Plan and control

Towards a cultural history of the Information Society

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> Every gain in knowledge and efficiency and every outworn symbol or causal explanation displaced by more realistic analysis, is potentially a gain in ease and richness of living. But when this new knowledge is not put to work in the service of all the people, when it is only partially applied to those able to "pay for it" or bright enough to learn it unaided, or when it is used by those with power in order to exploit others, this knowledge may be either largely barren or, worse, it tends to become a disruptive factor.
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> Robert S. Lynd, *Knowledge For What?* (1939)

What is the Information Revolution? The answer to this question may seem to be self-evident. A united host of industrialists, politicians, and academics is now engaged in making sure that we know that recent developments in the miniaturization of electronics components (the "microelectronics revolution") are laying the foundations, particularly through their impact on computing and telecommunications, for a new era of information wealth and abundance. An array of reports and publications make clear to us that the eighties mark a unique watershed in human history as we now experience a second Industrial Revolution. According to one observer, "the first Industrial Revolution enormously enhanced the puny muscular power of men and animals in production; this new development will similarly extend human mental capacity to a degree which we can now only dimly envisage."[1] It is the exploitation (and industrialization) of information and knowledge that marks an epochal shift from industrial to post-industrial society. The promise is that through new technologies (advanced computers, robotics, communications satellites, etc.) the puny powers of human intelligence and reason may be enhanced beyond our wildest dreams. As such, the "Information Revolution" reflects the symbiotic relationship between human evolution and scientific and technological progress.

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In this discursive cocktail of scientific aspiration and commercial hype, there are a number of implicit but significant assumptions. First, it is assumed that the decisive shift has been brought about by recent technological innovations: the association of information revolution and information technologies seems tautologically self-evident. Thus, discussion of the Information Revolution is located within the history of technological development and the discourse of technological "progress." Secondly, the assumption is made that this technological revolution, like the earlier Industrial Revolution, marks the opening of a new historical era. The flaccid terms "industrial" and "post-industrial" society – which, through a process of ideological elision, often translate into "capitalist" and "post-capitalist" – mark this transition from a period of constraint and limits to one of freedom, democracy, and abundance. A third assumption is that of the novelty of the Information Revolution. For the first time, in the late twentieth century, as a consequence of the development and convergence of telecommunications and data-processing, it has become possible to harness human intelligence and reason in a systematic and scientific way. Associated with this, of course, is the unquestioned assumption that organized knowledge and information are socially beneficial. Information is the major asset and resource of a post-industrial society: "it is ... the raw material of truth, beauty, creativity, innovation, productivity, competitiveness, and freedom."[2] Information in all places and at all times – that is the Utopian recipe. Finally, the issue is seen substantially as an economic matter, and information as pre-eminently an economic category. The revolution is about "making a business of information."[3] According to Tom Stonier, "the accumulation of information is as important as the accumulation of capital," because "as our knowledge expands the world gets wealthier."[4] Information is the key to economic growth and productivity, and to the bigger pie from which we shall all have bigger slices. Reflecting this economic annexation of information and knowledge is the fast expanding field of information economics.[5]

In the following discussion, which radically questions the unsubstantiated optimism of the information society scenario, we aim to confront and challenge these assumptions and their complacent promise of technological progress, economic growth, and human betterment. Thus, our own attempt to explore the significance of the new communications and information technologies in terms of their genealogy, leads us to be skeptical of the idea that they constitute a technological revolution. Whilst we would, of course, accept the scale of innovation in this area, and the degree of its exploitation (in the context of long-term

national and international recession), we believe that these new technologies are "revolutionary" only in a rather trivial sense.

Of course, we do not want to imply that there are not important transformations in the form and nature of capitalist societies in the 1980s, and the new information and communications technologies are surely implicated in these transformative processes.[6] Some commentators have described a historical shift from organized capitalism to disorganized capitalism while others have conceptualized the present period in terms of a change in the dominant regime of accumulation, from the system of Fordism to one characterized, still rather inadequately, as neo-Fordist or post-Fordist. Within this latter perspective, there has been, in our view, a strong tendency to over-emphasize elements of rupture: to focus on the shift from centralization to decentralization, massification to demassification, concentration to dispersal, rigidity to flexibility. However, there are others working within this framework who have stressed the elements of continuity between Fordism and its successor regime of accumulation. The work of Joachim Hirsch stands out as a particularly trenchant analysis of continuities in the mode of domination and control. In his account post-Fordism is emerging as a new system of "hyperindustrialization," characterized by the "microelectronic reorganization of Taylorism" and by the regulatory form of "authoritarian statism," which combines "decentralized and segmented corporatism" with new (and perhaps more flexible) technologies and strategies of repression and surveillance.[7]

The issue is clearly one of change and continuity, and this is a matter of disentangling different historical temporalities. Thus, although many have rightly focused on significant transformations in the structure and organization of the labor process, it is the case that forms of control, through the mobilization of information and communications resources, operate in terms of a longer periodicity.

Against those accounts that see the information society in terms of a technological revolution it is also important to emphasize that the appropriation of information and information resources has always been a constitutive aspect of capitalist societies quite outside of any technological context. The appropriation of knowledge (skill) in the factory, for example, may operate solely through hierarchical control. Similarly, at the level of the social totality there have been plenty of examples of totalitarianism to make us realize that states can oppress without benefit of computer technologies. Both here, and in wider

contexts, organizational structures – culminating in bureaucratic institutions – may establish effective mechanisms for the control and management of information resources. The gathering, recording, aggregation, and exploitation of information can be – and has, of course, been – achieved on the basis of minimal technological support.

Our point is that the "Information Revolution" is inadequately conceived, as it is conventionally, as a question of technology and technological innovation. Rather it is better understood as a matter of differential (and unequal) access to, and control over, information resources. That is, far from being a technological issue, what should concern us is the management and control of information within and between groups. Raising this widens unavoidably the scope of discussions of social change, taking it far from "technology effects" considerations, at the same time as it, necessarily, politicizes the process of technological development itself by framing it as a matter of shifts in the availability of information. Conversely, attempts to divert analysis and debate into technical and technocratic channels serve to repress these substantial political questions.

In a similar way, the prevailing tendency to consider information and information technology chiefly in terms of economic growth, productivity, and planning again puts it in a strongly technical, calculative, and instrumental context (with the major issue being that of the allocation of wages and profits). Against this orthodoxy, our own approach focuses upon information and information technologies in terms of their political and cultural dimensions. In both these aspects what are raised are the complex relations among technology, information, and power. In the case of the former, what is on the agenda, in the workplace and in society as a whole, is the relationship between management and control. And in the case of the cultural dimension, what is of concern is the micro-politics of power, what Foucault calls the capillary forms of power's existence. What this raises is the shaping influence of information and communication technologies on the texture, pattern, organization, and routines of everyday life.[8] What is apparent, at both levels we believe, is the indissociable relation between information/knowledge and power.

In tracing the cultural and political contexts in which information and communications technologies have taken shape, we suggest that they have performed two distinct but related functions, both of which are absolutely central to the cohesion and reproduction of capitalist socie-

ties. On the one hand, they have been the mechanism for social management, planning, and administration; and, on the other, they have been at the heart of surveillance and control strategies. Our argument is that these two functions are closely interrelated and mutually reinforcing. To echo Foucault's words, it is not possible for social planning and administration to be exercised without surveillance, it is impossible for surveillance not to reinforce administrative cohesion, efficiency, and power.[9] There is no point in dreaming of a time when planning and management will be simply a technical and instrumental matter – the administration of things – and will cease to be embroiled in the business of power, surveillance, and control.

Planning and control

The recent work of Anthony Giddens throws light on this relationship between planning and control. He argues that the state must maintain an effective hold on both "allocative resources" (planning, administration) and "authoritative resources" (power, control). Central to this project, argues Giddens, is information gathering and storage, which "is central to the role of "authoritative resources" in the structuring of social systems spanning larger ranges of space and time than tribal cultures. Surveillance – control of information and superintendence of the activities of some groups by others – is in turn the key to the expansion of such resources."[10] If information-gathering, documentation, and surveillance are vital to this end, it is also the case, Giddens argues, that the regularized gathering, storage, and control of information is crucial for administrative "efficiency" and power.

In the modern nation state administrative/allocative control and authoritative control converge insofar as each comes to depend on the continuous, normalized, and increasingly centralized surveillance and monitoring of subject populations. Tendentially, moreover, allocative control comes to prevail through its ability to combine (and legitimate) both administrative and authoritative functions: "surveillance as the mobilizing of administrative power – through the storage and control of information – is the primary means of the concentration of authoritative resources involved in the information of the nation-state."[11] In advanced capitalist societies it is this administrative-technocratic machinery of surveillance that expresses the prevailing relations of power and designates the inherently totalitarian nature of the modern state. "The possibilities of totalitarian rule," Giddens writes, "depend

upon the existence of societies in which the state can successfully penetrate the day-to-day activities of most of its subject population. This, in turn, presumes a high level of surveillance ... the coding of information about and the supervision of the conduct of significant segments of the population."[12] It is, we shall go on to argue, precisely these possibilities that are opened up by the new information technologies.

Further evidence of the tendency toward control through surveillance and monitoring that Giddens identifies can be seen in the field of economic analysis. For instance, one way of conceptualizing transactions in the economic market place has been in terms of information theory. Thus, Hayek writes of the "price system as ... a mechanism for communicating information"[13] and argues that "the problem of what is the best way of utilizing knowledge initially dispersed among all the people is at least one of the main problems of economic policy."[14] Hayek's own solution to this problem was, famously, to eschew central planning – "direction of the whole economic system according to one unified plan" – in favor of competition, which he refers to as "decentralised planning by many separate persons."[15] Other economists, however, have lived less comfortably with this "problem of the utilization of knowledge not given to anyone in its totality."[16] The tendency in the late twentieth century has been for the economy to assume ever greater complexity. The relation between the national economy and international markets; the relation between finance and industrial sectors; the management of technological innovation; the coordination of production and consumption; the internal articulation of dispersed multinational conglomerates – these all become pressing issues of economic management. Alfred Chandler has argued that this reflects a point in history "when the volume of economic activities reached a level that made administrative co-ordination more efficient and more profitable than market co-ordination"; a point at which "the visible hand of management replaced the invisible hand of market forces."[17] What becomes crucial is precisely the gathering in of dispersed knowledge, the concentration and centralization of information, and the elaboration of a unified plan. Economic management in the age of multinational capital necessarily tends toward that process of administrative control by a "directing mind" of the kind that Hayek[18] so despises. The necessity for effective and centralized information management becomes the preoccupation of an increasing number of economists. Thus, Charles Jonscher, referring to the "increase in the complexity of economic systems," refers to the enormous "organizational or

informational task of co-ordinating the diverse steps in the production chain ... [and] the number of transactions within and among productive units." "The largest untapped opportunities for improving economic performance," he concludes, "lay in the area of information handling. Consequently large research and development resources began to be directed to the creation of technologies which process, store, transport and manipulate information."[19]

We are especially suspicious of the "information society" scenarios sketched by the likes of Daniel Bell,[20] where information/knowledge is represented as a beneficial and progressive social force. Information, we suggest, has long been a key component of regulation in the modern nation state and in capitalist economies. And the history of information management suggests that technocratic and economic exploitation should be understood within the wider context of its disciplinary and political deployment.[21] Particularly significant in this context has been the process whereby authoritative control has become subsumed within the machinery of allocative control: power expresses itself through the discipline of calculative and rational social management and administration. Historically, this process has occurred without significant technological mediation. Increasingly, however, new technologies are drawn upon: because as Lewis Mumford has argued, "mechanization, automation, cybernetic direction" overcome the system's weakness, "its original dependence upon resistant, sometimes actively disobedient servo-mechanisms, still human enough to harbour purposes that do not always coincide with those of the system."[22] Whether bureaucratic or technological, however, the thrust of administrative control is toward extensive and intensive documentation and surveillance of internal populations. "With the mechanisms of information processing (the bureaucracy using people; the computer using machines), the ability to monitor behaviour is extended considerably," Mark Poster argues: "The mode of information enormously extends the reach of normalizing surveillance, constituting new modes of domination that have yet to be studied."[23] This disciplinary and calculative management of existence in advanced capitalist societies transforms itself into their culture, their way of life, their prevailing social relations.

We would stress that the logic of planning and control has always been contested. In an environment of increasing complexity and uncertainty, the urge to control may become more intensive and more neurotic, but it does not, for that, become more cohesive.[24] The logic of control invokes that of resistance. Populations are never simply and absolutely fixed and compartmentalized; they remain obdurately fluid and mobile. The power of resistance is an integral and dynamic aspect of the control system, and it would be quite wrong to regard it as only a residual force. Nonetheless, if we do not underestimate the significance of this counter-force,[25] then any balanced consideration should encourage us also not to underestimate the tenacity and resourcefulness of diverse control agencies. Thus, in the present context of a potential historical transition beyond Fordism, it seems to us that there are also important transformations in the modalities of surveillance and control. While control is often understood as an external and directly repressive force, its real dynamics are more complex and insidious, and, in fact, ideally exploit the compliance and even the creativity of its subjects. There are clear signs that, after a period of "desubordination" and destabilization, the present period is very much about the reassertion, and the streamlining, of control strategies. This is apparent in the image of the new model worker, the flexible, compliant, self-motivated, and self-controlling worker; and also in the new model student, again self-directed, flexible, enthusiastic, and docile.[26] As cognitive intrusion and surveillance become increasingly normalized, pervasive, and insidious, so does the logic of control – of power through visibility of "knowability" – become internalized.

The following sections aim to explore this dark underside of the information revolution, and to do this on the basis that serious, rather than just well-meaning, political responses are only possible if we confront, not just the repressive potential of information/knowledge, but more significantly the integral and necessary relation between repressive and possible emancipatory dimensions. In the following discussion we draw attention to the administrative and disciplinary exploitation of information resources and technologies, first in a discussion of the role of information in the economic contexts of production, markets, and consumption, and then through an account of the relations among information technologies, communications, and the political system. Such discussion remains selective and incomplete. Our ambition here is to provide an overview, a cartography of the information society, to

trace the cohesion in what might seem to be quite disparate developments. Whilst the exploitation of information/knowledge has a considerable history, our argument here is that the really significant moment occurs early in the twentieth century. It is at this time, and particularly in the complex matrix of forces surrounding the Scientific Management of Frederick Winslow Taylor, that the information society may be said to have been truly inaugurated.[27]

The new machine: Scientific Management and consumer capitalism

Though the image of the Industrial Revolution is one of vast, impersonal mills in which multitudinous "hands" were ruthlessly exploited by distant capitalists, the reality was that most work – arduous though it undeniably was – took place in small units of perhaps a dozen or so employees overseen by a master. It was in the later years of the century that size became an issue when the logic of competition and cartels brought into being the kind of corporate Leviathans that have dominated the industrial landscape ever since. With direct supervision of labor now increasingly impossible, what became necessary was a mechanism for coordinating and integrating the complex, fragmented processes and divisions of production. It was here that the philosophy and practice of F. W. Taylor was so crucial, with its application of Scientific Management to production: expert direction by engineers, factory planning, time and motion study, standardization, the intensive division of labor. The keyword in the application of engineering principles to the industrial system of production was efficiency. Taylor "proposed a neat, understandable world in the factory, an organization of men whose acts would be planned, co-ordinated, and controlled under continuous expert direction. His system had some of the inevitableness and objectivity of science and technology."[28] Factory production was to become a matter of efficient and scientific management: the planning and administration of workers and machines alike as components of one big machine.

Now, two observations here relate to our broader argument. First, within the Taylor system, efficient production and administration (planning) is indissociably related to control over the workforce. Although these two aspects are often treated as distinct (and emphasis is often placed on the disciplinary function), we would argue that planning and control are each an integral part of the other: efficiency translates into domination and the engineering of people becomes

subsumed within the engineering of things. The second point is that administration and control are a function of managerial appropriation of skills, knowledge, and information within the workplace. According to Taylor, workers should be relieved of the work of planning, and all "brain work" should be centered in the factory's planning department. In Anthony Giddens's terms, the collation and integration of information manifests itself in terms of both administration and surveillance. It is this dual articulation of information/knowledge for "efficient" planning and for control that is at the heart of Scientific Management, and which, in our view, characterizes it as the original Information Revolution.

Importantly, Taylorism as a system of factory control does not depend on technological support: information gathering and surveillance do not depend to any large extent upon information technologies. Its capacity to "reduce the labour of the ordinary employee to an automatic perfection of routine"[29] is a consequence of organizational forms and of direct managerial intervention, of technique rather than technology. As such it may be inscribed within Mumford's history of the non-technological megamachine – the military is a paramount example – which is "an invisible structure composed of living, but rigid, human parts, each assigned to his special office, role, and task, to make possible the immense work-output and grand design of this great collective organization."[30] If, however, this form of megatechnics, which replaces interpersonal modes of control with more rational and calculative procedures, establishes a certain degree of automaticity, it is the case that machinery can implement this principle more effectively. Insofar as it subordinates unreliable human components to the precise routines of machinery, technology enhances both efficiency and control.[31] It is this realization that constitutes Henry Ford's major contribution to the scientific management of production. Not only did Ford appropriate information/knowledge within the production process, but he also incorporated it into the technology of his production lines to achieve technical control over the labor process.[32]

Although we can touch on it only fleetingly here, the subsequent history of capitalist industry, we would argue, has been a matter of the deepening and extension of information gathering and surveillance to the combined end of planning and controlling the production process, and it is into this context that the new communications and information technologies of the 1980s are inserting themselves. Thus, computer numerical control, advanced automation, robotics and so on, intensify

this principle of technical control. And the new technologies now spreading through office and service work threaten to "Taylorize" intellectual labor itself. Managements have carefully analyzed their information routines and requirements and are aiming to introduce information technologies that will make information flows more effective, efficient, and cost-effective.[33] The new technologies are also crucial in managing and coordinating ever more complex organizational and productive structures. The establishment of a system of transnational corporations depends upon effective computer communications systems to handle financial transactions, corporate directives, and organizational coordination.

Yet Taylorism is more than just a doctrine of factory management. It became, in our view, a new social philosophy, a new principle of social revolution, and a new imaginary institution in society. Outside the factory gates, Scientific Management became a new form of social control, not just in the dominative sense of this term, but also in the more neutral sense of the "capacity of a social organization to regulate itself."[34] Taylor and his various epigones believed that the idea of rational, scientific, and efficient management and regulation could be extended beyond the workplace to other social activities. They spoke of "social efficiency," by which they meant "social harmony" under the leadership of "competent" experts.[35]

In 1916, Henry L. Gantt took a "dramatic step from the planning room of the factory to the world at large," with the formation of the "New Machine," an organization of engineers and sympathetic reformers under Gantt's leadership, which announced its intention to acquire political as well as economic power.[36] The association is made between society and the machine; society is to be regulated and maintained by social engineers. Experts and technocrats are to be the orchestrators of a programmed society.[37] As in the factory, this calculative and instrumental regime entails a combined process of administration/planning and surveillance, and depends upon the centralized appropriation and disposal of information resources. It implies "the intelligence of the whole," and this in the form of instrumental, theoretical, quantified data. The legitimacy of technocratic rule is justified by the command of knowledge/information: it assumes "an objective and universal rationality based on superior knowledge."[38]

A further legitimating aspect of Scientific Management was its undoubted capacity to increase productivity, economic growth, and,

consequently, social wealth. As Charles Maier argues, it promised "an escape from zero-sum conflict" between labor and capital: what Taylorism "offered – certainly within the plant, and ultimately, according to its author, in all spheres of government and social life – was the elimination of scarcity and constraint."[39] Inherent in mass production was the system of mass consumption and the promise of the consumer Utopia. In Scientific Management was a broad social philosophy, a promise of reform through growth and expansion, which had great appeal to social theorists and politicians of the Progressive era (and coincided, in Britain, with Fabian principles and beliefs).

This complex and expanding system of mass production and mass consumption could only be coordinated and regulated if the criteria of efficiency and optimality were extended from the factory to the system as a whole (the social factory). The system of consumption, particularly, must be brought under the practices of Scientific Management. It became increasingly apparent that both economic and social stability depended upon continuous and regular consumption, and upon the matching of demand to cycles and patterns of production. Ultimately what was required was the Scientific Management of need, desire, and fantasy, and their reconstruction in terms of the commodity form.[40] Thus, Taylorist principles of calculation must extend into the marketing sphere.[41] The steady movement of such commodities as clothing, cigarettes, household furnishings and appliances, toiletries or processed foods required the creation of ways of reaching customers, taking heed of their needs, wants, and dispositions, and responding by persuasion and even redesign of products to make them more or newly attractive.[42]

In this project of systematizing the management of consumption, it was Henry Ford's counterpart at General Motors, Alfred P. Sloan who played an important and formative role. It was Sloan who, in the twenties, introduced installment selling, used-car trade-ins, annual model changes, styling and brand image, to the automobile industry.[43] The objective was both to integrate production and demand, and also to intensify and "speed up" consumption. As such, "Sloanism" exemplified the principle of modern marketing, with its ambitions toward the Scientific Management of commodity markets and consumer behavior.

The system of mass consumption (and the consumer society) is dependent upon the collection, aggregation, and dissemination of infor-

mation. One consequence of this imperative to accumulate data on patterns of consumption was the rise of market-research organizations, specializing in the aggregation of demographic and socioeconomic information, and in the detailed recording of trends and patterns in sales. The embryonic company, International Business Machines, quickly developed technologies to service record-conscious and surveillance-conscious corporations. Henry C. Link, a polemical advocate of scientific marketing, described the relation between early forms of information technology and the informational needs of business:

> The most highly developed technique for measuring buying behaviour is that made possible by the electric sorting and tabulating machines. These ingenious devices have made it feasible to record and classify the behaviour of the buying public as well as the behaviour of those who serve that public, on a scale heretofore impracticable. Whereas by ordinary methods hundreds of transactions may be recorded, by this method thousands may be recorded with greater ease. Not only have comprehensive records been made possible but, what is more important, the deduction from these records of important summaries and significant facts have been made relatively easy. The technique developed by various merchants, with the use of these devices ... is the quantitative study and analysis of human behaviour in the nth degree.[44]

It is also vital, of course, to convey information to the consumer, and this informational task gave rise most obviously and pre-eminently to advertising (though it was also evident in packaging and branding commodities and in their display). In a paean to American productivism, David Potter suggests that "advertising [is] an instrument of social control"; it is, he continues, "the only institution which we have for instilling new needs, for training people to act as consumers, for altering men's values, and thus for hastening their adjustment to potential abundance."[45] Through their exploitation of information resources and channels, the early advertising corporations were searching "for a means of translating Frederick W. Taylor's ideal of scientific management into the selling and distribution processes."[46] What became apparent was that information resources (and information and communications technologies in their early incarnations) were the lifeblood of modern corporations and of the national and international business system.

During the second and third decades of the century, these developments were coming together to constitute a more systematic, calculative, and rationalized management of economic life. There was a concern with information management, with an emphasis on quanti-

fication and on professional and "scientific" procedures. Thus, in advertising, concepts from psychological research were introduced and campaigns more thoroughly prepared by pre-testing and careful analysis of advertising copy and presentation; broadcast ratings were promoted and refined to differentiate types of audience, patterns of behavior, and preferences;[47] public relations developed as "the attempt, by information, persuasion, and adjustment, to engineer public support," and quite self-consciously proclaimed that "engineering methods can be applied in tackling our problems."[48] Informing these trends toward more effective control and planning was the faith that innovations were motivated, not by vulgar self-interest, but by the search for efficiency, expertise, and rationality in the administration of both things and people.

It is in the context of this historical outline that we can begin to understand some aspects of the current "Information Revolution." Our argument is that what is commonly taken as innovation and "revolution" is, in fact no more – and no less – than the extension and intensification of processes set under way some seventy or so years ago. It was the exponents of Scientific Management, in its broadest sense, who unleased an Information Revolution. And particularly important here were the strategies of the "consumption engineers"[49] to regulate economic transactions and consumer behavior. It was these advocates of big business who first turned to the "rational" and "scientific" exploitation of information in the wider society, and it is their descendents – the multinational advertisers, market researchers, opinion pollers, data brokers, and so on – who are at the heart of information politics in the eighties. It is they who are promoting and annexing cable systems, communications satellites, telecommunications links, computer resources, and so on. Their objective is the elaboration of what has been termed a global "network market place"[50] in which ever more social functions and activities come "on-line" (education, shopping, entertainment, etc.). What is new in their enterprise is its scale, and also its greater reliance on advanced information and communications technologies to render the scientific management of consumer life more efficient and automatic. The objective of a cybernetic market place, and the fantasy of society as a producing and consuming machine, goes back, however, to Taylor, Gantt, and the rest.

World marketing in the era of multinational capital demands global market research and advertising, the ability to undertake surveillance and monitoring of markets and to launch persuasive propaganda on

behalf of a particular product or corporation. The information and intelligence agencies that undertake these tasks of "mind management" are themselves transnational enterprises and increasingly integrated across the whole information business. Thus, Saatchi and Saatchi, the world's number one advertising agency following its takeover of the Ted Bates group, has, during its meteoric rise, established skills and expertise in public relations, market research, management consultancy and sales promotion as well as in its central advertising concerns. The strategy of Saatchi and Saatchi is explicity to direct its informational expertise toward the "multinational advertisers [who are moving] towards greater co-ordination in their international marketing activities"[51] and who account for 80% of America's top spenders on advertising. World marketing necessitates a major strategy of surveillance and intelligence: the "analysis of all demographic, cultural and media trends" so that marketers "can survey the world battlefield for their brands, observe the deployment of their forces, and plan their international advertising and marketing in a coherent and logical way."[52] The important point, made by a Saatchi employee, is that "a coordinated approach to multinational brand marketing is only as good as the information which supports it, information about consumer habits, consumer perceptions and attitudes."[53]

The spread of global marketing is manifest, not only in new information politics, but also in its impact on communications media. The press, radio, and television have long been shaped, often in decisive ways, by the pressures of advertising, and it seems likely that the new information and communications technologies will be harnassed to the same consumerist ends.[54] The possibilities exist now both for global advertising and also for more targeted advertising reaching particular segments of the audience ("narrowcasting"). Cable television is particularly important here in that its two-way communication facility allows (and, indeed, requires) the recording and surveillance of precise viewing habits. This routine logging of consumer preferences can also be enhanced by the use of such devices as "people meters," through which each member of a monitored family is assigned a personal code which they "tap in" when viewing and "tap out" when leaving the set.[55] Yet a further extension of this surveillance and information gathering is the recording of data from supermarket check-out scanners in order to establish a basis for designing specifically "addressed" commercials to particular consumer groups. Similarly, the growth in credit cards permits the monitoring of purchasers and gives access to information about what people buy, at what price, how regularly, where, and how

readily they foot the bill. Already there are gargantuan data banks holding information on credit worthiness: Infolink, for example, has records on the entire electoral register of 42 million persons, which it processes at the rate of 48,000 transactions an hour.[56]

What the new technologies enhance, we would suggest, is the Scientific Management of marketing. "Teleshopping," global and targeted advertising, and electronic market research surveillance, all combine to establish a more rationalized and "efficient" network market place.[57] Information, surveillance, efficiency: the very principles of Taylorism become intensified, extended, and automated through the application of new communications and information technologies. One fundamental aspect of the "communications revolution" has been to refine that planning and control of consumer behavior that were already inherent in the early philosophy of Scientific Management.

From public sphere to cybernetic state

The growth of a "programmed" market, of a regulated and coded consumer society, is a fundamentally cultural phenomenon. The stimulation of needs, the recording of tastes, the surveillance of consumption, all reflect a more rationalized and regulated way of life. (This does not, of course, imply the necessary success of such strategies, nor does it deny the ability of individuals to derive pleasure and creativity from consumer goods.) We want now to turn to a second set of forces that have been central to the historical development of the "information society." We are referring to the role of information and communications resources in the political process. Here too we can trace the tendency towards combined planning and control, and here too this has been of profound significance for the cultural life of modernity.[58]

We have already referred to Anthony Giddens's argument that the state, and particularly the nation-state, has always been propelled into the business of surveillance and information gathering. Giddens suggests that "storage of authoritative resources is the basis of the surveillance activities of the state," and such surveillance, he argues, entails "the collation of information relevant to state control of the conduct of its subject population, and the direct supervision of that conduct." The storage of authoritative resources and control depends upon "the retention and control of information or knowledge."[59] Information and communications capabilities have been fundamental to the state and

the political sphere in a number of respects. First, they have been indispensable prerequisites for administrating and coordinating – maintaining the cohesion and integrity – of complex social structures. Secondly, they have played an important part in policing and controlling "deviant" members of the internal population, and in the surveillance of external (potential enemy) populations. And, thirdly, they have been central to the democratic process of political debate in the public sphere. In the following discussion we want to outline the specific shape and force that these various information functions have assumed in political life during this century.

Our historical account of the relation between information/knowledge and the political system gives rise to a number of observations that can usefully be detailed at the outset. First, we should emphasize that neither planning nor surveillance depends upon technological support. Thus, Theodore Roszak notes that the English Utilitarians recognized, early in the nineteenth century, "the persuasive force of facts and figures in the modern world": "All the essential elements of the cult of information are there – the façade of ethical neutrality, the air of scientific rigor, the passion for technocratic control. Only one thing is missing: the computer."[60] And the principles of disciplinary surveillance, too, have non-technological and Benthamite origins in the architecture of the Panopticon. The issue we are addressing is fundamentally about relations of power, though, having said that, we must emphasize that technologies have increasingly been deployed in the twentieth century to render the exercise of power more efficient and automatic. Our second point is that the functions of administration and control have increasingly coalesced and regulatory and disciplinary tendencies have increasingly expressed themselves through the calculative and "rational" machinery of administration. Thirdly, we argue that the idea of a democratic "conversation" in the public sphere has given way to that of the instrumental and "efficient" Scientific Management of political life. Along with this, surveillance has become associated with a transformation of the political identity and rights of the internal population, and comes to be directed against the "enemy within." Finally, we argue that, although there has always been an information politics, a particularly important moment in these processes occurred early in the twentieth century and was associated with the project of Taylorism.

To clarify these arguments, let us begin with the ideal role of information and communications in democratic political theory. In his classic

account of the emergence of the bourgeois public sphere, Habermas describes the historical convergence of democratic principles, the new channels of communication and publicity, and the Enlightenment faith in Reason.[61] The public sphere is the forum, open equally to all citizens, in which matters of general and political interest are debated and ideas exchanged. It remains distinct and separate from the state, and, indeed, insofar as it is the locus of critical reasoning, it operates as a curb on state power. The fundamental principles are that "opinions on matters of concern to the nation and publicly expressed by men [sic] outside the government ... should influence or determine the actions, personnel, or structure of their government," and that "the government will reveal and explain its decisions in order to enable people outside the government to think and talk about those decisions."[62] Such democratic discussion within the frontiers of the extended nation state depends necessarily upon an infra-structure of communication and publicity. Indeed, it is only on this basis that the idea of a public can have any meaning. It is through these media that channels of communication and discourse, and access to information resources, are assured. On this basis the public use of reasoning could be assured. Gouldner describes the bourgeois public sphere as "one of the great historical advances in rationality."[63]

That was the aspiration, though many critics of Habermas have doubted whether the bourgeois public sphere – and the "ideal speech situation" that it presupposes – were ever significant historical realities. For the present argument, however, these objections are not important. What concerns us now are the subsequent transformations of the public sphere, which do have manifest historical palpability. One process that occurs is the intrusion of market and commodity relations into the public sphere, and this results in the transformation of reasoning into consumption.[64] But perhaps even more important has been that process through which political debate has come to be regulated by large corporate bodies and by the state ("refeudalisation" is Habermas's term for it). The "public" is then "superseded, managed and manipulated by large organizations which arrange things among themselves on the basis of technical information and their relative power positions," and what results is "the dominance of corporative forms within which discussion is not public but is increasingly limited to technicians and bureaucrats," with the public now becoming "a condition of organizational action, to be instrumentally managed – i.e. manipulated."[65] What Habermas and Gouldner both discern is the technocratic and administrative rationalization of political life, the Scientific Man-

agement of the public sphere and of public information and communication. Gouldner goes further, however, in recognizing that this rationalizing tendency is, ironically, already present in the very foundations of the public sphere. He demonstrates that "the means to bring about the communicative competence that Habermas requires for rational discourse presuppose precisely the centralization and strengthening of that state apparatus which increasingly tends to stifle rather than facilitate the universalization of the rational, uninhibited discourse necessary for any democratic society."[66]

The most important cultural change with regard to the public sphere is the historical shift from a principle of political and public rationality, to one of "scientific" and administrative rationalization. As Anthony Giddens argues, there are problems in the very scale and complexity of the modern nation state. Social integration depends upon a strengthening and centralization of the state, and one aspect of this is the development and regulation of communication and information resources. The rationale and justification of such tendencies become a "technical" matter of "efficient" management and administration over the extended territory of the nation state. On this basis, political debate, exchange, and disagreement in the public sphere can come to seem "inefficient," an inhibiting and frictive obstacle to the rational management of society. Rational and informed discourse in the public sphere gives way to rational, scientific management of society by technicians and bureaucrats. In this process, the very nature and criteria of rationality have been transformed. In the first case, appeal is made to the reason and judgment of the individual citizen. In the second, it is made to the scientific rationality of the expert, and to the rationality of the social system. The more "objective" rationality of scientific management seems to promise a more "efficient" democratic order than the often inarticulate and irrational citizen. Reason thus becomes instrumental, the mechanism for administrating, and thereby effectively controlling, the complex social totality. The Enlightenment ideal of Reason gives birth to what Castoriadis calls the "rationalist ideology": the illusion of omnipotence, the supremacy of economic "calculus," the belief in the "rational" organization of society, the new religion of "science" and technology.[67]

This technocratic tendency is, of course, reflected in the positivist philosophy of Saint-Simon and Comte, which, as Gouldner persuasively argues, was inimical to the ideal of a politics open to all and conducted in public, and which maintained that public affairs were in fact scien-

tific and technological problems, to be resolved by professionals and experts.[68] But it is with a later form of practical sociology, that associated with the extension of the principles of Scientific Management to the wider society, that such social engineering assumed its most sustained form and the systematic exploitation of information and communications resources was taken up in earnest. And an emblematic figure here was Walter Lippmann. Scientific Management, especially when placed within the conditions of industrial democracy, embodied in the factory regime what these progressive thinkers such as Walter Lippmann envisioned within society at large.[69]

Lippmann points to two dilemmas of the modern, mass society.[70] The first refers to the political competence of citizens in democratic society: "The ideal of the omnicompetent, sovereign citizen is, in my opinion, such a false ideal. It is unattainable. The pursuit of it is misleading. The failure to produce it has produced the current disenchantment."[71] The second dilemma is that society has attained "a complexity now so great as to be humanly unmanageable."[72] The implication is that central government has been compelled to assume responsibility for the control and coordination of this increasingly diffuse social structure. And this entails "the need for interposing some form of expertness between the private citizen and the vast environment in which he is entangled."[73] As in the Taylorist factory, this depends on "systematic intelligence and information control"; the gathering of social knowledge, Lippmann argues, must necessarily become "the normal accompaniment of action."[74] If social control is to be effective, the control of information and communication channels is imperative. With the scientific management of social and political life through the centralization of communications and intelligence activities, "persuasion ... become[s] a self-conscious art and a regular organ of popular government" and the "manufacture of consent improve[s] enormously in technique, because it is now based on analysis rather than rule of thumb."[75]

What is especially important here, we believe, is the association of public opinion theory with the study of propaganda in contemporary political discourse. Propaganda has commonly, and common-sensibly, been seen as inimical to rational political debate, as a force that obstructs public reasoning. In the context, however, of the social complexity and citizen "incompetence" observed by Lippmann, propaganda assumed the guise of a more positive social force in the eyes of many social and political thinkers in the early decades of the century. An increasingly pragmatic and "realistic" appraisal of the political

process suggested that "in a world of competing political doctrines, the partisans of democratic government cannot depend solely upon appeal to reason or abstract liberalism."[76] It became clear that "propaganda, as the advocacy of ideas and doctrines, has a legitimate and desirable part to play in our democratic system."[77] The very complexity of the modern nation state is such that a "free market" of ideas and debate must be superseded by the management and orchestration of public opinion. Harold Lasswell makes the point succinctly: "The modern conception of social management is profoundly affected by the propagandist outlook. Concerted action for public ends depends upon a certain concentration of motives ... Propaganda is surely here to stay; the modern world is peculiarly dependent upon it for the co-ordination of atomized components in times of crisis and for the conduct of large scale 'normal' operations."[78]

Propaganda is understood here in terms of the regulation and control of channels of communication and information in democratic societies. At one level, this is a matter of disseminating and broadcasting certain categories of information.[79] At another level, it is a matter of restricting access to specific categories of information. As Walter Lippmann makes clear, "without some form of censorship, propaganda in the strict sense of the word is impossible. In order to conduct a propaganda there must be some barrier between the public and the event."[80] For Lippman, propaganda and censorship are complementary as forms of persuasion and public opinion management. There has been a shift from the idea of an informed and reasoning public, to an acceptance of the massage and manipulation of public opinion by the technicians of public relations. The state function has increasingly come to subsume and regulate the democratic principle; and this to the point that it now seems indissociable from that principle.[81]

We have spent some time in outlining the development of rationalized political management and information control because we feel, again, that this is an important historical context for the development of new information and communications technologies. Through the impetus of Scientific Management, and the development of propaganda and public opinion research, it became clear that social planning and control depended upon the exploitation of information resources and technologies. This was the historical moment of the Information Revolution. The most recent technological developments – space and satellite technologies, data processing, telecommunications – only extend what was in reality a fundamentally political "revolution" in information (and

communication) management. It was this historical conjuncture that spawned the "modern" industries and bureaucracies of public relations, propaganda, public (and private) opinion polling, news management, image production and advocacy, political advertising, censorship and "official" secrecy, think tanks, and so on. Innovations in the eighties came only with the increase in scale and the exploitation of technological resources.

An important rationale for the deployment of new information technologies is, then, the regulation of political life and the engineering of public opinion. Jeremy Tunstall describes the technological streamlining of political management in the United States: election campaigns "are now managed via computers"; electronic mailing permits "separate mailing shots ... targetted at particular occupational groups or types of housing area"; electronic databases provide political and demographic information.[82] In Britain, too, electioneering is increasingly a matter of electronic techniques, with the development of software programs to analyze voter groups and behavior, the growth of targetted mail, and computerized planning of campaigns.[83] The centrality of information control became apparent also in the defeat of the mineworkers during 1984–85, which owed much to the National Coal Board's use of private opinion polls and of modern communications and public relations strategies to bypass the unions.[84]

Conclusion

"Is closer and closer social control the inevitable price of 'progress,' a necessary concomitant of the continued development of modern social forms?"[85] We believe that this is indeed the case. Against those who see the new communications technologies as the basis for a coming "communications era,"[86] and the new information technologies as the panacea for our present "Age of Ignorance,"[87] our own argument is that their development has, in fact, been closely associated with processes of social management and control. The scale and complexity of the modern nation state has made communications and information resources (and technologies) central to the maintenance of political and administrative cohesion.

The "Information Revolution" is, then, not simply and straightforwardly a matter of technological "progress," of a new technological or industrial revolution. It is significant, rather, for the new matrix of

political and cultural forces that it supports. And a crucial dimension here is that of organizational form and structure. Communication and information resources (and technologies) set the conditions and limits to the scale and nature of organizational possibilities. What they permit is the development of complex and large-scale bureaucratic organizations, and also of extended corporate structures that transcend the apparent limits of space and time (transnational corporations). They also constitute the nervous system of the modern state and guarantee its cohesion as an expansive organizational form. Insofar as they guarantee and consolidate these essential power structures in modern society, information and communication are fundamental to political-administrative regulation, and consequently to the social and cultural experience of modernity.

The exploitation of information resources and technologies has expressed itself, politically and culturally, through the dual tendency towards social planning and management, on the one hand, and surveillance and control, on the other. In historical terms, this can be seen as the apotheosis of Lewis Mumford's megamachine: technology now increasingly fulfils what previously depended upon bureaucratic organization and structure. But the central historical reference point is the emergence, early in the twentieth century, of Scientific Management (as a philosophy both of industrial production and of social reproduction). It was at this moment that "scientific" planning and management moved beyond the factory to regulate the whole way of life. At this time, the "gathering of social knowledge" became "the normal accompaniment of action," and the manufacture of consent, through propaganda and opinion management, was increasingly "based on analysis rather than on rule of thumb."[88] If, through Scientific Management, the planning and administration of everyday life became pervasive, it also became the preeminent form and expression of social control. Planning and management were, necessarily and indissociably, a process of surveillance and of manipulation and persuasion. To the extent that these administrative and dominative information strategies were first developed on a systematic basis, it was at this historical moment, we believe, that the 'Information Revolution' was unleashed. New information and communications technologies have most certainly advanced, and automated, these combined information and intelligence activities, but they remain essentially refinements of what was fundamentally a political-administrative "revolution."

Recent innovations in information and communications technologies

have generally been discussed from a narrow technological or economic perspective. It has been a matter of technology assessment or of the exploitation of new technologies to promote industrial competitiveness and economic growth. This, in the light of our discussion, seems a partial and blinkered vision. The absolutely central question to be raised in the context of the "Information Revolution" of the eighties, is, we believe, the relation between knowledge/information and the system of political and corporate power. For some, knowledge is inherently and self-evidently a benevolent force, and improvements in the utilization of knowledge are demonstrably the way to ensure social progress.[89] Information is treated as an instrumental and technical resource that will ensure the rational and efficient management of society. It is a matter of social engineering by knowledge professionals and information specialists and technocrats. For us, the problems of the "information society" are more substantial, complex, and oblique.

This, of course, raises difficult political and philosophical issues. These are the issues that Walter Lippmann comes up against when he recognizes in the Great Society "that centralization of power which deprives [citizens] of control over the use of that power," and when he confronts the disturbing awareness that "the problems that vex democracy seem to be unmanageable by democratic methods."[90] They are the issues that Lewis Mumford addresses when he argues that "the tension between small-scale association and large-scale organization, between personal autonomy and institutional regulation, between remote control and diffused local intervention, has now created a critical situation."[91] And they are the monumental issues that concern Castoriadis in his analysis of instrumental reason and the "rationalist ideology," those "myths which, more than money or weapons, constitute the most formidable obstacles in the way of the reconstruction of human society."[92]

Among the significant issues to be raised by the new information technologies are their relation to social forms of organization, their centrality to structures of political power, and their role in the cultural logic of consumer capitalism. Sociological analysis is naïve, we believe, when it treats the new telecommunications, space, video, and computing technologies as innocent technical conceptions and looks hopefully to a coming, post-industrial Utopia. Better to look back to the past, to the entwined histories of reason, knowledge, and technology, and to their relation to the economic development of capitalism and the political and administrative system of the modern nation state.

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Notes

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2. Jacques Maisonrouge, "Putting Information to Work for People," *Intermedia*, 12(2) March, 1984.
3. Information Technology Advisory Panel, *Making a Business of Information* (London: HMSO, September 1983).
4. Tom Stonier, *The Wealth of Information* (London: Thames Methuen, 1983).
5. Fritz Machlup, *Knowledge: Its Creation, Distribution, and Economic Significance, vol. 3: The Economics of Information and Human Capital* (Princeton: Princeton University Press, 1984).
6. In referring throughout this essay to capitalist societies, we leave open the question of how much these ideas relate, or do not relate, to other social forms. Nonetheless, it would be hard to deny that the impulse to "command and control" is very highly developed in state socialist societies where totalitarianism is most evident. Some commentators might seize on this convergence of East and West to suggest that the increase in surveillance and computer communications technologies is indicative of a neutral technological progress or the necessity of control in advanced societies. We would refute such reasoning, pointing to the absence of consideration of relations of power in these perspectives.
7. Joachim Hirsch, "Fordismus and Postfordismus: die gegenwärtige gesellschaftliche Krise und ihre Folgen," *Politische Vierteljahresschrift*, 26(2), 1985; Joachim Hirsch, "Auf den Wege zum Postfordismus? Die aktuelle Neuformierung des Kapitalismus und ihre politischen Folgen," *Das Argument*, (151), 1985.
8. Kevin Robins and Frank Webster, "Cybernetic Capitalism: Information, Technology, Everyday Life," in V. Mosco and J. Wasko, editors, *The Political Economy of Information* (Madison: University of Wisconsin Press, 1988), 44–75.
9. Cf. "Knowledge and power are each an integral part of the other, and there is no point in dreaming of a time when knowledge will cease to be dependent on power. ... It is not possible for power to be exercised without knowledge, it is impossible for knowledge not to engender power." Michael Foucault, "Prison Talk: An Interview," *Radical Philosophy*, no. 16, Spring 1977, 15.
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11. Ibid., 181.
12. Ibid., 302.
13. F. A. Hayek, "The Use of Knowledge in Society," *American Economic Review*, 35(4), 1945, 526.
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17. Alfred D. Chandler, *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, Mass.: The Belknap Press, 1977), 8, 12.
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21. This is not, of course, to imply the necessary effectiveness of technocratic rule. Technocracy probably always approximates more to what S. M. Miller calls "pseudo-technocratic Society." See S. M. Miller, "The Coming of Pseudo-Technocratic Society," *Sociological Inquiry*, 46(3–4), 1976. And the "human components" always remain recalcitrant and resistant in the face of attempted social engineering.
22. Lewis Mumford, "Authoritarian and Democratic Technics," *Technology and Culture*, 5, 1964, 5.
23. Mark Poster, *Foucault, Marxism and History* (Cambridge: Polity Press, 1984), 103, 115.
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26. John Holloway, "The Red Rose of Nissan," *Capital and Class*, (32), Summer 1987; Kevin Robins and Frank Webster, *The Technical Fix: Education, Computers and Industry* (London: Macmillan, 1989), ch. 7.
27. See Frank Webster and Kevin Robins, *Information Technology: A Luddite Analysis* (Norwood, N.S.: Ablex, 1986), Part Three. James R. Beniger, *The Control Revolution: Technological Origins of the Information Society* (Cambridge: Harvard University Press, 1986) offers a parallel argument to ours, that the Information Revolution was essentially completed by the thirties. However, his perspective is one of sociological functionalism, arguing that the "control revolution" that creates the Information Society stems from the "needs" of "industrialization." We reject such technological determinism, which is devoid of any account of the dynamics of interests, values, and contestations in the genesis of the Information Society.
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29. J. A. Hobson, "Scientific Management," *Sociological Review*, 6(3), July, 1913, 198.
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tem to Mass Production 1800–1932: The Development of Manufacturing Technology in the United States (Baltimore: The John Hopkins University Press, 1987), ch. 8.

35. Samuel Haber, *Efficiency and Uplift*, x.
36. Ibid., 44.
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67. Cornelius Castoriadis, "Reflections on 'Rationality' and 'Development,'" *Thesis Eleven*, (10/11), 1984/85.
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Lasswell, society "cannot act intelligently" without its "specialists on truth": "unless these specialists are properly trained and articulated with one another and the public, we cannot reasonably hope for public interests." Edward L. Bernays, *Crystallizing Public Opinion* (New York: Boni and Liveright, 1923); Harold D. Lasswell, *Democracy Through Public Opinion* (Menasha, Wis.: George Banta Publishing Company (The Eleusis of Chi Omega, vol. 43, no. 1, part 2), 1941), 75–76, 63.

80. Walter Lippmann, 1922, *Public Opinion*, 43.
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