Kocaeli Üniversitesi **Sosyal Bilimler** Enstitüsü **Dergisi** (10) 2005 / 2 : 46-68

Public Administration in the Information Age: Towards an Informatised Bureaucracy

Hamza Ateş*
Sabri Bozali**

Abstract: This article deals with the question of how the information and communications technology revolution would affect government and public administration of the near-future. It is argued that development of information revolution would alter the nature of bureaucracy. The traditional - hierarchical public bureaucracy is being replaced by the informatised bureaucracy. Four main indicators of this trend are identified: rise of new elites, IT-led institutional restructuring, changing public and private sector relations through IT-led innovations, and the trend of a move from hierarchies to networks.
Key words: Information Technology, Government, Public Administration, Bureaucracy.

1. Introduction

Government reform has been the subject of considerable academic and practical discussion in recent years (Ateş, 1999). In many circles, government is seen as inefficient, ineffective or unresponsive to its social environment. Some argue that private-sector management techniques can be applied to government, which will produce public agencies that are more efficient, effective and responsive to clients than compared with traditional government bureaucracies, which are under less pressure to meet the needs of ordinary citizens. At the same time, new ideas about governance have also emerged, stressing collaborative relationships, network-like arrangements and hybrid public-private partnerships between various agencies and organizations which enable more effective problem solving and greater citizen participation in public affairs than in the past (La Porte et al., 2000). These two schools of thought about public administration and management both arise from the perception that

* Doç. Dr. Hamza Ateş, Kocaeli Üniversitesi Siyaset Bilimi ve Kamu Yönetimi Bölümünde öğretim üyesidir.
** Sabri Bozali, Kocaeli Üniversitesi Siyaset Bilimi ve Kamu Yönetimi Bölümünde araştırma görevlisidir.

administrative and political environments have become far more complex than in the past, and that existing structures and practices are failing to provide adequate services to communities and nations, and depriving citizens of adequate levels of engagement in public affairs and government. Within this context, the impacts of information revolution on the structure, style, power relations, and culture of public sector organisations and the state as a whole come to the fore. Following the line of thought developed by such authors as Ronfeldt (1991), Atkinson (2003), Bastow et al. (2000), Fountain (2002), and Taylor and Williams (1991), we argue in this article that the classical-Weberian bureaucracy is being transformed toward an IT-led bureaucratic structure and culture, by the wave of information revolution[***].

The term which we suggest to name the possible new destination of state bureaucracy is "informatised bureaucracy". A few other terms have also been found in political science, policy studies and public administration literature to describe similar trends in public administration, private sector organisations and government, such as "cyberocracy" (Ronfeldt, 1991), "information polity" (Bellamy and Taylor, 1999), "electronic politics" (Neustadt, 1985), "electronic government" (West, 2005), and "automated state" (Bellamy and Taylor, 1998). However, none of these terms seem to be satisfactory to adequately describe the inter-related issues and provide a holistic approach to organisational, cultural, and personnel dimensions of the IT-led changes. Therefore, a new term, "informatised bureaucracy", is suggested to surround all the dimensions above.

The article begins by a review of the effects of the information revolution on public administration and then focuses on how the traditional-Weberian bureaucracy of the modern state would give way to the "informatised bureaucracy", in the near future, at the end of the current process of information technology-led revolution in the state, society, and economy. Then, it broadly investigates main characteristics of the suggested term, informatised bureaucracy.

In order to prevent readers from getting confused, however, it is necessary at the outset to make vital clarifications on the terms *of information technology* (IT) and *information revolution*. The term 'information technology' includes computers but rarely refers solely or primarily to them. As used here, the term encompasses not only computer hardware and software but also the communications system, networks, and databanks and other information utilities to which computers may be connected. However, the term "information revolution," is not used in a merely

[***] We do not claim originality to our view. We have, to some extent, over-utilized the works of such authors as Ronfeldt (1991), Olsen (2005) and La Porte et al. (2000) in idea development, text design and writing stages. Our contribution is to bring the focus back on a particular subject matter, the relationship between information revolution and public bureaucracy.

technological sense. Advanced information and communications systems, properly applied, can improve the efficiency of many kinds of activities. But improved efficiency is not the only, or even the best, possible effect. The new technology is also having a transforming effect, for it disrupts old ways of thinking and operating, provides capabilities to do things differently, and suggests how some things may be done better if done differently. Although information revolution derives partly from the new technologies, it is not determined by them. For instance, many recent developments in the theory and practice of management reflect the information revolution, but have little to do with technology. They owe to conceptual changes in the awareness of the role of information in human behaviour, organisation, and society (Tufte, 1990). In short, the information revolution is a social, political, economic, cultural, and psychological, as well as a technological revolution.

2. The Effects of IT on Government and Public Administration

The governments of all the post-industrial nations are acquiring the new technologies, seeking competitive advantages from them, and addressing the issues they raise. A growing number of governments have produced major studies of various policy implications of the information and communications revolution since the 1970s. In Indiana (USA), for example, citizens can register their vehicles and order subscriptions to government databases online. California allows people to personalize websites depending on whether they are tourists, students, state employees, businesses, or state residents. Arizona and Michigan have been innovators in online voting. At the national level, Americans can access private companies through the Internal Revenue Service (IRS) website that will file tax forms for them electronically.

Governments around the world have created websites that facilitate tourism, citizen complaints, and business investment. Tourists can book hotels through the government websites of many Caribbean and Pacific island countries. In Australia, citizens can register government complaints through agency websites. Nations such as Bulgaria, the Netherlands, and the Czech Republic are attracting overseas investors through their websites. France is pursuing the "informatisation" of society (Taylor and Williams, 1990), while Japan and Singapore have plans to re-wire their countries with fiber-optic cables and connect businesses, homes, and institutions to them on the decades ahead (Gurbaxani, 1990; Taylor and Williams, 1991).

In his essay "Cyberocracy is Coming", David Ronfeldt (1991) coined the term "cyberocracy", meaning “rule by information" to describe possibilities of new forms of governing in the information age. He posits that information and its’ control will become a dominant source of power, as a natural next step in our political evolution.

He argues that, the motivation behind the increasing interest of many government leaders in IT development in their countries is the fact that the new technologies have deep impacts on the nature of political power, sovereignty, and governance.

Firstly, the distribution of power and the prospects for cooperation and conflict are increasingly seen as a function of the differing abilities of governments and other political actors to utilise the new technologies. A new distinction is emerging between the information "haves" and "have-nots" (Tennant and Heilmeier, 1991). Some actors may become global information powers, but others, notably in the Third World, fear "electronic colonisation" (Spenneman, 1996) and "information imperialism" (Ateş, 2000).

Secondly, information flows based on the spread of the new technology are undermining traditional concepts of territorial sovereignty (Wriston, 1988: 24). Information in electronic form, unlike most goods and services, is difficult to control; financial data flows, electronic mail between computers and fax machines, and television broadcasts from remote trouble spots do not halt at border check points. Clinging to closed, autarchic notions of sovereignty is less and less a viable option for ultra-nationalistic governments (Ronfeldt, 1991).

Thirdly, a key expectation about governance is that the new technology benefits society over the state, and thereby strengthens the prospects for democracy. The revolutionary upheavals of 1989, especially in Eastern Europe, have provided evidence for this, and raised optimism that open societies are superior and will triumph over closed ones. However, in leading democracies, the new technology may also lie behind trends that could undermine the democratic process: e. g., the growth of single-issue politics, media sound-bites, and public surveillance (Beniger, 1996; Ateş, 2000). Lastly, the new technology has raised expectations that top leaders and their staff will eventually have access to better information, from any part and level of government, virtually on demand. However, the modernisation of an office's communications systems has sometimes enabled it to expand its operational horizons in ways that stimulate bureaucratic rivalries. In short, the basis exists in the public administration for conceptual and structural shifts that are as profound as in the business.

Yet, by comparison, the public sector appears to be changing much more slowly and uncertainly. With few exceptions, policy-makers and analysts are just beginning to discern how government, administrative system, and politics may extensively be affected by the information revolution. Further, in spite of the intense efforts summarised above, however, one can claim that the information revolution is still in its infancy in the context of government and public administration. Its maturation would possibly take further two or three decades. In other words, the information revolution remains in its initial stage compared to what is on the drawing boards and

in the minds of the visionaries. The best and worst are yet to come in terms of the technology's effects on society, organisations, and politics (Bellamy and Taylor, 1999).

It can be reasonably argued that, a new technology usually has to prove itself first in terms of efficiency (Grace, 1987). There are evidence to suggest that, advanced information and communications systems, properly applied, are improving the efficiency and cost-effectiveness of many activities (Forester, 1980; Leebaert, 1991). Nevertheless, improved efficiency is not the only or even the best possible effect. The information revolution, led by new technology, is also having a transforming effect, for it disrupts old ways of thinking and doing things, provides capabilities to do things differently, and suggests that some things may be done better if done differently. Sproul and Kiesler (1991: 15-16) puts it: "*The consequences of new technology can be usefully thought of as first-level, or efficiency, effects and second level, or social system, effects. The history of previous technologies demonstrates that early in the life of a new technology, people are likely to emphasize the efficiency effects and underestimate or overlook potential social system effects. Advances in networking technologies now make it possible to think of people, as well as databases and processors, as resources on a network. Many organizations today are installing electronic networks or first-level efficiency reasons. Executives now beginning to deploy electronic mail and other network applications can realize efficiency gains such as reduced elapsed time for transactions. If we look beyond efficiency at behavioural and organizational changes, we'll see where the second-level leverage is likely to be. These technologies can change how people spend their time and what and who they know and care about. The full range of payoffs, and the dilemmas, will come from how the technologies affect how people can think and work together--the second- level effects*."

In an increasing number of fields, information technology is beginning to emerge from the efficiency-proving stage. In the near-future, the structural changes implied by the new technology are much more likely to occur more intensively. Indeed, a realisation that institutional redesigns are needed to take full advantage of a new technology may be an important sign of maturation. Extrapolating from the current effects of the new technology may thus not be a good guide to its future effects. As the technology lives up to its potential, new elites, institutions, and ideologies may arise.

3. The Move From “Traditional Bureaucracy” To “Informatised Bureaucracy”

‘‘Bureaucracy’’ is often used as a pejorative slogan, as well as a label for all public administration or any large-scale formal organization. In the social sciences, however, the term usually does not carry the pejorative associations of popular usage. In-

stead, it has generally been defined as a professional corps of officials organized in a pyramidal hierarchy and functioning under impersonal, uniform rules and procedures.

Max Weber, made bureaucracy an analytical concept, decoupled from the polemical context in which it had emerged; and here the term signifies, first, a distinct organizational setting, the bureau or office: formalized, hierarchical, specialized with a clear functional division of labor and demarcation of jurisdiction, standardized, rule based, and impersonal. Second, bureaucracy refers to a professional, full-time administrative staff with lifelong employment, organized careers, salaries, and pensions, appointed to office and rewarded on the basis of formal education, merit, and tenure. Third, bureaucracy implies a larger organizational and normative structure where government is founded on authority, that is, the belief in a legitimate, rational-legal political order and the right of the state to define and enforce the legal order. Binding authority is claimed through a fourfold rule-bound hierarchical relation: between citizens and elected representatives, between democratic legislation and administration, within administration, and between administration and citizens as subjects (as well as authors) of law. Bureaucratization, then, refers to the emergence and growth of bureaucratic forms and not to the perversions and illegitimate extension of the power of bureaucrats (Olsen, 2005).

For over a long time, both practitioners and theorists of public administration had been heavily criticizing bureaucracy. “What started as an attack on ‘‘bureaucracy’’ and its inefficient, costly, and rigid internal organization and operations has since the late 1970s developed into a criticism of the role of public administration; the possibility and desirability of government shaping society; the power balance between institutions and between actors; and the relevance and functionality of jurisdictional boundaries, including those of the territorial state (Olsen 2005). Key arguments have been that the ‘‘traditional’’ way of governing society is ill-suited to cope with the tasks and circumstances faced. A paradigmatic shift from administering and governing through bureaucracies and hierarchies to competitive markets and cooperation in partly autonomous policy networks has been diagnosed or prescribed.

However, the literature little touches upon the information producer and processor role of public bureaucratic organization. Indeed, bureaucracies enable governments to generate process, distribute, and store information. Even the Egyptian, Roman, and other ancient empires were administered in part by bureaucracies. Yet, the terms "bureaucracy," "bureaucratic," and "bureaucrat" are not ancient; they date from the 1830s and 1840s. The growth of formal bureaucracy is a phenomenon of the 19th and 20th centuries, and the modern bureaucratic state is one of mankind's recent accomplishments. For organisations in both the public and private sectors, the bureaucracy represents an important, modern technology of control.

Throughout history, information has been essential to government, and different types of governments may be distinguished by the ways in which they acquire, process, transmit, and control information (Ronfeldt, 1991). However, information per se has seldom been considered a key organising principle in theory or practice. “Informatised bureaucracy”, with some similar characteristics with Ronfeldt’s clumsy term “cyberocracy”, implies that information and its control will be elevated to a key principle. In a general sense informatised bureaucracy may manifest itself in two ways: narrowly, as a form of organisation that supplants traditional forms of bureaucracy and technocracy; and broadly, as a form of government that may redefine relations between state and society, and between the public sector and the private sector. This section briefly elaborates on the first, and the next section on the second.

Although the shape of a full-fledged informatised bureaucracy remains obscure, it should spell major changes in the nature and conduct of government. It should not mean that a nation's intelligence services, think-tanks, media, or other sources of informational power dominate government, although the information revolution has increased their visibility and importance. The major impact will probably be felt in terms of the organisation and behaviour of the modern bureaucratic state.

To some extent, an informatised bureaucracy would be a bureaucracy changed by computers. This new form presumes the diffusion of advanced information and communications systems throughout government as well as public and private sectors. It also implies the rise of elites who rely on those systems and work to use them to their fullest capabilities. Nevertheless, it would be a mistake to define an “informatised bureaucracy” just as a computerised bureaucracy. The new technology opens the doors to new capabilities and possibilities; it implies that things may be done differently. This difference may stem less from the computer someone may have than from the access it may provide to networks and databases outside one's office, and potentially across all branches and levels of government, in the private as well as the public sector, and internationally as well as domestically.

While traditional bureaucracies are organised along thematic lines, big budgets and staffs are generally considered more important than information as bases of bureaucratic power. Moreover, the hierarchical structuring of bureaucracies into offices, departments, and lines of authority may confound the flow of information that may be needed to deal with complex issues in today's increasingly interconnected world. Development of an “informatised bureaucracy" means that "big information" becomes a more important source of power and authority than a budget.

Informatised bureaucracy must surpass traditional bureaucracy and its 20th century equal, "technocracy", if new techniques of acquiring and using information are to take hold. Traditional bureaucracy depends on going through channels and keep-

ing information in bounds; in contrast, informatised bureaucracy may place a premium on gaining information from any source, public or private. Technocracy emphasises "hard" quantitative and econometric skills, like programming and budgeting methodologies; in contrast, an informatised bureaucracy brings a new emphasis on "soft" symbolic, cultural, and psychological dimensions of policymaking and public opinion. Bureaucrats command offices and channels. Technocrats command scientific expertise and analytical skills. Informatised bureaucrats not only command all that their predecessors commanded, but also redraw the boundaries of appropriate, authorised behaviour.

Informatised bureaucracy would imply that the traditional notions of bureaucratic boundaries are broken and that the public and private sectors become increasingly permeable to each other. The new technology makes possible a degree of networking and bypassing that would play havoc with the traditions of a hierarchical bureaucracy, but that may become hallmarks of future organizational processes.

One key to being an informatised bureaucrat may be the ability to tap multiple sources of information in electronic form, available inside and outside the official system, from both public and private sectors, in ways that bypass or break the conventional boundaries of bureaucracy (Applegate et al, 1988). Another key may be the ability to readily communicate and consult, individually or in teams, with selected individuals inside and outside of government who may be able to contribute to a policymaking process, even though those individuals may be far removed from one's immediate office area. Policy consultation and coordination may become more extensive than ever (Benjamin, 1989), but may unfold in ways that defy traditional bureaucratic conceptions. At stake, then, is not only access to information, but also control of how information is used to influence policymaking and to direct behaviour. Furthermore, a wholly new information and communications infrastructure will be required for such a system (Ronfeldt, 1991).

4. Toward an Informatised State?

As discussed above, while informatised bureaucracy is a descendant of the traditional bureaucracy, it would break the boundaries of that classical form of administration and management. Informatised bureaucracy would be defined as a form of organisation that has a well-developed information technology ifrastructure, conducts many key activities on-line, and is structured as though information technology were an essential factor for the organisation's presence, power, and productivity. While technology may appear to be the driving consideration, how these new forms

of organisation and infrastructure are developed depends as much on socio-political and other considerations.

In this environment, government personnel may keep most office work in electronic form, have electronic records that extend back decades in time, and use computerised models to visualize and assess trends and policy options. They may be on one or more networks for electronic mail, news feeds, conferencing, and document preparation with other officials, as well as for access to external information utilities and networks that belong to the government or its contractors and to which access is authorised.

A network may be confined to an office area, extend throughout a department or agency, or span different parts of the government; there may be many networks for different purposes and participants, and these may be interconnected to varying degrees through gateways of controlled access. The extent to which a bureaucrat has access to networks that reach beyond his or her office into other parts of the government may be an important issue. Another may be the extent to which he or she has access from the office to public and private networks, conferencing systems, and databases that are outside the government, maybe in a foreign country.

Informatised bureaucracy would raise issues about relations not only between people and offices in particular areas, but also between different office areas, agencies, and departments of the government, between the public and private sectors in general, and between state and society (Bellamy and Taylor, 1999). It may prove to be no mere variation on bureaucracy or technocracy; the technology implies more than improved efficiency for old institutional designs. It also may radically change, in ways we do not perceive, how states and societies interact, how governments are structured, and how offices and people within those governments deal with each other, outside organisations, and individual citizens.

A key issue for theory and practice may be the pros and cons of interconnection. Technology provides a capability for interconnecting individuals, organisations, and sectors on an unprecedented scale. As already noted, the technology alone will not determine how it gets used, or what the outcomes are; that will depend on broad cultural, political, and other conditions (Taylor and Williams, 1990). In some areas, and for some states and societies, extensive interconnection may be desirable. But elsewhere, that may be not be the case (Olsen, 2005).

The first informatised bureaucracies would appear as overlays on established bureaucratic forms of organisation and behaviour, just as the new post- industrial aspects of society overlay the still necessary industrial and agricultural aspects. Yet such an overlay may well begin to alter the structure and functioning of a system as a whole. Just as we now speak of the information society as an aspect of post-

industrial society, we may some day speak of informatised bureaucracy as an aspect of the post-bureaucratic state.

Nations where the political and cultural commitment to bureaucratic forms is relatively low, and freedom of information high, may have the easiest time evolving an informatised state (Bellamy and Taylor, 1998). Nations where the state is highly bureaucratised, and bureaucratic behaviour is ingrained culturally and politically, may have difficulty developing such a state, although the new technologies may be amply used for political control.

However, there will be no single type of "informatised bureaucracy". Some variations may occur because different departments and agencies within a government perform different tasks and have different requirements. For example, the kind of IT infrastructure that the Ministry of Health would need can be quite unlike what the Department of Environment or the military forces would do. Furthermore, national variations may appear because of differing cultural and other conditions.

5. Major Dimensions of an "Informatised Bureaucracy"

The personnel dimension: rise of a new generation of managers and new elites

For decades, analysts have expected the information revolution to create new elites (e.g., Bell, 1980, Michael, 1972; Stonier, 1980) and a new gap between the "information-rich" and the "information-poor" (Bell, 1980). Awkward terms like "knowledge elites" and "knowledge workers" have gained currency to label the new strata that live off the expanding information sectors. A principal contributor to thinking about the new knowledge elites, Daniel Bell (1980: 500) concludes that: *"the fear that a knowledge elite could become the technocratic rulers of the society isquite far-fetched and expresses more an ideological thrust by radical groups against the growing influence of technical personnel in decision making. Nor is it likely, at least in the foreseeable future, that the knowledge elites will become a "cohesive class" with common class interests, on the model of the bourgeoisie rising out of the ruins of feudalism to become the dominant class in industrial society. The knowledge class is too large and diffuses... What is more likely to happen... be that the different situses in which the knowledge elites are located will become the units of corporate action....? The competition for money and influence will be between these various situses".* His points are sound, but do not lay the matter to rest, because he defines knowledge elites in primarily technical terms.

Other analysts who take a less technical approach to the new elite continue to detect insidious possibilities. A strong warning comes from Reich (1991: 42-45), who has

added the equally clumsy term "symbol analysts" to depict a growing gap between a new elite and a new mass: *"Of course, wealthier Americans have been withdrawing into their own neighbourhoods and clubs for generations. But the new secession is more dramatic because the highest earners now inhabit a different economy from other Americans. The new elite is linked by jet, modem, fax, satellite and fiber-optic cable to the great commercial and recreational centres of the world, but it is not particularly connected to the rest of the nation. That is because the work this group does is becoming less tied to the activities of other Americans. Most of their jobs consist of analyzing and manipulating symbols--words, numbers or visual images. Among the most prominent of these "symbol analysts" are management consultants, lawyers, software and design engineers, research scientists, corporate executives, financial advisers, strategic planners, advertising executives, television and movie producers, and other workers whose jobs titles include terms like "strategy," "planning, "consultant," "policy," "resources" or "engineer*".

Reich sees a gap growing in many cities between these symbol analysts and the broad mass of local service workers whose jobs depend on the symbol analysts. For him, "*the stark political challenge in the decades ahead will be to reaffirm that, even though America is no longer a separate and distinct economy [from the rest of the world], it is still a society whose members have abiding obligations to one another*." (1991: 45)

Although Reich's points deal with important policy areas, the implication that the new infrastructure benefits mainly the rich and powerful provides only a partial picture. For example, elites in political and professional organizations that have previously lacked influence may use the new technology to help form coalitions with geographically distant, like- minded elites elsewhere, including in foreign countries. Some of the heaviest users of the new communications networks and technologies are progressive, centre-left, and socialist activists, through entities like the Association for Progressive Communications in US. Cyberspace is going to be occupied by all kinds of people, with all kinds of ideologies and agendas, from almost all areas of society.

It is also a mistake to expect that computer experts who act like a priesthood and lack social consciousness will end up running the new infrastructures of society and government. This view lingers because of some early analyses of computers and their implications. The development of cyberspace will generate new elites, in harmony with other trends in society. And the defining attributes of these elites may include knowledge of, and a dedication to, the use of information and communications technologies. However, these technologies are ever easier to use. As the skill requirements decline and the number of skilled people increases, the social, political, and other attributes of the new elites may become increasingly diverse.

Today's knowledge elites are not necessarily tomorrow's informatised bureaucrats. Some knowledge elites, especially in universities and research centres, may have nothing to do with informatised bureaucracy. Some informatised bureaucrats who have technical or other knowledge and skill may also be knowledge elites (Applegate, 1988). However, informatised bureaucrats may also arise who have no interest in knowledge per se, even though they are skilled at using computers, databases, models, and networks.

Individually, there will probably be as many different types of informatised bureaucrats as there are bureaucrats, technocrats, and other types of officials. What distinguishes the new generation of elites is that they will tend to define issues and problems in informational terms, and to look for answers and solutions through their access to cyberspace and their knowledge of how to use it to affect behaviour. The new elites may include propagandists and manipulators, as well as people of high public integrity and democratic consciousness.

Organisational structure dimension: restructuring the bureaucratic system

According to many accounts from the business world, the information revolution has caused the flattening of organizations, the collapse of hierarchies, increased decentralisation, and reductions in the number of middle-level managers. Technology and management innovations are undermining traditional hierarchical and recent matrix forms of organisation. Success in the new business environment is now to depend increasingly on organising project-oriented "teams" and "clusters" of individuals from different parts of a hierarchy who function semi- autonomously until a project is completed. But while some work and management units operate more autonomously than ever, other units span more boundaries than ever (e.g., the case of strategic planning). One new notion is that organisations should be redesigned around networks instead of hierarchies, and that these networks should be kept in flux. Another notion is that well-managed networks of small companies would increasingly outperform big centralised institutions (Atkinson, 2003).

Such views have prominent champions, notably Peter Drucker (1989) and Alvin Toffler (1970 and 1990), and important shifts are occurring in management theory and practice. However, it is easy for enthusiasts to overstate them and claim that more is changing than may be the case. Complex organizations depend on some kind of hierarchy. Hierarchy does not end because work teams include people from different levels and branches. The structure may be more open, the process more fluid, and the conventions redefined; but a hierarchy still exists, whether one is looking at management in the United States, Japan, or another country entering a post-industrial, postbureaucratic phase. The fact that the world is going through a very

turbulent, in many ways revolutionary period of change means that many kinds of hierarchies are being disrupted and overturned; but this may be a transitory phase, until the information revolution and a new world order result in a new set of hierarchical relationships.

Decentralisation is another important trend for many states and societies. The evolution of technology has matched the trend, for the initial emphasis on centralized data-processing and networking through mainframe computers, often run by managers who acted like a priesthood, has given way to the current emphasis on distributed data-processing and networking through small computers linked by local area networks. But decentralization is not the only possibility or solution in all cases.

As Huber (1990) points out, asking whether the new technology may increase or decrease centralisation is too general a question, and perhaps the wrong one. In some cases, the new information technologies may enable an organisation to become even more centralised, or decentralised, than it is. Huber's hypotheses also suggest that the computer-assisted communications and decision-support technologies may lead to the reverse: greater decentralization for highly centralized organizations, and greater centralization for decentralized ones. In addition, operations researchers have shown how organisational decision support systems may enable decentralized organisations to rest on strong, centralised bases of information (Walker, 1991: 774).

The question of whether decentralisation or re-centralisation will prevail becomes even more complex if one asks how the new technology and related management innovations may enable organizations to become both more centralised and more decentralised at the same time. Indeed, many analysts have noted that the real question is how to have both. The answer may lie partly in a concept identified by David Gelernter (1991). While the new technology fosters decentralisation, it may also provide greater "topsight"--a central understanding of the big picture that enhances the management of complexity. *"If you're a software designer and you can't master and subdue monumental complexity, you're dead: your machines don't work. they run or a while and then sputter to a halt, or they never run at all. Hence, 'managing complexity' must be your goal. Or, we can describe exactly the same goal in a more positive light. We can call it the pursuit of topsight. Topsight--an understanding of the big picture is an essential goal of every software builder. It's also the most precious intellectual commodity known to man*".

While many treatments of organisational redesign laud decentralisation, it alone is not a decisive issue, the pairing of decentralisation with topsight may be what offers the real gains. Furthermore, the demise of middle management may be a suspect notion. Many companies have reported reductions; in some, this stems from install-

ing computer networks to track information that used to employ numerous clerks and middle managers. But this reduction may be a transitory trend.

As Penzias (1990: 191) puts it, middle managers may be needed more than ever, particularly to maintain links between different working groups in large organizations. As informatised bureaucracies develops, will governments become flatter, less hierarchical, more decentralised, with different kinds of middle-level officials and offices? Some may, but many may not. Governments may not have the organisational flexibility and options that corporations have.

If we take the example of the Turkish government, interagency working groups, so-called "high councils" and task forces have been a common phenomenon for over two decades (Ateş, 1999). This has not meant less hierarchy and middle-management, but it has meant a more networked form of organisation. At the apex, the Presidency at Çankaya Palace, Prime Ministry, and the National Security Council are operationally stronger as a result of their growing information and communications capabilities; in some instances officials there have designed and implemented some policies and operations without appraising other parts of the government. But the latter are catching up and catching on; more coordination and consultation should be expected in the future. The notion of enhancing decentralisation and improving flexibility and performance through clustering small business companies around a central company has a governmental counterpart in the privatisation of public services and procurement, although this has not proceeded far yet. In other words, the postbureaucratic state may end up configured quite differently from the traditional bureaucratic state. If so, future studies of political rivalries and struggles in a government redesigned for the information age will read quite differently from contemporary studies of bureaucratic politics.

Governance dimension: changing public and private sector relations

Government operates in a distinct structural, political, and economic environment whose ultimate aim is democracy rather than efficiency or profit. Multiple constituencies influence government structures, processes, and programs through democratic means. Thus, development of an informatised bureaucracy, while bearing some similarities to analogous efforts in the private sector, follows a distinct course governed by multiple constituencies, separation of powers, checks and balances, political and budgetary cycles, and other institutions of democracy. Although many findings and lessons from business and research based largely on private sector firm behavior can be applied to government, direct translation is difficult and problematic.

Some high-performing private sector firms are able to link the actions of divisions within the firm to ultimate success in terms of profit and loss. Government was

seldom developed to measure success in terms of profit and loss or to link the actions of agencies and programs clearly with outcomes. Performance-based government strives to build such connections within the context of democratic systems, but the “multiple bottom lines” of government make such clarity difficult, if not impossible, to achieve in the same way that private firms can (Fountain, 2002).

However, the development of the new infrastructures would raise issues about relations between the public and the private sectors. One issue is access by officials to public and private IT tools located outside government circles. At the moment, this is hardly an issue; in some instances a limited capacity exists--for example, to get copies of media reports, or to enable an official to communicate with an international agency--but few officials are interested (Bastow et al., 2000). Eventually, however, officials at all levels may want access to external networks to help answer questions or exchange views. Such access would seem desirable for an informatised bureaucracy, although for some countries and governments more than others. Should an official be able to connect to any service he needs in the public or private sector? Or should diverse, separate networks and utilities be built to accommodate official needs, including for privacy and security? Such questions, seldom asked today, are likely to grow in importance in the near future.

A second, more general issue is the effect on definitions of, and relations between, the public and private sectors. The boundaries are blurring between the two sectors; and at the same time, new fusions are resulting from efforts to create public-private partnerships to address many policy problems. According to Theodore Lowi (1972:148)., writing presciently thirty years ago about the potential political impact of the information revolution, "the blurring and weakening of the public-private dichotomy could be the most important political development in the coming decades". A related question, is whether social imperatives or proprietary interests should govern how information gets organized, stored, and distributed.

A major phenomenon of our times is the trend toward the privatisation and deregulation of economic activities around the world. In many countries the private sector has been expanded and strengthened, while the public sector has seemed to diminish in scope if not strength. However, while this trend has received heavy attention, there are indications of an obverse parallel trend: Many political activities that were once considered private, or could be conducted as though they were private, are increasingly public, and publicized (Ronfeldt, 1991). For example, an election or case of corruption that might have been treated as a private affair in some country years ago may now be turned by the media into a world-wide event. Computer networks installed by local communities and governments may enable previ-

ously isolated individuals to make contact and organize a caucus or political action group that nobody expected.

In these respects, both the private and the public sectors are being opened up, expanded, and redefined. The more this proceeds, the more the lines between them are blurred, and the two are fused. The information revolution lies behind much of these. In addition, the advent of cyberspace is leading to the creation of new areas of private and public activity (West, 2005). Here too, distinctions between public and private and between commercial and non-commercial are blurring.

Where will this lead? Will it mean that traditional distinctions between public and private become "relics of the industrial age" (Tufte, 1990)? At a minimum, people may need to think less in terms of turning to government or the private sector to solve a problem, and more in terms of building cooperative partnerships across public and private boundaries and across all levels of government. This seems to be both an implication of the information revolution and a task that cannot be achieved without its tools, given the degree of consultation and coordination that may be required.

Beyond that, not only that the public-private distinction may be outmoded, but also that the development of post-industrial societies will raise the importance of "collective goods" and services that stand between but are different from public and private goods and services, traditionally conceived (Bastow et al., 2000). In this view, institutional redesigns will be needed to deal with the changing nature of goods and services that people demand (Ronfeldt, 1991). In Bell's words (1987), " *nation- states are becoming toosmall for the big problems of life, and too big or the small problems of life.... In short, there is amismatch of scale*." However, it would be reasonably argued that scale is not the key issue; the whole relationship between what is public and what private, and thus between state and society, would be headed for redefinition, both domestically and internationally.

The implications of the trend of blurring public-private differences for informatised state are unclear and speculative. They may mean a continuation of "big government," but they may also mean greater interconnection, consultation, and collaboration between the public and private sectors, if not the creation of a whole new sector that is separate from but also mediates between those two traditional sectors. This new sector may turn out to be crucial for informatised bureaucracy to work.

Meanwhile, it is difficult to see how smaller government will be the result since vast data collection, storage, analysis, manipulation, and dissemination capabilities may be required. Perhaps governments will need fewer middle-managers and clerks in the future. Perhaps many data collection and storage activities can be turned over to agencies outside government boundaries. But personnel with new skills will also

be required. Further, it may be increasingly difficult to tell where the boundaries of government stop.

Organisational principle dimension: from hierarchy to networks

A theme emerges from these considerations: The information revolution appears to be making "networks" relatively more important, and interesting, than "hierarchies" as a form of organisation. This may have profound implications for the informatised state, both for how it is organised internally and for the kinds of external actors it must respond to.

The information revolution, in both its technological and societal aspects, sets in motion forces that make life difficult for traditional, hierarchical institutions. These forces disrupt and erode hierarchies, diffuse and redistribute power, redraw boundaries, broaden spatial and temporal horizons, and compel closed systems to open up. Meanwhile, the network phenomenon is not only modifying an old form, that of large hierarchical institutions, but also giving rise to a new form. The very forces that cause troubles for old institutions, e.g., the erosion of hierarchy, favour the rise of multi-organizational networks of small organizations. Indeed, the information revolution is strengthening the importance of all forms of networks--social networks, communications networks, etc. While organisations are traditionally built around hierarchies and aim to act on their own, multi-organizational networks consist of organisations that have linked together to act jointly. The new technology favours the growth of such networks by making it possible for dispersed actors to consult, coordinate, and operate together across greater distances, for longer periods of time, and on the basis of more and better information than ever before.

These have three important implications:

- many government institutions may evolve to become "networked organisations."
- "organisational networks" may develop in between many of those institutions, their parts or their agencies, including across national borders.
- the network phenomenon may intensify interactions between state institutions and the organisations that deem to represent civil society.

Although the rise of multi-organisational networks is an important trend less in the government than in the business world; it seems most important in the realm of civil society. Growing numbers and varieties of non-government organisations are forming network-like coalitions, in many instances to strengthen their efforts to influence the behaviour of governments and businesses (Ronfeldt, 1991). The examples include new networks among special interest, public interest, pressure, lobby-

ing, and advocacy groups. Some of the best examples may be found among activist movements that revolve around human-rights, peace, environmental, consumer, labour, racial, and gender-based issues. These movements increasingly blend the organisational, social, and physical dimensions of the network concept.

6. Concluding Remarks

Bureaucracy was clearly the most common organizational structure in twentieth-century both in public and private sectors until the 1980s, and, despite the emergence of the new organization forms, still is (Olsen, 2005). Max Weber (1978/1910), in his historical examination of organizations over hundreds of years, observed that as the modern state became more complex the need for advanced administration grew. Bureaucracy met the needs of the production system of the industrial era by focusing on technical superiority and domination, reducing the impact of irrational, personal, and emotional elements on the decision-making process. Consistent, repetitive handling of affairs and organizational activities enabled administrative specialists to strengthen their expertise and become more productive in their activities.

However, this state of affairs has changed dramatically since Weber wrote his seminal work on organizations, and is presenting different challenges to be met by managers. The standardized production of the mass market era is giving way to short-lived, narrowly specialized products and services due to new information technologies and global competition (Reich, 1982; Huber, 1990).

Bureaucracy is being seriously challenged by other organizational designs because its rigidity is being viewed as a detriment to organizational survival in the IT-enabled hypercompetitive global marketplace. Standardization, homogeneity, and hierarchy are not conducive to meeting the changing demands of a turbulent environment. As a result, new organizational forms based on flexibility and adaptability are gaining prominence in the management and governance literature and in managerial practice (Goldsby, 1998). In the spere of public administration, too, the traditional bureaucratic organization has increasingly given way to an informatised bureaucracy.

Informatised bureaucracy ultimately concerns the nature of administration and governance. Therefore, the concept leads directly to questions about bureaucracy, class and elites, new governance models, new approaches about state, and transforming Weberian bureaucracy towards a flexible, information-rich and arguably more efficient bureaucratic structure and culture. In John Barlow's words, "the hand-off between government and governance is going to be one of the most deli-

cate and demanding enterprises that human species has ever had to take up, and I think that's where we are" (quoted in Caldow, 1997: 8).

The information revolution, in both its technological and non-technological aspects, sets in motion forces that challenge the design of public bureaucracies, as well as many other institutions. It disrupts and erodes the hierarchies around which institutions are normally designed. It diffuses and redistributes power, often to the benefit of what may be considered weaker, smaller actors. It crosses borders, and redraws the boundaries of offices and responsibilities. It expands the spatial and temporal horizons that actors should take into account. Thus, it generally compels closed systems to open up and enhances a governance approach. The future lies in networked government services with decision making resident at community levels wired to an infrastructure, regionally, nationally, and from both public and private sectors. But while this may make life difficult, especially for large, bureaucratic, aging institutions, the institutional form per se is not becoming obsolete.

Although public bureaucracy seems to remain essential to the organization of society; responsive and capable bureaucracies will adapt their structures and processes to the information age. Many will evolve from traditional hierarchical forms to new, flexible, network-like models of organization. Indeed, the information revolution is strengthening the importance of all forms of networks, such as social networks and communications networks. The network form is very different from the institutional form. While institutions, particularly large ones, are traditionally built around hierarchies and aim to act on their own, multi-organizational networks consist of organizations or parts of institutions that have linked together to act jointly. The information revolution favors the growth of such networks by making it possible for diverse, dispersed actors to communicate, consult, coordinate, and operate together across greater distances, and on the basis of more and better information than ever before. For government bureaucracies, success will depend on learning to knit hierarchical and network principles (Gingrich, 2005).

On the other hand, the concept of "informatised bureaucracy" cannot be developed without raising broader value-laden questions about the nature of authority, freedom, and democracy in the information age. Whether and how to interconnect different parts of the government, and also state and society in general, while safeguarding their autonomy, cannot be answered without making value judgments. The words of Michael (1983: 41) summarises this challenge clearly:

> "*To my mind, more information and more information technology pose for all levels andtypes of institutions the greatest challenge facing civilization--short of avoiding nuclear holocaust.The depth and extent of the challenge is evidenced by a summary of consequences that accompany an information-rich world: [It] 1) changes and redis-*

tributes the loci of power and action; 2) changes the operational and, eventually, the symbolic meanings of "sovereignty," interdependence and authority; 3) changes the relevant understanding of social process from disconnected, linear, cause/effect relationships to multiply interconnected, circular relationships of cause-effect-cause effect-cause...; 4) forces priority valuing of issues that have been secondary to the focus of governments or corporate responsibility: the planetary environment, future generations, biological impacts; 5) undermines the conventional definition of leadership competence; 6) requires a portion of citizenry than can think and value accordingly."

Özet: Bu makale bilgi ve haberleşme devriminin devlet ve kamu yönetimi üzerine etkilerini konu almaktadır. Bilgi devrimi, bürokrasinin doğasını değiştirmekte ve geleneksel-hiyerarşik bürokrasi yerini 'Bilgiselleştirilmiş Bürokrasi'ye bırakmaktadır. Bu yönelimin dört önemli göstergesi bulunmaktadır: Yeni bürokratik elitlerin ortaya çıkışı, bilgi teknolojileri yardımıyle örgütsel yeniden yapılanma, değişen kamu özel sektör ilişkileri ve hiyerarşiden şebeke tipi örgütlere geçiş eğilimi.
Anahtar Kelimeler: Bilgi Teknolojileri, Hükümet, Kamu Yönetimi, Bürokrasi.

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