematics and the sciences are concerned, only Uruguay and Brazil present values lower than 90% of those presented by the advanced economies.

It is also in the knowledge dimension, in this case not merely technological knowledge, that the generational mark that seems to be common to all these societies manifests itself most. The question of education is fundamental for analyzing the transition to the network society with an informational economic organization because, as we shall see, there is a strong correlation in all the societies between the educational competences given and the number of users of the basic network society technology: the Internet.

The Internet use figures constitute one reference value for characterizing the transition of a society to the network society because they reflect both the dimension of use in the socialization context and the market potential. Indeed, without a high number of users, there would also be no incentive for increasing electronic commerce (be it at the inter-company level or with private persons).

An analysis of the preceding table shows that the relation between access and use is dependant on a fundamental conditioning factor, the education level. Age is also a mobilizing factor, as it facilitates use via the group affiliation and practices amongst populations attending school (Table 2.3). However, different studies show that the stronger direct relationship is established between the education level and effective use of the Internet.

As far as the comparative analysis of the countries is concerned, the figures show that in the information societies use of the Internet by persons who have completed secondary education is between 60% and 90% of the users with higher education, while in the societies in transition, these values are less than 50%. The exception here is Portugal, with values of around 90%, as the number of Portuguese citizens who have completed secondary education is relatively low and, consequently, is closer in percentage terms to the numbers who have concluded higher education.

Table 2.3 Use of the Internet per country according to user's highest education level (%)

Country	Not completed primary education*	Primary or first stage of basic*	Lower secondary or second stage of basic*	Upper secondary*	Post secondary, non-tertiary*	First stage of tertiary*	Second stage of tertiary*
Portugal	21.10	18.86	37.24	48.87	–	48.61	50.00
Austria	16.66	–	33.88	51.45	77.09	–	76.62
Belgium	7.69	10.61	29.94	45.22	61.53	–	77.39
Switzerland	35.29	–	39.78	52.88	73.91	82.89	90.47
Czech Rep.	30.00	–	14.28	23.74	47.61	62.50	60.00
Germany	–	–	–	–	–	–	–
Denmark	–	20	46.07	61.08	73.46	84.50	100
Spain	0.91	1.69	16.63	31.68	44.64	61.79	68.42
Finland	25	15.18	55.55	63.94	–	79.20	100
France	6.08	8.93	25.10	24.16	49.57	67.06	77.04
U.K.	–	–	26.34	66.60	57.21	74.71	91.83
Greece	0.90	0.431	6.04	14.12	31.81	47.00	60
Hungary	1.51	16.58	6.63	23.49	–	40	58.69
Ireland	–	9.09	28.94	46.47	65.38	77.77	75.00
Israel	–	5.40	24.59	30.61	37.25	64.07	67.44
Italy	–	0.88	21.83	50.35	55.40	59.27	85.96
Luxembourg	–	20.00	50.00	61.53	–	100	100.00
Netherlands	–	21.875	38.57	66.02	71.79	79.40	80.00
Norway	–	–	25.49	60.75	77.77	80.51	90.00
Poland	–	3.70	5.63	12.40	18.79	42.95	43.64
Sweden	88.88	37.43	57.44	83.33	–	83.01	89.74
Slovenia	–	–	19.51	15	53.84	55.55	85.71

Source: European Social Survey 2002/2003. *Note: given the different names for education levels in the European context we opted to use the original ESS terms.

Although the analysis has thus far practically made reference to European countries only, a more geographically comprehensive study, such as that proposed by the World Internet Project (2005), establishes the same relationship between Internet use and education.

Table 2.4 Internet use rates in the population with secondary and higher education (%)

	Secondary	University
United Kingdom	64.4	88.1
Portugal	64.8	75.1
Germany	66.0	62.6
Hungary	14.6	45.5
Italy	53.5	77.3
Japan	45.7	70.1
Korea	44.9	77.7
Macao	49.5	76.7
Singapore	66.3	92.2
Spain	47.6	80.5
Sweden	76.4	83.8
Taiwan	18.2	54.9
USA	61.0	87.1

Source: CIES, Network Society in Portugal Survey, 2003 for Portugal; for all other countries the WIP (World Internet Project).

In characterizing societies in transition, the similarities are crossed with the exceptions and the question of Internet access offers a new example for the affirmation of singularities.

Although it is possible to establish similarities between the access rates in some of the countries studied here (Portugal, Poland, Spain), we also immediately find differences as to the effective use of that access. Indeed, if we establish a ratio between access and use, we see that Portugal is one of the countries that makes most use of the existing availability, putting it on a par with leading countries such as Norway, the Netherlands and Finland and ahead of other societies in transition such as the Czech Republic, which has high access figures but very low effective use by its populations.

What this use of the existing access availability ratio measures is the effective use of the technology, demonstrating that there must be other factors endogenous to each society that could explain why there

are differences in the use of a technology even when the access is equally high to begin with.

Analysis of the values for Portugal and the other European countries shows that, in certain conditions, even when the access rate increases, that increase is not necessarily directly reflected in an increase in use, for there are dynamics peculiar to each country at play that can explain the different socialization rates for the technology.

Table 2.5—Internet access/use of access ratio

Country	Has Internet access at home or at work* %	Uses the Internet** %	Access availability usage ratio
Portugal	37.79	29.72	0.79(4)
Austria	67.22	54.37	0.81(3)
Belgium	67.14	43.70	0.65
Switzerland	72.89	57.85 (3)	0.79(4)
Czech Republic	46.51	27.56	0.59
Germany	–	–	–
Denmark	76.61 (3)	62.39(2)	0.81(3)
Spain	35.45	22.20	0.63
Finland	75.95 (4)	56.19	0.74
France	50.00	37.28	0.75
United Kingdom	57.55	45.21	0.79 (4)
Greece	25.87	13.40	0.52
Hungary	46.21	19.63	0.42
Ireland	66.12	40.39	0.61
Israel	54.25	39.22	0.72
Italy	53.21	30.51	0.57
Luxembourg	68.57	51.43	0.75
Netherlands	73.05	55.88	0.76
Norway	75.29 (5)	62.07(4)	0.82(2)
Poland	38.68	23.88	0.62
Sweden	77.96 (2)	66.94(1)	0.86 (1)
Slovenia	78.92 (1)	36.14	0.46

Source: European Social Survey 2002/2003. *Note: the figures refer to the aggregated sum of all those who responded that they at least have access regardless of the degree of utilization. **Note: the figures refer to the aggregated sum of those who make effective personal use of the Internet (whereby personal use is defined as: private or recreational use that has nothing to do with the professional occupation of the user).

Table 2.6 Percentage of citizens per age group that have completed secondary and tertiary education in selected countries

	Finland	USA	Portugal	Spain	Italy	Czech Rep.	Slovakia	Advanced Economies
Secondary >55 years	52	84	8	18	24	80	68	60
Secondary 25–34	88	87	35	58	60	88	93	80
Growth rate	69.23%	3.57%	337.50%	222.22%	150.00%	10.00%	36.76%	
Tertiary > 55	23.4	33.2	4.6	10.5	6.7	10.6	8.6	18
Tertiary	39	39	15	37	12	12	12	27
Growth rate	66.67%	17.47%	226.09%	252.38%	79.10%	13.21%	39.53%	

	Hungary	Greece	Poland	Chile	Argentina	Uruguay	Brazil	Advanced Economies
Secondary >55 years	48	28	37	28	28	23	15	60
Secondary	82	72	53	61	52	38	32	80
Growth rate	70.83%	157.14%	43.24%	117.86%	85.71%	65.22%	113.33%	
Tertiary > 55	12.6	10.2	10.5	6	9	7	6	18
Tertiary	15	24	16	12	15	9	14	27
Growth rate	19.05%	135.29%	52.38%	100.00%	66.67%	28.57%	133.33%	

Sources: Secondary education figures: Education Outlook OECD 2004; tertiary education figures: Education Outlook OECD 2003

If the relationship between use of the Internet and education seems to be transversal to all countries, there is also a characteristic in the education dimension that seems to be common to almost all countries analyzed her: all of them, with the exception of the Czech Republic, reveal strong generational differences in terms of the completion of secondary education and tertiary education. The countries under analysis can be grouped into three distinct groups. The first group includes most of the countries: all those which present growth rates for completion of the education level ranging from 300% to 50% between the generations. This first group is also heterogeneous, for though countries such as Greece and Hungary present values in the younger generations that place them above 70% completion of secondary education, Portugal, Brazil and Uruguay are below 40%. Also in this group, in an intermediate position, are Spain, Poland, Argentina and Chile, which all have values close to 60% of the population with secondary education completed in the younger generations. This first group (with the exception of Greece) is also characterized by figures for the completion of higher education that are clearly below the average for the G7 countries.

A second group of countries, made up of the Czech Republic and Slovakia, seems to be in a better position, presenting diminutive generational differences in terms of education, given that even in the older generations completion of secondary education was close to or above 70%.

Finally, we have a third group made up by Italy alone, a country characterized by high growth rates for the completion of secondary education in the younger generations and values very close to those of Finland as far as investment in tertiary education by the younger generations is concerned. Italy presents itself, once more, as a dual society: simultaneously an information society and one in transition.

The generation analysis focusing on the question of education can also be observed when we look at the relationship between age and use of the Internet.

Table 2.7 Use of the Internet by age interval per country (%)

Country	15-24	25-34	35-54	over 55
Austria	81.81	75.28	65.73	21.02
Belgium	75.60	63.35	48.18	12.69
Switzerland	88.00	76.82	71.48	29.14
Czech Republic	73.07	39.82	38.46	10.31
Denmark	91.66	81.33	72.95	33.33
Spain	50.15	35.98	28.81	3.78
Finland	91.93	82.53	63.94	22.29
France	62.67	53.90	45.00	13.28
UK	73.34	62.05	59.49	20.01
Greece	32.60	25.71	15.73	1.95
Hungary	63.55	27.55	15.24	4.15
Ireland	62.79	56.60	46.78	16.34
Israel	55.68	52.631	37.93	18.69
Italy	48.87	52.83	33.28	8.67
Luxembourg	85.71	80.00	54.54	18.18
Netherlands	87.09	76.26	67.30	29.97
Norway	85.71	80.00	74.28	30.70
Poland	53.32	34.25	18.81	3.43
Sweden	66.30	65.45	50.97	21.21
Slovenia	67.85	53.57	38.33	7.54
Average	68.91	57.56	46.56	16.61

Source: European Social Survey 2002/2003.

Another characteristic common to the societies in transition, in this case with bearing on our analysis of European societies, is the fact that there is a considerable difference between the use rates for the older and younger generations.

For all societies in transition for which there are comparative data (Portugal, Spain, Czech Republic, Greece, Hungary and Poland), one can verify that the older citizens using the Internet correspond to only 10% of the younger users. In the case of other European countries, the figures are almost always somewhat above 20%.

Table 2.8 International comparison of Internet use per age group (%)

	United Kingdom	Portugal	Germany	Hungary	Italy	Japan	Korea	Spain	USA
16 to 24 yrs	80.1	58.8	59.6	45.1	66.4	80.6	95.1	70.2	90.8
35 to 44 yrs	72.8	30.4	55.6	13.7	37.4	63.0	49.5	31.7	74.5
55 to 64 yrs	38.7	5.4	31.6	4.3	9.0	22.2	11.5	11.7	67.3

Source: CIES, Network Society in Portugal Survey, 2003 for Portugal; for all other countries: WIP (World Internet Project)

The age dimension also can be used for comparison not only at the European level, for European, American and Asian societies all offer the possibility of comparative inter-generational analyses. Italy figures as a country in an intermediate position between information societies such as Germany, the United Kingdom, Japan and the USA and other societies in transition such as Portugal, Spain and Hungary.

The explanation for these differences between the generations in using the Internet seems, for the societies in transition, to lie mostly in the difference in the possession of basic forms of literacy, whereas in the more developed information societies the differences probably have more to do with the availability of contents that adapt to the interests of all generations and, furthermore, the dimension of the sociability networks that the technology can offer to more senior citizens.

All the factors analyzed so far in the infrastructure, production and knowledge dimensions and also those relating to acquired skills, employment structure and predominance of low and medium technology areas in the economy, are also reflected in the economies' compared productivity levels and their GDP *per capita*.

On a competitiveness index of 0-100, where the average for the advanced economies is 74 points, the societies in transition under analysis here occupy varied positions. Chile (26th), Spain (31st), Portugal (39th) and Slovakia (40th) are amongst the top forty countries or regions, while the remaining countries occupy positions between 42nd (Hungary) and 59th (Argentina).

Whereas the Portuguese GDP *per capita* represents 67% of the average for the advanced economies, placing it amongst the top thirty countries in an international comparison (together with Spain, Italy and Greece), the other countries (with the exception of the Czech Republic, Slovakia and Hungary) present values below 30% of the GDP *per capita* of the G7 economies.

Table 2.9 International comparison of informational development indicators

	Finland	USA	Singapore	Chile	Spain	Portugal	Slovakia	Hungary
Competitiveness (scale 0-100)[1]	83 (8)	100 (1)	89 (2)	69 (26)	67 (31)	58 (39)	57 (40)	57 (42)
GDP per capita (US $)[2]	26,190	35,750	24,040	9,820	21,460	18,280	12,840	13,400
Stock market capitalization growth, 1996-2000 (%)[3]	894	429	n.d.	70.7	70.4	35.1	7.9	20.2
Investment in R&D as a % of GDP (2001)[4]	3.4(2)	2.8	2.1	0.5	1.0	0.8	0.6	0.9
Investment in knowledge as a % of GDP (2000)[5]	6.2	6.8	–	–	2.5	2.2	2.4	3.1
Revenue derived from intellectual property and licences (US $ per 1,000 inh.)[4]	107.5 (5)	151.7 (4)	–	0.4	9.0	3.1	–	35.3

Table 2.9 International comparison of informational development indicators (continued)

	Czech Rep.	Greece	Italy	Brazil	Portugal	Argentina	Uruguay	Advanced Economies
Competitiveness (scale 0-100)[1]	56 (43)	56 (44)	50 (51)	48 (53)	41 (57)	36 (59)	–	74
GDP per capita (US $)[2]	15,780	18,720	20,528	7,770	10,560	10,880	7,830	27009
Stock market capitalization growth, 1996-2000 (%)[3]	21.6	51.7	40.2	26.9	15.0	100.9	0.8	71.44
Investment in R&D as a % of GDP (2001)[4]	1.3	0.7	1.1	1.1	0.7	0.4	0.2	2.0
Investment in knowledge as a % of GDP (2000)[5]	3.7	1.6	2.3	–	1.9	–	–	4.7
Revenue derived from intellectual property and licences (US $ per 1,000 inh.)[4]	4.4	1.1	9.4	0.6	0.7	0.5	0.2	26

Source: 1 Figures obtained directly from the source cited in Castells and Himanen (2002), i.e. the IMD (2004); 2 Values for all countries taken from the UNDP Human Development Report 2004; 3 Adapted from Castells and Himanen 2002, except the data for Portugal, which were supplied by the Portuguese Securities Exchange Commission (CMVM)—http://www.cmvm.pt/consulta_de_dados_e_registos/indicadores/indicadores.asp—whereby the figures for Portugal refer to 1997-2000 (Shares—BVL 30); 4 Adapted from Castells and Himanen (2002) for Finland, USA and Singapore; remaining data taken from the World Development Indicators Report of the World Bank 2002 (capitalization 1990-2000); 5 Investment in knowledge is defined as the sum of expenditure on R&D, higher education and software (OECD Factbook 2005). Note: (*) relative position.

A comparison of the societies in transition in terms of the informational development indicators reveals more differences than common traits. Nevertheless, as far as investment in R&D and knowledge are concerned, it is possible to present two different transition stages.

Thus, Italy, Brazil,[2] Spain, Portugal, the Czech Republic, Hungary and Slovakia are representative of a stage in which the countries invest approximately 50% of the values of the advanced economies in R&D and knowledge. A second group of countries—led by Greece, Poland, Chile, Argentina and Uruguay—presents values below 0.7% of the GDP.

Still in the context of the international comparison of development we can also analyze the economies in transition according to two other classification levels: the readiness of economies for an informational development model and their growth and competitiveness rates.

In terms of the incorporation of technology into the society and economy, The Economist's e-readiness report for 2004 proposes an index that measures the readiness and receptiveness of economies for an informational development model, basing its ranking on six dimensions: connectivity and information technologies, business environment, business and consumer adoption, legal and policy environment, social and cultural environment and supporting e-services.

For example, Portugal achieves good results in the "business environment," "business and consumer adoption" and "legal and policy environment" dimensions, on the basis of which one can conclude that, in terms of business infrastructure and state actions, the conditions are given for the national economy developing in that informational context.

However, the informational model does not consist of these conditions alone. It needs technological infrastructure conditions, specialized support services, sufficient user numbers and also a technically qualified workforce.

The countries and regions that lead the first half of the e-readiness ranking, namely Scandinavia, the UK, the USA and the Netherlands, achieve good results in all of the fields analyzed. The societies in transition essentially show bad performances in terms of the use of the basic telephone network, the mobile network, the Internet and the use of com-

[2] For Brazil, the analysis refers only to the R&D value.

Table 2.10 Position of the information economies under analysis

	Connectivity	Business environment	Consumer and business adoption	Legal and policy	Social and cultural environment	Supporting e-services	Overall score
Category weight	0.25	0.20	0.20	0.15	0.15	0.05	–
Finland	6.06	8.51	8.45	9.05	9.00	9.25	8.08 (5)
USA	6.25	8.50	8.22	8.45	9.30	9.40	8.04 (6)
Singapore	6.70	8.44	8.14	8.31	9.00	8.75	8.02 (7)
Spain	5.18	7.96	7.49	8.58	7.50	8.00	7.20 (21)
Italy	5.40	7.29	6.80	8.49	8.00	8.25	7.05 (23)
Portugal	4.98	7.49	7.65	8.52	7.25	7.50	7.01 (24)
Greece	4.49	6.77	6.91	8.19	6.75	7.50	6.47 (27)
Czech Rep.	4.74	7.37	6.81	6.73	7.25	7.00	6.47 (27)
Chile	3.82	8.00	6.26	7.69	6.88	7.13	6.35 (29)
Hungary	4.08	7.18	6.49	6.87	7.25	7.00	6.22 (30)
Brazil	3.21	6.36	6.95	6.05	5.88	6.13	5.56 (35)
Poland	3.01	7.10	5.32	5.88	6.50	6.25	5.41 (36)
Argentina	3.32	5.91	5.95	5.54	6.88	6.38	5.38 (37)

Source: The Economist e-readiness report, 2004. Note: The countries leading the ranking are Denmark, United Kingdom, Norway and Sweden.*

*_Connectivity and information technologies_: measures the use of the basic telephone network, the mobile network, the Internet and the use of computers, as well as the cost, quality and reliability of services. _Business environment:_ evaluate the general business climate in a country, including the strength of the economy, political stability, the regulatory environment, taxation, competition policy, the labour market, the quality of infrastructure and openness to trade and investment. _Consumer and business adoption:_ assesses how prevalent e-business practices are in each country, i.e. how the Internet is used to automate traditional business processes and how companies are helped by the development of logistics and online payment systems and the availability of finance and state investment in information technologies. _Legal and policy environment:_ assesses a country's legal framework and the specific laws governing Internet use—how easy is it to register new businesses, how strong is protection of private property, and whether the governments support the creation of an Internet-conducive legal environment or are more concerned with censoring content and controlling access. _Social and cultural environment:_ evaluates the literacy and basic education, which are preconditions for being able to use the new technologies, experience using the Internet and receptivity to it and the technical skills of the workforce. Finally, the existence of _supporting e-services:_ the existence of consulting and IT services, the existence of back-office solutions and consistent industry-wide standards for platforms and programming languages.

puters, as well as the cost, quality and reliability of service.[3] These data are corroborated by other sources such as the OECD figures (Figure 1) or the World Economic Forum, whose ranking is analyzed below.

Continuing with the comparisons in terms of competitiveness, the Global Competitiveness Report (2004) produced by the World Economic Forum employs a ranking system based on three indexes: technology, quality of public institutions and macro-economic environment.[4] The GCI index reflects the balance between technological development and adoption and the reliability of the public institutions and macroeconomic environment.

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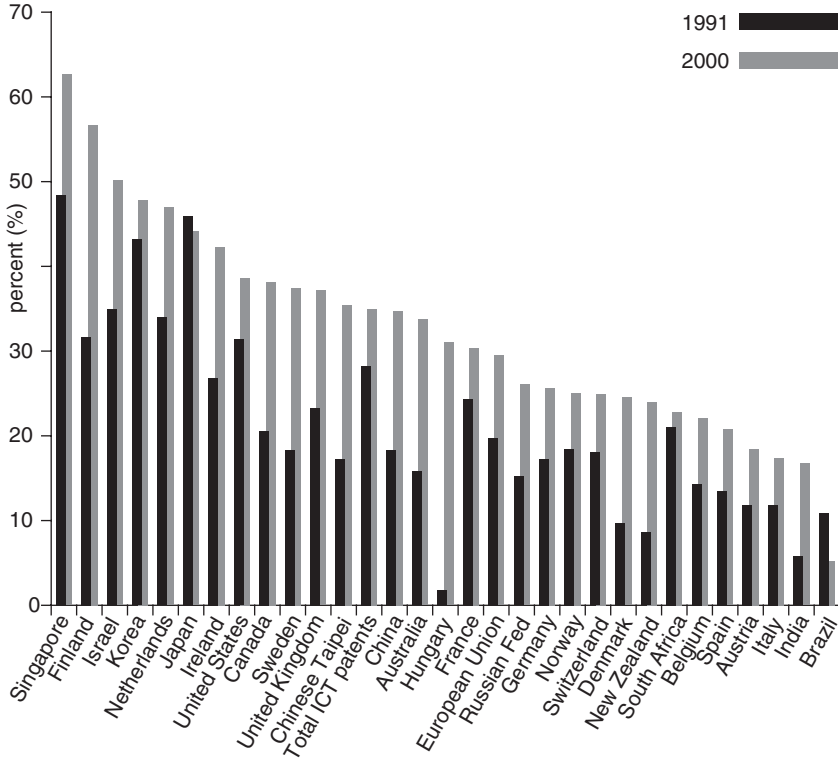
[3] *Connectivity and information technologies*: measures the use of the basic telephone network, the mobile network, the Internet and the use of computers, as well as the cost, quality and reliability of services. *Business environment:* evaluate the general business climate in a country, including the strength of the economy, political stability, the regulatory environment, taxation, competition policy, the labour market, the quality of infrastructure and openness to trade and investment. *Consumer and business adoption:* assesses how prevalent e-business practices are in each country, i.e. how the Internet is used to automate traditional business processes and how companies are helped by the development of logistics and online payment systems and the availability of finance and state investment in information technologies. *Legal and policy environment:* assesses a country's legal framework and the specific laws governing Internet use—how easy is it to register new businesses, how strong is protection of private property, and whether the governments support the creation of an Internet-conducive legal environment or are more concerned with censoring content and controlling access. *Social and cultural environment:* evaluates the literacy and basic education, which are preconditions for being able to use the new technologies, experience using the Internet and receptivity to it and the technical skills of the workforce. Finally, the existence of *supporting e-services:* the existence of consulting and IT services, the existence of back-office solutions and consistent industry-wide standards for platforms and programming languages.

[4] The *technology index* is obtained using a set of data with differentiated weighting. The measured variables are Internet access in schools, whether the state of competition between ISPs is sufficient for guaranteeing high quality, low failure rates and low prices, whether the government programmes are successful or not in promoting the use of the information technologies and whether the legislation on e-commerce, digital signatures, consumer protection are developed and enforced. Furthermore, mobile phone penetration and the number Internet users, Internet hosts, telephone lines and personal computers are also measure; the *public institutions index* is measured on the independence of the judicial system in relation to political power, citizens and companies, whether the property rights, including movable goods, are well defined and protected by law, whether the state is impartial in awarding public contracts and whether or not organized crime constitutes a high cost to economic activity. Also measured are corruption dimensions, in particular to what extent bribery is common for achieving import and export authorizations, access to public assets and avoiding taxation; the *macro-economic environment index* is based the probability of the economy experiencing recession in the coming year and to what extent access to credit for companies is more or less difficult than the previous year. Also assessed are the state debts or surpluses in the preceding year, as well as the savings, inflation and exchange rates and the spread for loans and financial applications. Two further factors assessed are the country's rating in terms of international credit and to what extent the state supplies necessary goods and services not supplied by the market and distortive government subsidies.

Figure 2.1 Businesses using the Internet and businesses receiving orders over the Internet, percentage of businesses with ten or more employees, 2002 and 2003 or latest available year[1]



1. The provisional definition of ICT patents is presented in Annex B of the compendium.
2. Cut-off point: countries with more than 100 EPO applications in 2000.
Source: OECD, Patent Database, September 2004.

In a table led by Finland and the USA, Portugal occupied 24th place in 2004, having climbed one place in relation to 2003. Indeed, Portugal is accompanied in its leadership of the societies in transition by two other countries that have also climbed the table: Spain and Chile.

Despite presenting high figures at the technological level, the second group of countries analyzed here, consisting of Greece, Hungary, the Czech Republic, Slovakia and Italy, has lower scores in terms of their public institutions. The third group, which includes Uruguay, Brazil, Poland and Argentina, is penalized essentially by the negative scores for the macro-economic index.

Table 2.11 Growth Competitiveness Index (GCI)

	Finland	USA	Singapore	Chile	Spain	Portugal	Slovakia	Hungary
GCI Ranking (2004)	2	1	7	22	23	24	37	39
GCI Ranking (2003)	2	1	6	28	23	25	35	33
GCI Rating 2004	5.82	5.95	5.56	5.01	5.00	4.96	4.56	4.56
Technology index	6.24 (1)	5.92 (3)	5.11 (11)	4.55 (32)	4.86 (20)	4.78 (23)	4.42 (38)	4.66(29)
Quality of public institutions index	6.48 (3)	5.74 (21)	6.21 (11)	5.77 (20)	5.16 (34)	5.69 (23)	4.74 (44)	5.07 (37)
Macro-environment index	5.04 (15)	5.47 (3)	5.79 (1)	4.71 (27)	4.99 (16)	4.42 (34)	4.52 (31)	3.95 (55)

	Czech Rep.	Slovakia	Italy	Uruguay	Brazil	Poland	Argentina
GCI Ranking (2004)	40	43	47	54	57	60	74
GCI Ranking (2003)	39	43	41	50	54	45	78
GCI Rating 2004	4.55	4.43	4.27	4.08	4.05	3.98	3.54
Technology index	4.88 (19)	4.67 (28)	4.08 (50)	3.92 (56)	4.24 (42)	4.19 (45)	3.87 (57)
Quality of public institutions index	4.56 (51)	4.64 (49)	4.64 (48)	5.23 (32)	4.62 (50)	3.70 (80)	3.77 (79)
Macro-environment index	4.22 (41)	3.98 (54)	4.27 (38)	3.10 (90)	3.28 (80)	4.05 (51)	2.96 (94)

Source: The Global Competitiveness Report 2004, World Economic Forum.

Societies in Transitions, Values and Social Well-being

The information societies are characterized not only by the appropriation of technology but also their internal openness and social well-being.

None of the countries in transition analyzed have an authoritarian regime and the dominating values in those societies today are those of an open society. The openness of a society can be measured by various dimensions, such as the ratio between the population in prison and the total population.

As one can see in the following table (Table 3.14), whereas the Finnish model is characterized by a ratio twice as low as that for the USA, Portugal registers figures that are twice those for Finland, with values that are very close to the average for the G7 societies. However, if we look at the total number of countries in transition in terms of their prison inmate figures, we find that, with the exception of Italy and Greece, all of the remaining countries have an inmate population above the average for the advanced economies.

In terms of gender equality, the majority of societies in transition are below the average for the advanced economies (661), representing societies that are still very unequal in terms of gender. Only Spain and Argentina achieve better gender equality scores, bringing them closer to the egalitarian model in terms of gender relations: Finland (820).

To add a further dimension, we can also compare the well-being of the populations of the societies in transition to the well-being models associated with the three information society models under analysis (Finland, Singapore and Silicon Valley), by looking at the income structures.

Hence, measured by the ratio of the 20% richest to the 20% poorest is concerned, the Finnish model of an information welfare society presents the greatest equality of income (3.8). At the other end, the market-governed information society model (Silicon Valley) and the authoritarian model (Singapore) show much greater unbalance in terms of income distribution, occupying third and second place in the ranking of the advanced economies with the worst ratios between the income of the richest and that of the poorest (8.3 and 9.7 respectively).

Table 2.12 International comparison of citizenship indicators

	Finland	USA	Singapore	Portugal	Spain	Italy	Czech Rep.	Slovakia	Advanced Economies
Freedom of the press (index 0-100; 0 = free)[1]	9 (free)	13 (free)	64 (not free)	14 (free)	19 (free)	33 (partially free)	23 (free)	21 (free)	17 (free)
Gender equality (0-1,000, 0 = unequal)[2]	820 (4)	769 (14)	648 (20)	644 (23)	716 (15)	583 (32)	586 (30)	607 (26)	661
Membership of at least one association (%)[3]	80	90	–	29	29	40	60.5	65	53
Social trust (%)[7]	56	35.5	–	12	35	31.5	24	15.5	31
Inmate population (per 100,000 inh.)[4]	71 (–157)	714 (–1)	392	128	140	98	184	165	126
Foreigners or persons born abroad (% of population)[5]	2.6	12.4	33.6	2.3	3.2	2.8	2.3	0.6	8.8
Environment: CO_2 emission (metric tons per capita)[2]	10.3	19.8 (-2)	14.7	5.9	5.3	6.6	11.6	6.6	10.4

Source: 1 Adapted from Castells and Himanen (2002), all data from the Press Freedom Survey 2004: http://www.freedomhouse.org/; 2 Adapted from Castells and Himanen (2002), except data for Portugal, which are taken from the UNDP Human Development Report 2001; 3 Adapted from Castells and Himanen (2002) and Norris, Pippa "Gender and Social Capital" 1999-2001 World Values Survey; 4 For all countries: International Centre for Prison Studies, King's College http://www.kcl.ac.uk/depsta/rel/icps/worldbrief/highest_to_lowest_rates.php; 5 Adapted from Castells and Himanen 2002, http://www.un.org/esa/population/publications/ittmig2002/WEB_migration_wallchart.xls 3. Note: (*) relative position. Based on Norris, Pippa "Gender and Social Capital" 1999-2001 World Values Survey (% of the population that responded that it generally trust others).

Table 2.12 International comparison of citizenship indicators

	Hungary	Greece	Poland	Chile	Argentina	Uruguay	Brazil	Advanced Economies
Freedom of the press (index 0-100; 0 = free)[1]	20 (free)	28 (free)	19 (free)	23 (free)	35 (partially free)	26 free)	36 (partially free)	94
Gender equality (0-1,000, 0 = unequal)[2]	529 (39)	523 (43)	606 (27)	460 (58)	645 (21)	511 (46)	–	83
Membership of at least one association (%)[3]	29	57	25	50	42.5	–	–	53
Social trust (%)[7]	22	21	18	22.5	15.5	–	–	32
Inmate population (per 100,000 inh.)[4]	165	82	209	204	148	209	183	126
Foreigners or persons born abroad (% of population)[5]	3	5	5.4	1	3.8	2.7	0.3	8.8
Environment: CO_2 emission (metric tons per capita)[2]	5.4	8.5	7.8	3.9	3.9	1.6	1.8	10.6

Source: 1 Adapted from Castells and Himanen (2002), all data from the Press Freedom Survey 2003 : http://www.freedomhouse.org/; 2 Adapted from Castells and Himanen (2002), except data for Portugal, which are taken from the UNDP Human Development Report 2001; 3 Adapted from Castells and Himanen (2002), except data on Portugal, which are taken from Cardoso et Al., 2004, *A Sociedade em Rede em Portugal (The Network Society in Portugal),* CIES; 4 For all countries: International Centre for Prison Studies, King's College: http://www.kcl.ac.uk/depsta/rel/icps/worldbrief/highest_to_lowest_rates.php; 5 Adapted from Castells and Himanen 2002, except data for Portugal which were taken from the National Statistics Office's (INE) population report. Note: (*) relative position.

Table 2.13 International comparison of social well-being indicators

	Finland	USA	Singapore	Portugal	Spain	Italy	Czech Rep.	Slovakia	Advanced Economies
Combined rate of students of the first, second and third cycles[1]	106 (1)	92	87	93	92	82	78	74	94
Functional literacy (%)[2]	89.6 (2)	79.3	92.5	52	–	–	84.3	–	83
Life expectancy at birth (years)[1]	77.9	77.0	78.0	76.1	79.2	78.7	75.3	73.6	78
Health care coverage (%)[3]	100	82	–	100	100	100	–	–	n.d.
Number of working hours per annum per person[7]	1713	1792	–	1676	1800	1591	1972	1814	1636
Ratio of the 20% richest to the 20% poorest[4]	3.8 (3)	8.4	9.7	8.0	5.4	6.5	3.5	4.0	5.8
Percentage of population below the poverty line[5]	3.8 (4)	14.1	–	21	–	–	–	–	10.6
Gini coefficient[6]	26.9	40.8	42.5	38.5	32.5	36	25.4	25.8	28.57

Source: 1 Adapted from Castells and Himanen (2002), except data for Portugal, which were taken from the UNDP Human Development Report 2001; 2 Adapted from Castells and Himanen (2002), except data for Portugal, which were taken from the UNDP Human Development Report 2003, calculated on the basis of the "Lacking functional literacy skills" indicator, http://hdr.undp.org/reports/global/2003/pdf/hdr03_HDI.pdf; 3 Adapted from Castells and Himanen (2002), except data for Portugal. Given the existence of a universal National Health Service, one can presume total coverage of the Portuguese population; 4 Adapted from Castells and Himanen 2002, except data for Portugal, taken from http://www.worldbank.org/poverty/wdrpoverty/; 5 Adapted from Castells and Himanen 2002. The value for Portugal was taken from Capucha (2004), *Desafios da Pobreza (The Challenges of Poverty),* Lisbon, ISCTE, p.131 (Doctoral Thesis). Relative poverty measurement referenced to a threshold of 60% of the average of the income available to households; 6 Data for all countries based on UNDP 2004.

Table 2.13 International comparison of social well-being indicators

	Hungary	Greece	Poland	Chile	Argentina	Uruguay	Brazil	Advanced Economies
Combined rate of students of the first, second and third cycles[1]	86	86	90	79	94	85	92	94
Functional literacy (%)[2]	66.8	–	57.4	95.9	96.9	97.6	87.3	83
Life expectancy at birth (years)[1]	71.7	78.2	73.8	76.0	74.1	75.2	68.0	78
Health care coverage (%)[3]	–	–	–	–	–	–	–	–
Number of working hours per annum per person[7]	–	1938	1956	–	–	–	–	1636
Ratio of the 20% richest to the 20% poorest[4]	4.9	6.2	5.8	18.7	18.1	10.4	31.5	5.8
Percentage of population below the poverty line[5]	14.5	–	23.8	19.9	28.4	–	23.9	10.6
Gini coefficient[6]	24.4	35.4	31.6	57.1	52.2	44.6	59.1	28.57

Source: 1 Adapted from Castells and Himanen (2002), except data for Portugal, which were taken from the UNDP Human Development Report 2001; 2 Adapted from Castells and Himanen (2002), except data for Portugal, which were taken from the UNDP Human Development Report 2003, calculated on the basis of the "Lacking functional literacy skills" indicator, http://hdr.undp.org/reports/global/2003/pdf/hdr03_HDI.pdf; 3 Adapted from Castells and Himanen (2002), except data for Portugal. Given the existence of a universal National Health Service, one can presume total coverage of the Portuguese population; 4 Adapted from Castells and Himanen 2002, except data for Portugal, taken from http://www.worldbank.org/poverty/wdrpoverty/; 5 Adapted from Castells and Himanen 2002. The value for Portugal was taken from Capucha (2004), *Desafios da Pobreza (The Challenges of Poverty),* Lisbon, ISCTE, p.131 (Doctoral Thesis). Relative poverty measurement referenced to a threshold of 60% of the average of the income available to households; 6 Data for all countries based on UNDP 2004.

All of the South American societies in transition (Brazil, Chile, Argentina and Uruguay) reveal extremely high inequality figures, sometimes three times as much as the USA (Brazil) or twice as much (Chile and Argentina).

As for the European societies, there is a division into two large groups. The first is made up of Portugal, Italy, Greece and Poland, with inequality values close to the USA informational society model. The second group includes the Czech Republic, Slovakia, Hungary and Spain, which are closer to the Finnish information society model.

Highlighting once more some of the specificities of each society under analysis, when we refer to the education level, it is also worthwhile stating that the openness of an information society does not depend only on the combined rate of students in the three education cycles, for if we neglect the school drop-out dimension (which the figures do not take into account) we would have a situation that would place Portugal and other societies in transition on a level with the USA and Finland, which are countries with much lower drop-out rates.[5]

In the field of education, a comparison between the countries as far as functional literacy, i.e. the capacity to apply knowledge acquired in school in the society one lives in, shows that there are also great divides between the countries, even in the European context. Thus, Portugal, together with Poland, presents the worst results of the European countries studied—with a functional literacy rate of only 52% as compared to an average of 83% for the advanced economies and more than 80% for the USA and Finland.

The openness of a society can also be measured on the social involvement of the citizens in everyday life. Together with Spain, Hungary and Poland, Portugal has the lowest rates of participation in associations, whereas Argentina and Italy present intermediate figures of around 40% for participation in associations. The Czech Republic, Slovakia, Chile and Greece are countries with over 50% of the population participating in associations.

[5] The data show that the drop-out rates in the EU are relatively high, with an average of 22.5%. However, there are considerable differences between the Member States. The Northern European states achieve better results than the other members. Portugal (40.7 %), Italy (30.2 %), Spain (30.0 %) and the United Kingdom (31.4 %) present high rates, while Germany (13.2 %), Austria (11.5 %) and the Scandinavian countries (Sweden 9.6 % and Finland 8.5 %) present below-average values (European Union 2000).

The reasons for the low participation levels are varied, but it is possible to identify some guiding hypotheses if we focus on a specific reality such as the Portuguese one.

Of the reasons for this lack of civic engagement, we can list, first and foremost, the degree of public confidence in the politicians for Portugal. Although it can be considered a global phenomenon (Castells 2004), the development of the degree of trust of the citizens in politicians is not identical in all societies. Whereas Portugal is in 28th place in terms of public trust in the honesty of its politicians, sharing this level with a group of European countries—Belgium, France, Italy and Ireland—Finland, in 3rd place, is one of the countries with the highest degree of trust in the honesty of its politicians in the world.

The analysis of civic engagement levels in the different countries must also take into account historic conditioning factors of both a global and local nature. What is known as unconventional political participation has increasingly become the most common form of civic engagement in our developed societies. Petitions, boycotts and other forms of direct action have become more common. For this reason, we should pay more attention to these forms of engagement than to membership in parties or trade unions and participation in demonstrations.

However, in terms of civic engagement measures in these terms, Portugal has even lower scores. The engagement index measured on the basis of different forms of civic involvement and participation in organizations shows that Portugal occupies the last place in an international comparison of 22 European countries and Israel. Despite the cultural and geographic proximity to Portugal, countries such as Spain and Italy have much higher levels of civic engagement.

The historic context of each society can also help us to understand the participation levels a little more. For example, in his analysis of data gathered in more than 70 countries, referring to more than 80% of the world population, on participation in established democracies and new democracies, Inglehart (2001) has linked the scarce civic participation in some societies to the *post-honeymoon* effect. Periods of high civic participation levels are followed by decreases or stagnation in participation, but in the long term the trend is for growth in participation.