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POSTMODERNIZATION, OR THE INFORMATIZATION OF PRODUCTION

Postmodernism is not something we can settle once and for all and then use with a clear conscience. The concept, if there is one, has to come at the end, and not at the beginning, of our discussions of it.

Fredric Jameson

The good news from Washington is that every single person in Congress supports the concept of an information superhighway. The bad news is that no one has any idea what that means.

Congressman Edward Markey

It has now become common to view the succession of economic paradigms since the Middle Ages in three distinct moments, each defined by the dominant sector of the economy: a first paradigm in which agriculture and the extraction of raw materials dominated the economy, a second in which industry and the manufacture of durable goods occupied the privileged position, and a third and current paradigm in which providing services and manipulating information are at the heart of economic production.¹ The dominant position has thus passed from primary to secondary to tertiary production. Economic *modernization* involves the passage from the first paradigm to the second, from the dominance of agriculture to that of industry. Modernization means industrialization. We might call the passage from the second paradigm to the third, from the domination of industry to that of services and information, a process of economic *postmodernization*, or better, *informatization*.

The most obvious definition and index of the shifts among these three paradigms appear first in quantitative terms, in reference either to the percentage of the population engaged in each of these productive domains or to the percentage of the total value produced by the various sectors of production. The changes in employment statistics in the dominant capitalist countries during the past one hundred years do indeed indicate dramatic shifts.² This quantitative view, however, can lead to serious misunderstandings of these economic paradigms. Quantitative indicators cannot grasp either the *qualitative* transformation in the progression from one paradigm to another or the *hierarchy* among the economic sectors in the context of each paradigm. In the process of modernization and the passage toward the paradigm of industrial dominance, not only did agricultural production decline quantitatively (both in percentage of workers employed and in proportion of the total value produced), but also, more important, agriculture itself was transformed. When agriculture came under the domination of industry, even when agriculture was still predominant in quantitative terms, it became subject to the social and financial pressures of industry, and moreover agricultural production itself was industrialized. Agriculture, of course, did not disappear; it remained an essential component of modern industrial economies, but it was now a transformed, industrialized agriculture.

The quantitative perspective also fails to recognize hierarchies among national or regional economies in the global system, which leads to all kinds of historical misrecognitions, posing analogies where none exist. From a quantitative perspective, for example, one might assume a twentieth-century society with the majority of its labor force occupied in agriculture or mining and the majority of its value produced in these sectors (such as India or Nigeria) to be in a position analogous to a society that existed sometime in the past with the same percentage of workers or value produced in those sectors (such as France or England). The historical illusion casts the analogy in a dynamic sequence so that one economic system occupies the same position or stage in a sequence of develop-

ment that another had held in a previous period, as if all were on the same track moving forward in line. From the qualitative perspective, that is, in terms of their position in global power relationships, however, the economies of these societies occupy entirely incomparable positions. In the earlier case (France or England of the past), the agricultural production existed as the dominant sector in its economic sphere, and in the later (twentieth-century India or Nigeria), it is subordinated to industry in the world system. The two economies are not on the same track but in radically different and even divergent situations—of dominance and subordination. In these different positions of hierarchy, a host of economic factors is completely different—exchange relationships, credit and debt relationships, and so forth.³ In order for the latter economy to realize a position analogous to that of the former, it would have to invert the power relationship and achieve a position of dominance in its contemporary economic sphere, as Europe did, for example, in the medieval economy of the Mediterranean world. Historical change, in other words, has to be recognized in terms of the power relationships throughout the economic sphere.

Illusions of Development

The discourse of economic *development*, which was imposed under U.S. hegemony in coordination with the New Deal model in the postwar period, uses such false historical analogies as the foundation for economic policies. This discourse conceives the economic history of all countries as following one single pattern of development, each at different times and according to different speeds. Countries whose economic production is not presently at the level of the dominant countries are thus seen as developing countries, with the idea that if they continue on the path followed previously by the dominant countries and repeat their economic policies and strategies, they will eventually enjoy an analogous position or stage. The developmental view fails to recognize, however, that the economies of the so-called developed countries are defined not only by certain quantitative factors or by their internal structures, but also and more important by *their dominant position in the global system*.

The critiques of the developmentalist view that were posed by underdevelopment theories and dependency theories, which were born primarily in the Latin American and African contexts in the 1960s, were useful and important precisely because they emphasized the fact that the evolution of a regional or national economic system depends to a large extent on its place within the hierarchy and power structures of the capitalist world-system.⁴ The dominant regions will continue to develop and the subordinate will continue to underdevelop as mutually supporting poles in the global power structure. To say that the subordinate economies do not develop does not mean that they do not change or grow; it means, rather, that *they remain subordinate in the global system* and thus never achieve the promised form of a dominant, developed economy. In some cases individual countries or regions may be able to change their position in the hierarchy, but the point is that, regardless of who fills which position, the hierarchy remains the determining factor.⁵

The theorists of underdevelopment themselves, however, also repeat a similar illusion of economic development.⁶ Summarizing in schematic terms, we could say that their logic begins with two valid historical claims but then draws from them an erroneous conclusion. First, they maintain that, through the imposition of colonial regimes and/or other forms of imperialist domination, the underdevelopment of subordinated economies was created and sustained by their integration into the global network of dominant capitalist economies, their partial articulation, and thus their real and continuing dependence on those dominant economies. Second, they claim that the dominant economies themselves had originally developed their fully articulated and independent structures in relative isolation, with only limited interaction with other economies and global networks.⁷

From these two more or less acceptable historical claims, however, they then deduce an invalid conclusion: if the developed economies achieved full articulation in relative isolation and the underdeveloped economies became disarticulated and dependent through their integration into global networks, then a project for

the relative isolation of the underdeveloped economies will result in their development and full articulation. In other words, as an alternative to the “false development” pandered by the economists of the dominant capitalist countries, the theorists of underdevelopment promoted “real development,” which involves delinking an economy from its dependent relationships and articulating in relative isolation an autonomous economic structure. Since this is how the dominant economies developed, it must be the true path to escape the cycle of underdevelopment. This syllogism, however, asks us to believe that the laws of economic development will somehow transcend the differences of historical change.

The alternative notion of development is based paradoxically on the same historical illusion central to the dominant ideology of development it opposes. The tendential realization of the world market should destroy any notion that today a country or region could isolate or delink itself from the global networks of power in order to re-create the conditions of the past and develop as the dominant capitalist countries once did. Even the dominant countries are now dependent on the global system; the interactions of the world market have resulted in a generalized disarticulation of all economies. Increasingly, any attempt at isolation or separation will mean only a more brutal kind of domination by the global system, a reduction to powerlessness and poverty.

Informatization

The processes of modernization and industrialization transformed and redefined all the elements of the social plane. When agriculture was modernized as industry, the farm progressively became a factory, with all of the factory’s discipline, technology, wage relations, and so forth. Agriculture was modernized as industry. More generally, society itself slowly became industrialized even to the point of transforming human relations and human nature. Society became a factory. In the early twentieth century, Robert Musil reflected beautifully on the transformation of humanity in the passage from the pastoral agricultural world to the social factory: “There was a

time when people grew naturally into the conditions they found waiting for them and that was a very sound way of becoming oneself. But nowadays, with all this shaking up of things, when everything is becoming detached from the soil it grew in, even where the production of soul is concerned one really ought, as it were, to replace the traditional handicrafts by the sort of intelligence that goes with the machine and the factory.”⁸ The processes of becoming human and the nature of the human itself were fundamentally transformed in the passage defined by modernization.

In our times, however, *modernization has come to an end*. In other words, industrial production is no longer expanding its dominance over other economic forms and social phenomena. A symptom of this shift is manifest in the quantitative changes in employment. Whereas the process of modernization was indicated by a migration of labor from agriculture and mining (the primary sector) to industry (the secondary), the process of postmodernization or informatization has been demonstrated through the migration from industry to service jobs (the tertiary), a shift that has taken place in the dominant capitalist countries, and particularly in the United States, since the early 1970s. Services cover a wide range of activities from health care, education, and finance to transportation, entertainment, and advertising. The jobs for the most part are highly mobile and involve flexible skills. More important, they are characterized in general by the central role played by knowledge, information, affect, and communication. In this sense many call the postindustrial economy an informational economy.

The claim that modernization is over and that the global economy is today undergoing a process of postmodernization toward an informational economy does not mean that industrial production will be done away with or even that it will cease to play an important role, even in the most dominant regions of the globe. Just as the processes of industrialization transformed agriculture and made it more productive, so too the informational revolution will transform industry by redefining and rejuvenating manufacturing processes. The new managerial imperative operative here is, “Treat

manufacturing as a service.”⁹ In effect, as industries are transformed, the division between manufacturing and services is becoming blurred.¹⁰ Just as through the process of modernization all production tended to become industrialized, so too through the process of postmodernization all production tends toward the production of services, toward becoming informationalized.

Not all countries, of course, even among the dominant capitalist countries, have embarked on the project of postmodernization along the same path. On the basis of the change of employment statistics in the G-7 countries since 1970, Manuel Castells and Yuko Aoyama have discerned two basic models or paths of informatization.¹¹ Both models involve the increase of employment in postindustrial services, but they emphasize different kinds of services and different relations between services and manufacturing. The first path tends toward a *service economy model* and is led by the United States, the United Kingdom, and Canada. This model involves a rapid decline in industrial jobs and a corresponding rise in service-sector jobs. In particular, the financial services that manage capital come to dominate the other service sectors. In the second model, the *info-industrial model*, typified by Japan and Germany, industrial employment declines more slowly than it does in the first model, and, more important, the process of informatization is closely integrated into and serves to reinforce the strength of existing industrial production. Services related directly to industrial production thus remain more important in this model relative to other services. The two models represent two strategies to manage and gain an advantage in the economic transition, but it should be clear that they both move resolutely in the direction of the informatization of the economy and the heightened importance of productive flows and networks.

Although the subordinated countries and regions of the world are not capable of implementing such strategies, the processes of postmodernization nonetheless impose irreversible changes on them. The fact that informatization and the shift toward services have taken place thus far primarily in the dominant capitalist coun-

tries and not elsewhere should not lead us back to an understanding of the contemporary global economic situation in terms of linear stages of development. It is true that as industrial production has declined in the dominant countries, it has been effectively exported to subordinated countries, from the United States and Japan, for example, to Mexico and Malaysia. Such geographical shifts and displacements might lead some to believe that there is a new global organization of economic stages whereby the dominant countries are informational service economies, their first subordinates are industrial economies, and those further subordinated are agricultural. From the perspective of stages of development, for example, one might think that through the contemporary export of industrial production, an auto factory built by Ford in Brazil in the 1990s might be comparable to a Ford factory in Detroit in the 1930s because both instances of production belong to the same industrial stage.

When we look more closely, however, we can see that the two factories are not comparable, and the differences are extremely important. First of all, the two factories are radically different in terms of technology and productive practices. When fixed capital is exported, it is exported generally at its highest level of productivity. The Ford factory in 1990s Brazil, then, would not be built with the technology of the Ford factory of 1930s Detroit, but would be based on the most advanced and most productive computer and informational technologies available. The technological infrastructure of the factory itself would locate it squarely within the informational economy. Second, and perhaps more important, the two factories stand in different relations of dominance with respect to the global economy as a whole. The Detroit auto factory of the 1930s stood at the pinnacle of the global economy in the dominant position and producing the highest value; the 1990s auto factory, whether in São Paulo, Kentucky, or Vladivostok, occupies a subordinate position in the global economy—subordinated to the high-value production of services. Today all economic activity tends to come under the dominance of the informational economy and to

be qualitatively transformed by it. The geographical differences in the global economy are not signs of the co-presence of different stages of development but lines of the new global hierarchy of production.

It is becoming increasingly clear from the perspective of subordinated regions that modernization is no longer the key to economic advancement and competition. The most subordinated regions, such as areas of sub-Saharan Africa, are effectively excluded from capital flows and new technologies, and they thus find themselves on the verge of starvation.¹² Competition for the middle-level positions in the global hierarchy is conducted not through the industrialization but through the informatization of production. Large countries with varied economies, such as India and Brazil, can support simultaneously all levels of productive processes: information-based production of services, modern industrial production of goods, and traditional handicraft, agricultural, and mining production. There does not need to be an orderly historical progression among these forms, but rather they mix and coexist. All of the forms of production exist within the networks of the world market and under the domination of the informational production of services.

The transformations of the Italian economy since the 1950s demonstrate clearly that relatively backward economies do not simply follow the same stages the dominant regions experience, but evolve through alternative and mixed patterns. After World War II, Italy was still a predominantly peasant-based society, but in the 1950s and 1960s it went through furious if incomplete modernization and industrialization, a first economic miracle. Then, however, in the 1970s and 1980s, when the processes of industrialization were still not complete, the Italian economy embarked on another transformation, a process of postmodernization, and achieved a second economic miracle. These Italian miracles were not really leaps forward that allowed it to catch up with the dominant economies; rather, they represented mixtures of different incomplete economic forms. What is most significant here, and what might usefully pose the Italian case as the general model for all other backward

economies, is that *the Italian economy did not complete one stage (industrialization) before moving on to another (informatization)*. According to two contemporary economists, the recent Italian transformation reveals “an interesting transition from proto-industrialism to proto-informatization.”¹³ Various regions will evolve to have peasant elements mixed with partial industrialization and partial informatization. The economic stages are thus all present at once, merged into a hybrid, composite economy that varies not in kind but in degree across the globe.

Just as modernization did in a previous era, postmodernization or informatization today marks a new mode of becoming human. Where the production of soul is concerned, as Musil would say, one really ought to replace the traditional techniques of industrial machines with the cybernetic intelligence of information and communication technologies. We must invent what Pierre Levy calls an anthropology of cyberspace.¹⁴ This shift of metaphors gives us a first glimpse of the transformation, but we need to look more closely to see clearly the changes in our notion of the human and in humanity itself that emerge in the passage toward an informational economy.

The Sociology of Immaterial Labor

The passage toward an informational economy necessarily involves a change in the quality and nature of labor. This is the most immediate sociological and anthropological implication of the passage of economic paradigms. Today information and communication have come to play a foundational role in production processes.

A first aspect of this transformation is recognized by many in terms of the change in factory labor—using the auto industry as a central point of reference—from the Fordist model to the Toyotist model.¹⁵ The primary structural change between these models involves the system of communication between the production and the consumption of commodities, that is, the passage of information between the factory and the market. The Fordist model constructed a relatively “mute” relationship between production and consump-

tion. The mass production of standardized commodities in the Fordist era could count on an adequate demand and thus had little need to “listen” to the market. A feedback circuit from consumption to production did allow changes in the market to spur changes in productive engineering, but this communication circuit was restricted (owing to the fixed and compartmentalized channels of planning and design structures) and slow (owing to the rigidity of the technologies and procedures of mass production).

Toyotism is based on an inversion of the Fordist structure of communication between production and consumption. Ideally, according to this model, production planning will communicate with markets constantly and immediately. Factories will maintain zero stock, and commodities will be produced just in time according to the present demand of the existing markets. This model thus involves not simply a more rapid feedback loop but an inversion of the relationship because, at least in theory, the production decision actually comes after and in reaction to the market decision. In the most extreme cases the commodity is not produced until the consumer has already chosen and purchased it. In general, however, it would be more accurate to conceive the model as striving toward a continual interactivity or rapid communication between production and consumption. This industrial context provides a first sense in which communication and information have come to play a newly central role in production. One might say that instrumental action and communicative action have become intimately interwoven in the informationalized industrial process, but one should quickly add that this is an impoverished notion of communication as the mere transmission of market data.¹⁶

The service sectors of the economy present a richer model of productive communication. Most services indeed are based on the continual exchange of information and knowledges. Since the production of services results in no material and durable good, we define the labor involved in this production as *immaterial labor*—that is, labor that produces an immaterial good, such as a service, a cultural product, knowledge, or communication.¹⁷ One face of

immaterial labor can be recognized in analogy to the functioning of a computer. The increasingly extensive use of computers has tended progressively to redefine laboring practices and relations, along with, indeed, all social practices and relations. Familiarity and facility with computer technology is becoming an increasingly general primary qualification for work in the dominant countries. Even when direct contact with computers is not involved, the manipulation of symbols and information along the model of computer operation is extremely widespread. In an earlier era workers learned how to act like machines both inside and outside the factory. We even learned (with the help of Muybridge's photos, for example) to recognize human activity in general as mechanical. Today we increasingly think like computers, while communication technologies and their model of interaction are becoming more and more central to laboring activities. One novel aspect of the computer is that it can continually modify its own operation through its use. Even the most rudimentary forms of artificial intelligence allow the computer to expand and perfect its operation based on its interaction with its user and its environment. The same kind of continual interactivity characterizes a wide range of contemporary productive activities, whether computer hardware is directly involved or not. The computer and communication revolution of production has transformed laboring practices in such a way that they all tend toward the model of information and communication technologies.¹⁸ Interactive and cybernetic machines become a new prosthesis integrated into our bodies and minds and a lens through which to redefine our bodies and minds themselves. The anthropology of cyberspace is really a recognition of the new human condition.

Robert Reich calls the kind of immaterial labor involved in computer and communication work "symbolic-analytical services"—tasks that involve "problem-solving, problem-identifying, and strategic brokering activities."¹⁹ This type of labor claims the highest value, and thus Reich identifies it as the key to competition in the new global economy. He recognizes, however, that the growth of these knowledge-based jobs of creative symbolic manipu-

lation implies a corresponding growth of low-value and low-skill jobs of routine symbol manipulation, such as data entry and word processing. Here begins to emerge a fundamental division of labor within the realm of immaterial production.

We should note that one consequence of the informatization of production and the emergence of immaterial labor has been a real homogenization of laboring processes. From Marx's perspective in the nineteenth century, the concrete practices of various laboring activities were radically heterogeneous: tailoring and weaving involved incommensurable concrete actions. Only when abstracted from their concrete practices could different laboring activities be brought together and seen in a homogeneous way, no longer as tailoring and weaving but as the expenditure of human labor power in general, as *abstract labor*.²⁰ With the computerization of production today, however, the heterogeneity of concrete labor has tended to be reduced, and the worker is increasingly further removed from the object of his or her labor. The labor of computerized tailoring and the labor of computerized weaving may involve exactly the same concrete practices—that is, manipulation of symbols and information. Tools, of course, have always abstracted labor power from the object of labor to a certain degree. In previous periods, however, the tools generally were related in a relatively inflexible way to certain tasks or certain groups of tasks; different tools corresponded to different activities—the tailor's tools, the weaver's tools, or later a sewing machine and a power loom. The computer proposes itself, in contrast, as the universal tool, or rather as the central tool, through which all activities might pass. Through the computerization of production, then, labor tends toward the position of abstract labor.

The model of the computer, however, can account for only one face of the communicational and immaterial labor involved in the production of services. The other face of immaterial labor is the *affective labor* of human contact and interaction. Health services, for example, rely centrally on caring and affective labor, and the entertainment industry is likewise focused on the creation and manipulation of affect. This labor is immaterial, even if it is corporeal

and affective, in the sense that its products are intangible, a feeling of ease, well-being, satisfaction, excitement, or passion. Categories such as “in-person services” or services of proximity are often used to identify this kind of labor, but what is really essential to it are the creation and manipulation of affect. Such affective production, exchange, and communication are generally associated with human contact, but that contact can be either actual or virtual, as it is in the entertainment industry.

This second face of immaterial labor, its affective face, extends well beyond the model of intelligence and communication defined by the computer. Affective labor is better understood by beginning from what feminist analyses of “women’s work” have called “labor in the bodily mode.”²¹ Caring labor is certainly entirely immersed in the corporeal, the somatic, but the affects it produces are nonetheless immaterial. What affective labor produces are social networks, forms of community, biopower. Here one might recognize once again that the instrumental action of economic production has been united with the communicative action of human relations; in this case, however, communication has not been impoverished, but production has been enriched to the level of complexity of human interaction.

In short, we can distinguish three types of immaterial labor that drive the service sector at the top of the informational economy. The first is involved in an industrial production that has been informationalized and has incorporated communication technologies in a way that transforms the production process itself. Manufacturing is regarded as a service, and the material labor of the production of durable goods mixes with and tends toward immaterial labor. Second is the immaterial labor of analytical and symbolic tasks, which itself breaks down into creative and intelligent manipulation on the one hand and routine symbolic tasks on the other. Finally, a third type of immaterial labor involves the production and manipulation of affect and requires (virtual or actual) human contact, labor in the bodily mode. These are the three types of labor that drive the postmodernization of the global economy.

We should point out before moving on that in each of these forms of immaterial labor, cooperation is completely inherent in the labor itself. Immaterial labor immediately involves social interaction and cooperation. In other words, the cooperative aspect of immaterial labor is not imposed or organized from the outside, as it was in previous forms of labor, but rather, *cooperation is completely immanent to the laboring activity itself.*²² This fact calls into question the old notion (common to classical and Marxian political economics) by which labor power is conceived as “variable capital,” that is, a force that is activated and made coherent only by capital, because the cooperative powers of labor power (particularly immaterial labor power) afford labor the possibility of valorizing itself. Brains and bodies still need others to produce value, but the others they need are not necessarily provided by capital and its capacities to orchestrate production. Today productivity, wealth, and the creation of social surpluses take the form of cooperative interactivity through linguistic, communicational, and affective networks. In the expression of its own creative energies, immaterial labor thus seems to provide the potential for a kind of spontaneous and elementary communism.

Network Production

The first geographical consequence of the passage from an industrial to an informational economy is a dramatic decentralization of production. The processes of modernization and the passage to the industrial paradigm provoked the intense aggregation of productive forces and mass migrations of labor power toward centers that became factory cities, such as Manchester, Osaka, and Detroit. Efficiency of mass industrial production depended on the concentration and proximity of elements in order to create the factory site and facilitate transportation and communication. The informatization of industry and the rising dominance of service production, however, have made such concentration of production no longer necessary. Size and efficiency are no longer linearly related; in fact, large scale has in many cases become a hindrance. Advances in telecommunications and information technologies have made possible a deterritorialization of production that has effectively dispersed the mass facto-

ries and evacuated the factory cities. Communication and control can be exercised efficiently at a distance, and in some cases immaterial products can be transported across the world with minimal delay and expense. Several different production facilities can be coordinated in the simultaneous production of a single commodity in such a way that factories can be dispersed to various locations. In some sectors even the factory site itself can be done away with as its workers communicate exclusively through new information technologies.²³

In the passage to the informational economy, the assembly line has been replaced by *the network* as the organizational model of production, transforming the forms of cooperation and communication within each productive site and among productive sites. The mass industrial factory defined the circuits of laboring cooperation primarily through the physical deployments of workers on the shop floor. Individual workers communicated with their neighboring workers, and communication was generally limited to physical proximity. Cooperation among productive sites also required physical proximity both to coordinate the productive cycles and to minimize the transportation costs and time of the commodities being produced. For example, the distance between the coal mine and the steel mill, and the efficiency of the lines of transportation and communication between them, are significant factors in the overall efficiency of steel production. Similarly, for automobile production the efficiency of communication and transportation among the series of subcontractors involved is crucial in the overall efficiency of the system. The passage toward informational production and the network structure of organization, in contrast, make productive cooperation and efficiency no longer dependent to such a degree on proximity and centralization. Information technologies tend to make distances less relevant. Workers involved in a single process can effectively communicate and cooperate from remote locations without consideration to proximity. In effect, the network of laboring cooperation requires no territorial or physical center.

The tendency toward the deterritorialization of production is even more pronounced in the processes of immaterial labor that involve the manipulation of knowledge and information. Laboring

processes can be conducted in a form almost entirely compatible with communication networks, for which location and distance have very limited importance. Workers can even stay at home and log on to the network. The labor of informational production (of both services and durable goods) relies on what we can call *abstract cooperation*. Such labor dedicates an ever more central role to communication of knowledges and information among workers, but those cooperating workers need not be present and can even be relatively unknown to one another, or known only through the productive information exchanged. The circuit of cooperation is consolidated in the network and the commodity at an abstract level. Production sites can thus be deterritorialized and tend toward a virtual existence, as coordinates in the communication network. As opposed to the old vertical industrial and corporate model, production now tends to be organized in horizontal network enterprises.²⁴

The information networks also release production from territorial constraints insofar as they tend to put the producer in direct contact with the consumer regardless of the distance between them. Bill Gates, the co-founder of the Microsoft Corporation, takes this tendency to an extreme when he predicts a future in which networks will overcome entirely the barriers to circulation and allow an ideal, “friction-free” capitalism to emerge: “The information highway will extend the electronic marketplace and make it the ultimate go-between, the universal middleman.”²⁵ If Gates’s vision were to be realized, the networks would tend to reduce all distance and make transactions immediate. Sites of production and sites of consumption would then be present to one another, regardless of geographical location.

These tendencies toward the deterritorialization of production and the increased mobility of capital are not absolute, and there are significant countervailing tendencies, but to the extent that they do proceed, they place labor in a weakened bargaining position. In the era of the Fordist organization of industrial mass production, capital was bound to a specific territory and thus to dealing contrac-

tually with a limited laboring population. The informatization of production and the increasing importance of immaterial production have tended to free capital from the constraints of territory and bargaining. Capital can withdraw from negotiation with a given local population by moving its site to another point in the global network—or merely by using the potential to move as a weapon in negotiations. Entire laboring populations, which had enjoyed a certain stability and contractual power, have thus found themselves in increasingly precarious employment situations. Once the bargaining position of labor has been weakened, network production can accommodate various old forms of non-guaranteed labor, such as freelance work, home work, part-time labor, and piecework.²⁶

The decentralization and global dispersal of productive processes and sites, which is characteristic of the postmodernization or informatization of the economy, provokes a corresponding centralization of the control over production. The centrifugal movement of production is balanced by the centripetal trend of command. From the local perspective, the computer networks and communications technologies internal to production systems allow for more extensive monitoring of workers from a central, remote location. Control of laboring activity can potentially be individualized and continuous in the virtual panopticon of network production. The centralization of control, however, is even more clear from a global perspective. The geographical dispersal of manufacturing has created a demand for increasingly centralized management and planning, and also for a new centralization of specialized producer services, especially financial services.²⁷ Financial and trade-related services in a few key cities (such as New York, London, and Tokyo) manage and direct the global networks of production. As a mass demographic shift, then, the decline and evacuation of industrial cities has corresponded to the rise of global cities, or really cities of control.

Information Highways

The structure and management of communication networks are essential conditions for production in the informational economy.

These global networks must be constructed and policed in such a way as to guarantee order and profits. It should come as no surprise, then, that the U.S. government poses the establishment and regulation of a global information infrastructure as one of its highest priorities, and that communications networks have become the most active terrain of mergers and competition for the most powerful transnational corporations.

An adviser to the Federal Communications Commission, Peter Cowhey, provides an interesting analogy for the role these networks play in the new paradigm of production and power. The construction of the new information infrastructure, he says, provides the conditions and terms of global production and government just as road construction did for the Roman Empire.²⁸ The wide distribution of Roman engineering and technology was indeed both the most lasting gift to the imperial territories and the fundamental condition for exercising control over them. Roman roads, however, did not play a central role in the imperial production processes but only facilitated the circulation of goods and technologies. Perhaps a better analogy for the global information infrastructure might be the construction of railways to further the interests of nineteenth- and twentieth-century imperialist economies. Railways in the dominant countries consolidated their national industrial economies, and the construction of railroads in colonized and economically dominated regions opened those territories to penetration by capitalist enterprises, allowing for their incorporation into imperialist economic systems. Like Roman roads, however, railways played only an external role in imperialist and industrial production, extending its lines of communication and transportation to new raw materials, markets, and labor power. *The novelty of the new information infrastructure is the fact that it is embedded within and completely immanent to the new production processes.* At the pinnacle of contemporary production, information and communication are the very commodities produced; the network itself is the site of both production and circulation.

In political terms, the global information infrastructure might be characterized as the combination of a *democratic* mechanism and

an *oligopolistic* mechanism, which operate along different models of network systems. The democratic network is a completely horizontal and deterritorialized model. The Internet, which began as a project of DARPA (the U.S. Defense Department Advanced Research Projects Agency), but has now expanded to points throughout the world, is the prime example of this democratic network structure. An indeterminate and potentially unlimited number of interconnected nodes communicate with no central point of control; all nodes regardless of territorial location connect to all others through a myriad of potential paths and relays. The Internet thus resembles the structure of telephone networks, and indeed it generally incorporates them as its own paths of communication, just as it relies on computer technology for its points of communication. The development of cellular telephony and portable computers, unmooring in an even more radical way the communicating points in the network, has intensified the process of deterritorialization. The original design of the Internet was intended to withstand military attack. Since it has no center and almost any portion can operate as an autonomous whole, the network can continue to function even when part of it has been destroyed. The same design element that ensures survival, the decentralization, is also what makes control of the network so difficult. Since no one point in the network is necessary for communication among others, it is difficult for it to regulate or prohibit their communication. This democratic model is what Deleuze and Guattari call a rhizome, a nonhierarchical and noncentered network structure.²⁹

The oligopolistic network model is characterized by broadcast systems. According to this model, for example in television or radio systems, there is a unique and relatively fixed point of emission, but the points of reception are potentially infinite and territorially indefinite, although developments such as cable television networks fix these paths to a certain extent. The broadcast network is defined by its centralized production, mass distribution, and one-way communication. The entire culture industry—from the distribution of newspapers and books to films and video cassettes—has traditionally operated along this model. A relatively small number of corporations

(or in some regions a single entrepreneur, such as Rupert Murdoch, Silvio Berlusconi, or Ted Turner) can effectively dominate all of these networks. This oligopolistic model is not a rhizome but a tree structure that subordinates all of the branches to the central root.

The networks of the new information infrastructure are a hybrid of these two models. Just as in a previous era Lenin and other critics of imperialism recognized a consolidation of international corporations into quasi-monopolies (over railways, banking, electric power, and the like), today we are witnessing a competition among transnational corporations to establish and consolidate quasi-monopolies over the new information infrastructure. The various telecommunication corporations, computer hardware and software manufacturers, and information and entertainment corporations are merging and expanding their operations, scrambling to partition and control the new continents of productive networks. There will, of course, remain democratic portions or aspects of this consolidated web that will resist control owing to the web's interactive and decentralized structure; but there is already under way a massive centralization of control through the (de facto or de jure) unification of the major elements of the information and communication power structure: Hollywood, Microsoft, IBM, AT&T, and so forth. The new communication technologies, which hold out the promise of a new democracy and a new social equality, have in fact created new lines of inequality and exclusion, both within the dominant countries and especially outside them.³⁰

COMMONS

There has been a continuous movement throughout the modern period to privatize public property. In Europe the great common lands created with the break-up of the Roman Empire and the rise of Christianity were eventually transferred to private hands in the course of capitalist primitive accumulation. Throughout the world what remains of the vast public spaces are now only the stuff of legends: Robin Hood's forest, the Great Plains of the Amerindians, the steppes of the nomadic tribes, and so forth. During the consolidation of industrial society, the construction and destruction of

public spaces developed in an ever more powerful spiral. It is true that when it was dictated by the necessities of accumulation (in order to foster an acceleration or leap in development, to concentrate and mobilize the means of production, to make war, and so forth), public property was expanded by expropriating large sectors of civil society and transferring wealth and property to the collectivity. That public property, however, was soon reappropriated in private hands. In each process the communal possession, which is considered natural, is transformed at public expense into a second and third nature that functions finally for private profit. A second nature was created, for example, by damming the great rivers of western North America and irrigating the dry valleys, and then this new wealth was handed over to the magnates of agribusiness. Capitalism sets in motion a continuous cycle of private reappropriation of public goods: the expropriation of what is common.

The rise and fall of the welfare state in the twentieth century is one more cycle in this spiral of public and private appropriations. The crisis of the welfare state has meant primarily that the structures of public assistance and distribution, which were constructed through public funds, are being privatized and expropriated for private gain. The current neoliberal trend toward the privatization of energy and communication services is another turn of the spiral. This consists in granting to private businesses the networks of energy and communication that were built through enormous expenditures of public monies. Market regimes and neoliberalism survive off these private appropriations of second, third, and nth nature. The commons, which once were considered the basis of the concept of the public, are expropriated for private use and no one can lift a finger. The public is thus dissolved, privatized, even as a concept. Or really, the immanent relation between the public and the common is replaced by the transcendent power of private property.

We do not intend here to weep over the destruction and expropriation that capitalism continually operates across the world, even though resisting its force (and in particular resisting the expropriation of the welfare state) is certainly an eminently ethical and important task. We want to ask, rather, what is the operative notion of the common today, in the midst of postmodernity, the information revolution, and the consequent transforma-

tions of the mode of production. It seems to us, in fact, that today we participate in a more radical and profound commonality than has ever been experienced in the history of capitalism. The fact is that we participate in a productive world made up of communication and social networks, interactive services, and common languages. Our economic and social reality is defined less by the material objects that are made and consumed than by co-produced services and relationships. Producing increasingly means constructing cooperation and communicative commonalities.

The concept of private property itself, understood as the exclusive right to use a good and dispose of all wealth that derives from the possession of it, becomes increasingly nonsensical in this new situation. There are ever fewer goods that can be possessed and used exclusively in this framework; it is the community that produces and that, while producing, is reproduced and redefined. The foundation of the classic modern conception of private property is thus to a certain extent dissolved in the postmodern mode of production.

One should object, however, that this new social condition of production has not at all weakened the juridical and political regimes of private property. The conceptual crisis of private property does not become a crisis in practice, and instead the regime of private expropriation has tended to be applied universally. This objection would be valid if not for the fact that, in the context of linguistic and cooperative production, labor and the common property tend to overlap. Private property, despite its juridical powers, cannot help becoming an ever more abstract and transcendental concept and thus ever more detached from reality.

A new notion of “commons” will have to emerge on this terrain. Deleuze and Guattari claim in *What Is Philosophy?* that in the contemporary era, and in the context of communicative and interactive production, the construction of concepts is not only an epistemological operation but equally an ontological project. Constructing concepts and what they call “common names” is really an activity that combines the intelligence and the action of the multitude, making them work together. Constructing concepts means making exist in reality a project that is a community. There is no other way to construct concepts but to work in a common way. This commonality is, from the standpoint of the phenomenology of production,

from the standpoint of the epistemology of the concept, and from the standpoint of practice, a project in which the multitude is completely invested. The commons is the incarnation, the production, and the liberation of the multitude. Rousseau said that the first person who wanted a piece of nature as his or her own exclusive possession and transformed it into the transcendent form of private property was the one who invented evil. Good, on the contrary, is what is common.