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Collective Intelligence

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The prosperity of a nation, geographical region, business, or individual depends on their ability to navigate the knowledge space. Power is now conferred through the optimal management of knowledge, whether it involves technology, science, communication, or our "ethical" relationship with the other. The more we are able to form intelligent communities, as open-minded, cognitive subjects capable of initiative, imagination, and rapid response, the more we will be able to ensure our success in a highly competitive environment. Our material relationship to the world is maintained through a formidable epistemological and logical infrastructure: educational and training institutions, communications networks, digitally supported intellectual technologies, the continuous improvement and distribution of skills. In the long term, everything is based on the flexibility and vitality of our networks of knowledge production, transaction, and exchange.

It would be a gross oversimplification to compare the transition to the age of knowledge with the shift to a service economy. Such a transition cannot be reduced to the displacement of industrial activities to the service sector, for the service sector itself is increasingly coming under siege by a variety of technological objects. It is becoming "industrialized," as characterized by the presence of ATMs, Web sites, educational software, expert systems, etc. To a greater and greater extent, industrial organizations see their activities as a form of service. To respond to the new conditions of economic life, businesses tend to organize themselves in such a way that they are receptive to *innovation networks*. This means, for example, that in a large corporation, departments can easily and quickly interact with one

another, without the need for any kind of formal agreement, and with the continuous exchange of information and personnel. Interactive systems and contemporary innovation networks intersect one another, operating across the enterprise. The increasing growth of partnerships and alliances is a striking illustration of this process. New abilities must continuously be imported, produced, and introduced (in real time) in all sectors of the economy. Organizations must remain receptive to a constantly renewed stream of scientific, technical, social, and even aesthetic skills. Skill flow conditions cash flow. Once the process of renewal slows down, the company or organization is in danger of petrifaction and extinction. As Michel Serres has written, knowledge has become the new infrastructure.

Why did the so-called communist governments begin to decline sharply during the seventies, before finally collapsing at the beginning of the nineties? Without going into too many details on what is a complex issue, I can offer one hypothesis[1] that may be able to shed considerable light on our approach to the age of knowledge. The bureaucratically planned economy, which was still capable of functioning at the beginning of the sixties, was incapable of following the transformation of labor that resulted from the contemporary evolution of technological and organizational structure. Totalitarianism collapsed in the face of new forms of mobile and cooperative labor. *It was incapable of collective intelligence.*

The great shake-up of Western economies toward the tertiary sector was not the only factor involved in this, however. A more significant movement was under way, one that was anthropological. Beginning in the nineteen sixties, it became increasingly difficult for a laborer, employee, or engineer to inherit the traditions of a trade, to exercise and transmit this ability almost unchanged, to assume a lasting professional identity. Not only did technologies change with increasing velocity, but it became necessary to learn how to compare, regulate, communicate, and reorganize one's activity. It became necessary to exercise one's intellectual potential on a continuous basis. Moreover, new conditions of economic life gave a competitive edge to organizations in which each member was capable of taking the initiative for coordination, rather than submitting to some form of top-down planning. But this constant mobilization of social and cognitive abilities implicitly assumed a considerable degree of subjective involvement. No longer was it sufficient to passively identify oneself with a category, trade, or community. Now one's uniqueness, one's personal identity were implicated in professional life. It is precisely this form of subjective mobilization, highly individual as well as ethical and cooperative, that the bureaucratic and totalitarian universe was incapable of generating.

Quite obviously the interpenetration of leisure, culture, and work as a form of global social and subjective commitment remains the privilege of business leaders, the more highly qualified executives, certain professions, researchers, and artists. There are indications, however, that this model will expand, "trickle down" by a process of capillary motion, to all layers of society. The fact that the boundary between our professional life and personal development is beginning to blur signifies the death of a form of economic activity. Economic goals and technological efficiency can no longer operate within a closed circuit. As soon as genuine subjective commitment is required of individuals, economic needs must give way

to politics in the broadest sense of the word, that is to ethics and civic responsibility. They must also reflect cultural significations. Pure economy and mere efficiency cease to become effective. Only by incorporating cultural and moral objectives, aesthetic experience, can business engage the subjectivity of its employees, as well as its customers. The corporation no longer only consumes and produces goods and services, as in traditional economics. It is no longer satisfied with implementing, developing, and distributing skill and knowledge, as illustrated by the new cognitive approach to organizational structure. We must recognize the fact that the corporation, like other institutions, both encourages and promotes the development of subjectivity. Because it conditions all other activities, the continuous production of subjectivity will most likely be considered the major economic activity throughout the next century.

Under the wage system the individual sells his physical strength or labor time within a quantitative and easily measurable framework. Such a system could easily give way to a form of self-promotion, involving qualitatively differentiated abilities, by independent producers or small teams.[2] Individuals and microcorporations are more capable than large companies of continuous reorganization and optimal enhancement of the individual skills that are currently the requirements for success. Economic life will no longer be driven primarily by competition among large companies, which encourage quantitative and anonymous forms of labor. Rather, we are witnessing the development of complex forms of confrontational interdependence among skill zones that are fluid, delocalized, based on their singularities, and agitated by permanent molecular movements of association, exchange, and rivalry. The ability to rapidly form and reform intelligent communities will become the decisive weapon of regional skill centers competing within a globalized economic space. The emergence and constant redefinition of distributed identities will not only take place within the institutional framework of business, but through cooperative interactions in an international cyberspace.

Anthropology

Once knowledge becomes the prime mover, an unknown social landscape unfolds before our eyes in which the rules of social interaction and the identities of the players are redefined. A new anthropological space, the *knowledge space*, is being formed today, which could easily take precedence over the spaces of earth, territory, and commerce that preceded it. The second part of this book [Lévy's] is devoted to a detailed cartography of these spaces and their interrelationship.

What is an anthropological space? It is a system of proximity (space) unique to the world of humanity (anthropological), and thus dependent on human technologies, significations, language, culture, conventions, representations, and emotions. For example, in the anthropological space I refer to as "territorial," two individuals, living on either side of a border, are "farther" from one another than from people living in the same country, while this relationship might be reversed in the space of physical geography.

The *earth* was the first great space of signification formed by our species. It is based on the three primordial characteristics that distinguish *Homo sapiens*: language, technology, and complex forms of social organization ("religion" in the broadest sense of the word). Only humanity lives on *this* earth; animals inhabit ecological niches. Our relationship to the cosmos is the fundamental aspect of this first space, both from a point of view that we would today qualify as imaginary (animism, totemism), as well as from a very practical point of view, given the intimate contact between us and "nature." Myth and rite are the specific modes of knowledge of this first anthropological space. On earth, identity is inscribed within our bond to the cosmos as well as in our affiliation or alliance with other men. The first item on our resumé is generally our name, our symbolic inscription within an ancestral line.

A second, *territorial* space arose during the Neolithic period with the development of agriculture, the city, the state, and writing. This second space did not eliminate the great nomadic earth but partially covered it and attempted to turn it into something sedentary, domesticated. Hunting and gathering were no longer a source of wealth, but the possession and exploitation of fields. Within this second anthropological space the dominant modes of knowledge were based on writing: history and the development of systematic, theoretical, and hermeneutic knowledge. Here, the pivot of existence was no longer participation in the cosmos but the link to a territorial entity (affiliation, property, etc.) defined by its borders. Today, along with our name, we have an address, which serves to identify us within the territory of residents and taxpayers. The institutions in which we live are also territories, or juxtapositions of territories, with their hierarchies, bureaucracies, systems of rules, borders, logic, belonging, and exclusion.

A third anthropological space began to develop in the sixteenth century, which I will call the *commodity* space. It began to take shape with the initial development of a world market following the conquest of America by Europeans. The organizing principle of the new space is movement: the flow of energy, raw materials, merchandise, capital, labor, information. The great movement of *deterritorialization* that began to develop at the dawn of the modern era did not result in the suppression of territories but in their subversion, their subordination to economic flux. The commodity space did not eliminate the preceding spaces, but outpaced them. It became the new engine of evolution. Wealth was no longer based on controlling borders but on the control of movement. Industry now rules, in the general sense of processing materials and information. Modern experimental science is a typical mode of knowledge of the new space of continuous movement. But traditional science is itself undergoing a process of deterritorialization. Following the Second World War, it gave way to a "technoscience" driven by a permanent dynamic of research and economic innovation. The coupling of theory and experimental practice characteristic of classical science now had to compete with the growing power of simulation and digital modeling, which threatened conventional epistemological methods and provided a glimpse into the turmoil of a fourth space. To possess an identity, to exist in the space of commodity flow, means that we participate in economic production and exchange, occupy a position at the nodes of the various networks of production, transaction, and

communication. To be unemployed within the commodity space is a sign of misfortune, for within it our social identity is defined by work, which means, for the majority of the population, a job and a salary. On our resumé, right after our name (position on earth) and address (position within the territory), we generally indicate our profession (position in the commodity space).

Is it possible to bring a new space into existence, in which we would possess a social identity even without a profession? Perhaps the current crisis of identity and social forms of identification signifies the dimly perceived and incomplete emergence of a new anthropological space, that of knowledge and collective intelligence, whose arrival is in no way guaranteed by any historical laws. Like the other anthropological spaces, the *knowledge space* will control preceding spaces rather than eliminate them. From this point forward, the existence of economic networks and territorial power will depend on mankind's capacity for the rapid acquisition of knowledge and the development of a collective imagination, as will the survival of the great nomadic earth.

Intelligence and human knowledge have always played a central role in social life. Our species is called *sapiens* for good reason. To each anthropological space there corresponds a specific mode of knowledge. But then, why refer to civilization's new horizon as the *knowledge space*? There are at least three aspects to this newness: the rate of evolution of knowledge, the number of people who will be asked to learn and produce new forms of knowledge, and finally, the appearance of new tools (cyberspatial tools) capable of bringing forth, within the cloud of information around us, unknown and distinct landscapes, singular identities characteristic of this space, new sociohistoric figures.

Speed. Never before has science and technology evolved so rapidly, with so many direct consequences on our daily life, work, modes of communication, our relation to our bodies, space, etc. Today it is within the universe of knowledge and skill that acceleration is greatest and the configurations most changeable. This is one of the reasons why knowledge (in the most general sense of the word) dominates the other dimensions of social life.

Mass. It has become impossible to restrict knowledge and its movement to castes of specialists. From now on, humanity as a whole must adapt, learn, and invent if it is to improve its lot in the complex and chaotic universe in which we now live.

Tools. The number of messages in circulation has never been as great as it is now, but we have few instruments to filter the pertinent data, make connections on the basis of significations and needs that are still subjective, or orient ourselves within the flux of information. It is at this point that the knowledge space ceases to be the object of established fact and becomes a project. Building the knowledge space will mean acquiring the institutional, technical, and conceptual instruments needed to make information navigable, so that each of us is able to orient ourselves and recognize others on the basis of mutual interests, abilities, projects, means, and identities within this new space. The deliberate creation of a system of expression for the knowledge space will enable us to correctly express, and perhaps even resolve, a number of crucial problems that we are currently unable to formulate adequately with the concepts and tools that have been used to express preceding spaces.

Our living knowledge, skills, and abilities are in the process of being recognized as the primary source of all other wealth. What then will our new communication tools be used for? The most socially useful goal will no doubt be to supply ourselves with the instruments for sharing our mental abilities in the construction of collective intellect or imagination. Internetworked data would then provide the technical infrastructure for the collective brain or *hypercortex*[3] of living communities. The role of information technology and digital communications is not to "replace mankind" but to promote the construction of intelligent communities in which our social and cognitive potential can be mutually developed and enhanced. Based on this approach, the major architectural project of the twenty-first century will be to imagine, build, and enhance an interactive and ever changing cyberspace. Perhaps it will then be possible to move beyond the society of the spectacle and enter a post-media era in which communications technologies will serve to filter and help us navigate knowledge, and enable us to think collectively rather than simply haul masses of information around with us. Unfortunately, although the promoters of the information highway may be aware of the problem, they remain mired in discussions about bandwidth. Fortunately, at present only a small minority considers the global system for delivering video on demand to be the *nec plus ultra* of imaginative thought concerning the art and architecture of cyberspace.

Notes

1   This hypothesis was inspired by the work of Bernard Perret. See *L'Economie contre la société. Affronter la crise de l'intégration culturelle et sociale*, by Bernard Perret and Guy Roustang (Paris: Editions du Seuil, 1993).

2   This long-range approach to the "end of employment" was suggested by Robert Reich, *The Work of Nations: Preparing Ourselves for 21st Century Capitalism* (New York: Random House, 1991).

3   The word was coined by Roy Ascott during the "Telenonia" conference held in Toulouse in 1992 as part of the FAUST project. See also, "Telenonia" in *Interactive Art, Intercommunication*, 7 (1994), pp. 114–23, and "Telenonia, On Line" in *Kunst im Netz* (Graz: Steirischen Kulturinitiative, 1993), pp. 135–46.