

9. Europe

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Approach

This group began with an open brainstorming session intended to identify major political, economic and social issues raised by the information revolution that had not, in the view of participants, been sufficiently addressed in the conference plenary sessions. Such issues would be of concern to Europe but not exclusively so. Next the group focused its attention on information revolution questions and projections that are either unique to or particularly characteristic of Europe. It subsequently addressed various kinds of modifying factors that would affect the pace and shape of the information society in different parts of Europe. Finally, the group reviewed the range of ideas it had generated and attempted to capture them in four possible future scenarios for Europe. The discussion that follows is ordered to reflect the organization of the group process summarized here.

General Issues for the Future of the Information Revolution

Other Revolutions

Continuing advances in computing and communications technology have stimulated an information revolution that will fuel revolutions in a number of other domains such as science, engineering, health/medicine, business, manufacturing, the environment, transportation and lifestyle. A valuable future task, therefore, would be to identify those domains where positive feedback loops will likely occur (such as the expected synergy between biological science and IT) and then devise policies to guide the impact for greatest societal benefit.

Social Consequences

Greater consideration should be given to the future social consequences of the information revolution. For example, it is likely that further automation as a function of technological advance will create more jobs than it eliminates. However, attending just to net gains ignores the social disruption that may occur (since job losers and job gainers may well not be the same individuals) as well as the need imposed on all workers for continuous learning and the social stress of unending change. (Stress reduction will likely become a major concern in countries proceeding rapidly through the information revolution.)

Demographic dimensions of countries moving ahead in the information revolution also merit consideration. While noting that demography is not destiny, group members believe that the aging population of most industrial nations suggests that a great deal of work will be outsourced over networks to developing countries in the future, terming this trend "virtual migration." On the other hand, older people may be mobilized by such technology both politically and socially--since participation will demand less in the way of physical mobility. In any case, an older population of IT users should be expected to seek a new range of support services (including not only technical support but also health and social services) that could be either delivered or enhanced by digital networks.

Other social consequences noted in the breakout group include the ways in which physical or geographic proximity are implicated in creativity and innovation; there is a need to illuminate these processes and to understand the limits of IT-based connectivity in supporting them. On the other hand, increased geographic mobility together with far-ranging connectivity are likely to bring about transnational--and even global--virtual communities of varied kinds. Finally, the group underscored its concern about the future concentration of social elites, attributable to the differential benefits they will accrue from the information revolution.

Information-Intensive Goods and Services

The conference plenary sessions gave significant attention to technology and connectivity. Future study should pay more attention to the content and uses of information-intensive goods and services.

Presently such goods and services are consumed mainly by businesses. While households and individuals increasingly confront IT-embedded objects (cars, coffee-makers and a range of other goods were offered in evidence), these do not

directly require the consumer to interact with considerable amounts of information per se. Information-intensive goods and services, on the other hand, remain a small fraction of the consumption function (compared, for example, with housing, food, transportation and the like). Further, they require substantial amounts of time and effort to be consumed; their consumption is therefore probably self-limiting. Projecting the potential market would be an enlightening exercise--today's estimates may be overrated.

Could technical barriers be overcome, the group identified two significant categories of information-intensive goods and services that should have dramatic value for the future of the global information revolution. The first is educational technology, including both a very low cost access device and appropriately delivered education and training content. When available, such technology will help enable even those with least education all over the world to participate in the information society. The second is language translation technology, again including both a low-cost device with adequate power and speed to make real-time translation viable and sufficiently intelligent software to make it useful. The group urged pushing for both these potential breakthroughs.

System Governance

As society becomes increasingly dependent on internetworking to conduct a vast range of political, social and economic activities, the risks posed by potential instability and disruption (whether intentional or inadvertent) become great. Major chaos, for example, could ruin even large banks. System vulnerability should therefore be probed in future work.

Further, agreements about rights and norms will have to be established across national boundaries. For example, nations will have to come to agreements about protection of privacy versus the near-limitless possibilities for surveillance of network-based activity. The pervasiveness of surveillance, for instance, could become a flashpoint between the European Union (EU) and the US regarding privacy.

This area of contention is just one of many future domains where system governance issues will have to be decided and overarching agreements will have to be reached. Governments will have to negotiate with one another, suggesting the need for some sort of overriding transnational vehicle (much like the EU now provides for European nations). However, it is unclear how any such agreements, however brokered, would be enforced.

Prospects and Problems for Europe in the Information Revolution

The European Context

Europe comprises an extremely dense and complex group of independent nations that embody many different languages, cultures and constitutions. It has a long history that may also be a source of inertia. But its great diversity should be a source of strength, providing an incredibly varied pool from which social forms highly suited for survival in the information society of the future may emerge, adapt and grow.

Currently European nations are trying to add a layer of federation (via the EU). Currently--the EU parliament and commission notwithstanding--the power is still mainly in the national states; and there is considerable debate over how much power to hand over to EU bodies. Nonetheless, citizens are increasingly independent of their national states and some degree of political integration is already apparent. These trends support and are supported by the information revolution. It is likely that the near term will bring even greater regional integration across national boundaries (e.g., in the Baltics and in the Mediterranean region). Such prospects are shored up by long historical ties, shared social networks and cultural preferences--all of which are frequently grounded in locality. The group also noted the importance of tacit understanding, which often plays a role in political, economic and social trust.

IT in Europe

The Internet is still at an early stage ("ebay and amazon.com are industrial age organizations on a modern platform"). Europe missed the first phase of the Internet, and so has spent much of the past decade or so playing catch-up. Further, Europe has an old legacy infrastructure--there is no fast broadband network linking major European cities. These factors may slow the pace of the information revolution there.

On the other hand, Europe could emerge as a front runner in the next phase, for several reasons. First, Europe has traditionally been strong in telecommunications and broadcasting, and has led the way in cellular technology. Second--and related--is the point that Europe has a reasonable approach to technology standards, arriving at constructive solutions that facilitate interoperability without precluding innovation. Third, there are immediate incentives (given the density of cultures and multiplicity of languages

noted above) to achieve voice recognition and real-time translation; these should stimulate related technical advances. Moreover, Europe should continue to be a leader in the production of content, and could also be a leader in breakthrough uses of IT. Finally, several European countries are outpacing the US in R&D investment; such investment may be viewed as a forerunner of technological innovation.

Expectations: Governments, Markets and Technologies

Europe has far less confidence than the US in the ability of "free" markets to lead to productive and healthy information societies. There are doubts about whether the same style of capitalism that promoted a competitive industrial economy will work equally well in the post-industrial age; and there is skepticism about whether the information revolution in the US is really being driven by a free market in the first place (versus, for example, Microsoft and the Federal Reserve).

In Europe, therefore, governments are more likely to intervene in the course of the information revolution so that its shape there will likely differ from what emerges in the US. First, governments in Europe will likely attempt to intervene in the market in a balanced way to span the digital divide, promote equity, protect privacy and assure inclusion and social participation (or reduce marginalization). At the same time, European governments will give greater emphasis to social and cultural capital development and to the quality of life in the information society. Further, in Europe unions also exert an influence, limiting the power of governments and the market in the service of the quality of working life. So Europe may provide lifestyle models for the future (in contrast to the US, where the market will be allowed to determine the landscape of the information society).

Expectations: Business Environment

The nature of government intervention in the business environment will be a key factor in shaping the information society in Europe. In general, the trend will be to let industries self-organize and self-regulate, but to introduce government intervention to keep competition fair and to avoid misbehavior on the part of players in the market.

Europe, like other parts of the industrial world, has witnessed the IT-enabled implementation of lean organizations and the intensification of work all the way up and down the hierarchy of firms. But it has been slower at restructuring than the US, in part because of the serious social disruption and personal stress

brought about by these changes. Europe has also been slower to engender new high-technology start-up firms. It is likely that these tendencies won't change. So Europe should undergo evolutionary change in the business world, in which old "dinosaur" companies that can't adapt go extinct while new or more agile old firms survive.

Work intensification in restructured firms is associated both with higher stress and longer working hours. These outcomes run counter to the European emphasis on quality of life in general and, in particular, on shorter working hours than most of the industrialized world. To retain these values, Europe will have to deploy advancing IT in ways that make productivity break-throughs if its firms are to retain competitive advantage in the global economy while its people adhere to shorter working weeks and longer vacations.

Meanwhile, unions are concerned about how best to organize and maintain their voice when, as a function of the information revolution in business, people work in so many places (at the workplace, to be sure, but also at home, in hotels, in transit, at client firms, and so on). It is unclear who will assure workplace health and safety, equitable processes and rewards, and so on in the future. More generally, traditional trade or industry unions don't cope well with evolution and change. It would not be surprising, therefore, to see the rise of professional guilds in Europe--new kinds of organizations (not entirely unlike the old guilds) that will promote firm self-regulation and provide guides for positive working conditions in IT-enabled enterprises. Such guilds might be transnational, just as firms are.

At the same time, the new e-commerce business environment should empower individual consumers and groups of consumers. Specifically, by bundling products and services in distinctive ways, firms can produce "tailored" or customized outputs that meet an individual's needs and preferences. Individuals can readily shop around for the items they want, comparing prices online to arrive at the best buy. Finally, ease of network-based coordination should enable collective buying, where organized consumer groups can bargain with sellers for large-scale purchases at reduced cost.

Expectations: Education and the Transformation of Information into Knowledge

The European educational tradition is very old and very strong, and this strength should continue into the future. It provides the foundation for developing knowledge from information and leads to an emphasis on information quality (versus information per se). These are especially important given the incredible

pace of knowledge growth, the sheer difficulty of keeping up, and the increasingly overwhelming difficulty of filtering.

Europe's traditional strengths in education and the transformation of information into knowledge, coupled with its edge in broadcasting (see above) should thus make it a content leader in the future in remote education, news and varied lifestyle arenas. Additionally, if it can transform content into "brands," it may well be able to generate significant revenue streams from its content advantage.

Other Expectations: Groups and Leaders

Like the rest of the world, Europe expects to see the rise of virtual communities of all kinds, including social groups, collegial networks and even virtual families. In particular, participants foresaw these developments occurring much more rapidly among younger individuals, who already share a "youth culture" that transcends national boundaries. It is possible, then, that generational divisions may mark the information society of the near future.

Besides groups, participants raised questions about future intellectual and political leadership (since visionary leaders can by themselves exert a profound societal influence). Where, for instance, will the next daVinci come from? Or the next Marx? Or the next labor organizer who can unite the growing cadre of IT workers of the world? Many believed that Europe might well be their origin.

Modifying Factors

In general, breakout group participants viewed the North-South split (in Europe) as representative of a cluster of modifying factors that would differentially shape the course of the information revolution there. At present, the split marks a digital divide, with IT penetration and connectivity much greater in the North. The North also typically experiences a more rapid rate of diffusion of new technologies, so the divide is likely to widen. Moreover, although southern and northern countries are both committed to norms of social equity, governments in the South will not take a proactive stance toward the introduction and promotion of IT (in contrast to the agendas of northern governments).

Along East-West lines, participants noted that most of eastern Europe is eager to join the EU and other West-dominated alliances. While the East generally lags the West in IT penetration and connectivity, it has the advantage of a strong educational tradition (in mathematics and the sciences as well as literacy). Thus eastern Europe, and especially Russia, should be able to move forward faster

than many countries at a similar stage of penetration and connectivity. Long-standing historic and cultural relationships should play a substantial role in shaping the emergence of network alliances in Europe.

Besides these general themes, participants generated examples of other more specific modifying factors (while cautioning that these should be regarded as illustrative but not exhaustive). In the Nordic countries, for instance, there is a strong emphasis on rapid but equal diffusion of IT to retain the current socioeconomic structure (in which status divisions are small). There is also a strong commitment to consensual decision making, which may slow the pace of change. Finally, Nordic citizens place a high value on home life, so it would be natural to see there the emergence of IT-at-home applications.

Eastern Europe on the whole, and Russia in particular, has increasing opportunities for closer integration with the West in the information society of the future. High education levels plus relatively low labor costs should give it a special competitive niche in IT (potentially very strong in software and in content production). Currently, however, trust in banks is very low and there is little to no protection for intellectual property rights. These trends, together with the existence of large black and gray markets, mean that e-commerce is not presently viable. That situation could change rapidly with economic and political stability. (The remarkable success of Estonia would be worth special examination in this context.)

In western Europe, meanwhile, France has less confidence in IT as a social good and more skepticism about the economics of large-scale network-based coordination. The UK views itself as attempting to conserve its traditional cultural strengths, values and language, proceeding with a balanced and constructive approach to the information revolution. But it was acknowledged that "not everyone in Europe thinks exactly as the Brits do" about preserving the past.

Possible Future Scenarios

To arrive at possible futures, breakout group participants started by insisting that the picture will not be generated by looking simply at IT. Rather, participants suggested envisioning an n-dimensional space within which individuals and groups engage in numerous and diverse interactions along political, institutional, educational, economic, social, personal and other as yet unforeseen lines. Then they sought to discern the conditions that could cause these interactions to

cluster, yielding distinctly different scenarios. Figure 9.1 below summarizes the results of that exercise.

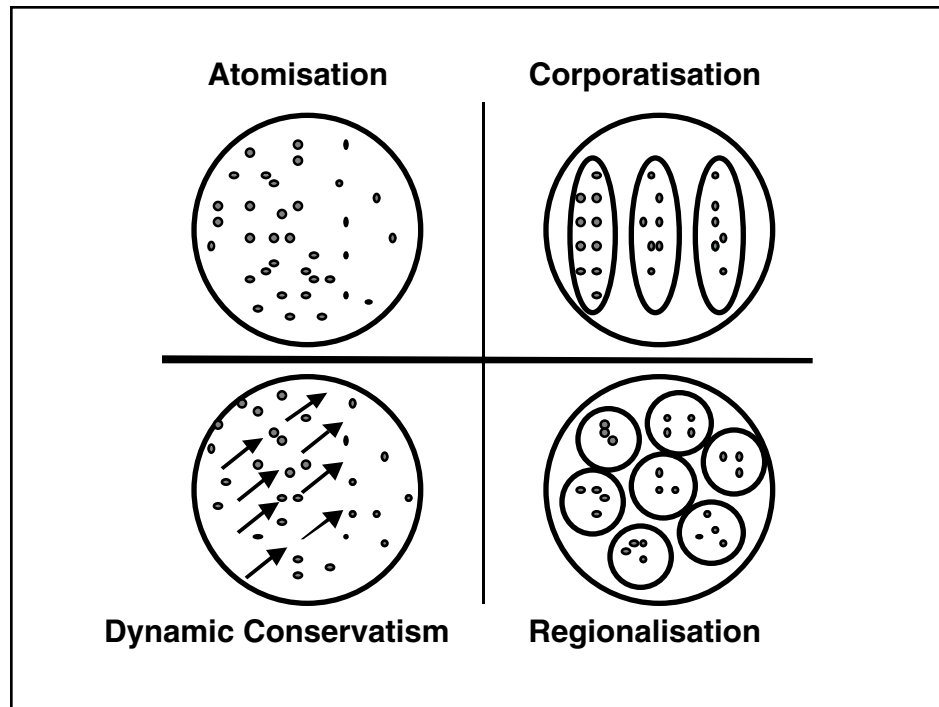


Figure 9.1 Four Future Scenarios for Europe

The upper left quadrant reflects organic atomisation, presenting a biomimetic model of the European information society of the future. This model incorporates thousands and thousands of small units engaging in millions of interactions that are organically self-organizing and self-adapting. It recalls complexity theory, as used to comprehend the voluminous and ever-changing constellations of transactions hosted and monitored by Citibank; it also rests on the future vision of network-based auctions, markets, reconfigurable work teams and "e-lance" labor that characterizes recent organizational behavior research. Finally, the picture is consistent with the view that highly complex information societies -- like large complex information systems -- cannot be both designed and robust; hence they must rely on a more organic, or biomimetic, approach to development and sustainability.

The upper right quadrant, labeled corporatisation, portrays a quite different future. In this scenario, a small number of very large players negotiate with one another to exert social, economic and other control over individual-level interactions. These dominating entities may include large transnational enterprises and transnational unions or professional guilds as well as

intergovernmental bodies or NGOs. Such a model for Europe reflects the magnifying power of IT (the rich get richer, the big get bigger) along with its capability to support mass coordinated action.

Intense regionalisation is depicted in the lower right quadrant. Here, too, interactions span national boundaries. But they are shaped by cultural, linguistic and historic ties, shared values, and common tacit knowledge about how decisions are made or negotiations undertaken. On this view, for instance, parts of Russia would likely be closely integrated with the Baltic nations, while other parts of Russia might well be integrated into an Asian cluster. The North-South split would probably define some regions as well, with southern Italy part of a Mediterranean cluster and northern Italy linked to other parts of the North.

In the lower left quadrant, dynamic conservatism represents a scenario in which the traditional national governments of Europe come together (for instance, under the EU rubric) to try to preserve what they value most about contemporary society while moving toward the future. They attempt to arrive at shared frameworks for regulation that make room for innovation while establishing a fair playing field for competition. They rely on constructive consensual standards to guide IT development and implementation.

Breakout group participants believe that Europe will start in this last quadrant and try to stay there. But it represents a long, slow, deliberative process. It is therefore susceptible to being overtaken or derailed by other events. For example, a major economic crisis in Europe that requires fast agile responses could put an end to the slow progressive scenario. On the other hand, the legacy infrastructure in Europe could impede its forward movement so that the future information revolution in Europe ends up being led from without.