Wiring Weber's Iron Cage?

Divergent Patterns of Informatization and Accountability in Government Bureaucracies

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1. INTRODUCTION

The organization of government has been heavily influenced by the ideas of Max Weber about bureaucratic organizations. Political leaders can use bureaucracies as instruments to develop and implement policies. These instruments should – according to the design principles of Max Weber – obey their principals and thus civil servants are tied to the will of democratically elected leaders.

Government bureaucracies, therefore, have centralized structures and are characterized by formalization in order to promote accountability.

The use of information and communication technologies (ICTs) raises questions concerning the interference of characteristics of ICTs with parameters of bureaucracies. Scheepers (1991) argues that the introduction of ICT in governmental agencies leads to bureaucratization (and thus to increased formalization and centralization). However, there is also evidence that the use of ICTs can weaken government bureaucracies in terms of their original purposes. Frissen (1996) indicates that the use of ICTs can transform government bureaucracies through processes of horizontalization and fragmentation.

In this paper the relation between the characteristics of ICTs and the bureaucratic organization of government is explored. On the basis of four case studies we identify two patterns: strongly bureaucratized organizations use organizational ICTs to strengthen their bureaucracy whereas weakly bureaucratized organizations use personal ICTs to increase the autonomy of individual civil servants. We argue that Weberian accountability is enhanced through the use of organizational ICTs whereas the use of personal ICTs requires new forms of accountability.

2. GOVERNMENT BUREAUCRACIES: PERFORMANCE AND ACCOUNTABILITY

Since Weber laid down his ideal-typical description of bureaucracy, this concept has played a central role in theories about public administration. In the design of bureaucratic organizations Weber's ideas result in strong central control and a high degree of formalization. The role of individuals in Weber's idealtype of bureaucracies is relatively unimportant; they can even be replaced. As Max Weber put it: "The individual bureaucrat cannot squirm out of the apparatus into which he has been harnessed. (…) He is only a small cog in a ceaselessly moving mechanism which prescribes to him an essentially fixed route of march" (Weber, 1968: 987). This is often referred to as Weber's iron cage.

The traditional design of bureaucracy fits within the 'Public Administration paradigm' (Behn, 2001): an apolitical civil service for permanence and stability. At the end of the twentieth century this paradigm – and therefore the bureaucratic organization of government – became to be criticized by the 'New Public Management paradigm'. According to its main proponents, Osborne and Gaebler (1992) government is underperforming and new principles can lead to better performance. New Public Management pleads for more entrepreneurial government and, consequently, less centralization and formalization. They argue that the autonomy of managers and individuals should be increased.

In it turn, New Public Management has been criticized. The critique focuses on the consequences of

decentralization and deregulation of government bureaucracies for public accountability. Moe and Gilmour (1995) emphasize that "political accountability necessarily assumes legally based hierarchical reporting structures." Government bureaucracies should, according to Moe and Gilmour, not improve their performance but ensure political accountability. To this end, central and formalized organizations seem to be required.

The debate about the organization of government bureaucracies has not been concluded. Some argue for less centralization and formalization to increase the performance of government organizations, others emphasize that centralized and formalized bureaucracies are required to ensure public accountability. At the same time, government organizations are increasingly using ICTs to support their business processes. These technologies could transform bureaucracies and therefore influence the (normative) debate on the organization of government.

3. RESEARCH ON ICTS AND ORGANIZATIONAL STRUCTURE

Numerous research endeavors have tried to address the relationship between ICTs and organizational parameters. One of the first themes that was investigated was the effect of ICT on centralization as an organizational parameter (Kubicek, 1975). George and King (1991) have surveyed the literature and identified theories that produce conflicting explanations about the relationship between ICT and centralization. One stream in the literature reported that introduction of ICT leads to a centralization of decision-making authority. The rationale for this proposition was found in the increased capabilities of ICT to monitor and control the behavior of organization members. Drucker (1987) assumed that the introduction of ICT leads to elimination of middle management and that lower hierarchical levels could be increasingly directed and monitored by management. Crozier analogously assumed that ICT threatens the autonomy of workers as opposed to management (Bemelmans, 1987).

However, there is also a stream in the literature that claims that ICT leads to decentralization: ICT can be used to perform complicated calculations or simulations so that individual workers are no longer dependent upon higher hierarchical levels or support staff. Surprisingly, the decentralization thesis has gained empirical support too (van der Heijden, 1995; Meyer, 1968; Klatzky, 1970; Blau, Falbe, McKinley & Tracy, 1976). Gazendam (1993) and de Jong (1994) have provided well-documented cases in which the application of ICT led to decentralization and a decrease in bureaucracy.

Breukel (1996) mentions organizational structure and ICT as equal aspects of the organization with no one-way causal relation between them. He argues that feasible sets of equally effective, internally consistent patterns can be defined (see also Drazin & van de Ven, 1985). This means that ICT and structure are variables of which some combinations of values are assumed to be consistent and other

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combinations are assumed to be inconsistent. This perspective is referred to as the 'emergent' perspective (see also van den Bosch, 1993; van der Heijden, 1995).

In the emergent perspective consistency between organizational and technological variables plays a crucial role. As we have already indicated, the degree of centralization and formalization in government bureaucracies are important organizational variables. Technological variables are related to 'intrinsic characteristics' of ICTs (Zuboff, 1988; Huber, 1990). These characteristics do not predetermine the use of the ICTs but the emergent perspective indicates that (consistent) patterns in the relation between characteristics of ICTs and organizational parameters can be identified.

When the 'emergent perspective' is applied to government organizations, we can expect that strongly bureaucratized organizations will mainly use ICTs that enforce the degree of formalization and centralization. On the other hand, weakly bureaucratized government organizations will mainly choose ICTs which increase the autonomy of individual civil servants. We propose that a distinction between organizational and personal ICTs can help to increase our understanding of these patterns.

4. ORGANIZATIONAL AND PERSONAL ICTS: DIVERGENT BUREAUCRATIZATION

Organizational ICTs are technologies that were developed to support business and management processes. Individuals in organizations that use these technologies, have scarce possibilities to revise and develop the ICTs (including the surrounding procedures and work processes). A typical example of an organizational ICT is a workflow management system or a large Oracle database system. Typical individual users do not have the possibilities (nor, in many cases, the capabilities) to redesign these technologies. Therefore, it is likely that organizational ICTs diminish user autonomy in organizations. Personal ICTs, on the other hand, were developed to support individual activities and communications. Individuals can tailor the technologies by themselves to their specific needs, and can design or redesign technologies in order to support tasks carried out by themselves. Small decision support systems (Gazendam, 1993), PDAs and small database management systems are typical examples of personal ICTs. In general, they increase user autonomy. Personal ICTs are often associated with aspects of empowerment of individuals in organizations.

In order to explore patterns of informatization and organizational arrangements, some illustrations from a sample of 15 cases are presented here. The 15 cases were studied to explore the effects of informatization on parliamentary and legal accountability (Meijer, 2002).

In general, in these 15 cases, some indicated that organizational ICTs trigger a process of *bureaucratic informatization*: the management of data is strictly regulated by central and formal

procedures. In the case of the Dutch Central Agency for Motor Vehicle Taxes, an automated telephone system was installed in order to direct incoming phone calls to available employees and to register exactly how long customers had to wait and how long it took to answer the call. The information that was generated by the system was used to introduce targets for employees. With the use of the automated telephone system, the agency had set up an 'information factory'. One can argue that work was managed according to the guidelines of Frederick Taylor. Every action was measured and consequently employees had to work according to these standards.

The Dutch Ministry of Environmental Affairs provides another example. This department handles requests from companies for permission to bring hazardous waste to other countries in the European Union. These requests contain a variety of documents and all these documents are scanned and processed electronically in a workflow management system. The workflow management system signals the civil servants involved but also enables management to control, steer, plan and control the business process.

However, in other cases, other patterns could be observed. In the early nineties the Dutch National Aviation Agency implemented an e-mail system. The ICT department implemented the facilities but did not issue procedures for the use or preservation of e-mail messages. Central management was not directly involved in the implementation of e-mail facilities and did not pay attention to these procedures either. At the agency, e-mail was extensively used both for business and personal communications. Additionally, the use of e-mail led to a strong grow of internal communication.

A comparable pattern could be observed at the Dutch Ministry of Foreign Affairs. At this Ministry, some standards and guidelines concerning the use and preservation of *official* e-mail communication were indeed put into practice. However, central management had no control over the use of e personal e-mail, which was also intensively used by civil servants, both for personal as well as for business purposes.

These latter two cases indicate that the use of personal ICTs may trigger a process of *debureaucratic informatization*. Debureaucratic informatization consists of two dimensions: individualization and informalization. Civil servants increasingly manage (digital) data according to their own standards and hierarchical steering is undermined because individuals control the data. Furthermore, debureaucratic informatization refers to a blurring of the distinction between formal and informal communication since civil servants use personal ICTs for both forms of communication. In these cases, the 'emergent organization' is a less centralized and less formalized government bureaucracy.

The above examples illustrate two types of 'emergent organizations': a more bureaucratized and a less

bureaucratized one. These types of informatization were related to types of ICTs: organizational and personal ICTs. A closer look at the case studies shows that personal and organizational ICTs were used for different business processes. The automated telephone system and the workflow management system were used for large scale, standardized work processes whereas the e-mail systems were used for specific communication between professional. The 'emergent organization' is thus not only consistent in use of ICT and structure but also consistent with the type of business process.

In conclusion, case studies support the view that the use of ICTs has a *divergent* effect on government organizations: organizations which are relatively strongly bureaucratized – because they are carrying out large scale, standardized work processes – become even stronger bureaucratized because they start using organizational ICTs. On the other hand, organizations that are relatively weakly bureaucratized – because they are carrying out small-scale, specialized work processes – become less bureaucratized because of the use of personal ICTs. In general, one can conclude that informatization can reinforce existing organizational arrangements.

The identification of these patterns does not imply that strongly bureaucratized organizations cannot use personal ICTs and that weakly bureaucratized organizations will never implement organizational ICTs. Based on the case studies and in line with the 'emergent perspective', however, the identified patterns seem more likely than inconsistent combinations of organizational and technological parameters.

5. IMPLICATIONS FOR SYSTEM DESIGN AND ACCOUNTABILITY

Bureaucratization and debureaucratization can both have various effects on government organizations. For effective system design these effects need to be acknowledged. It is important to emphasize that ICTs do not predetermine these effects. There is a degree of interpretative flexibility and system designers should use this interpretative flexibility to deal with the possible negative effects of the use of ICTs. Since we are talking about government organizations, accountability demands specific attention in system design.

Design of Organizational ICTs: Emphasis on Traditional Accountability Processes
Bureaucratic informatization seems to have positive effects on the accountability of government organizations. The formalized and centralized characteristics of information systems facilitate the flow of information from the bottom to the top of the organization and, therefore, accountability processes are enabled. This form of informatization, however, may have dehumanizing effects. The autonomy of civil servants is reduced and possibilities to develop themselves in their work are

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limited: Weber's iron cage has been optimized. The extensive criticism on bureaucratic organizations in organizational literature is relevant to this type of informatization. Perrow (1986: 29), for example, writes: "(…) the consequence is that the bulk of people in the middle and lower levels are prevented from really giving their all for goal achievement; they turn, instead, into infantile, fearful robots."

For system design that means that designers should pay attention to the quality of work. If necessary, proper measures should be taken to increase the quality of work, provided that traditional accountability processes are not impeded. These measures can be taken within the design of the system itself. One could think of ways that employees can use the system to suggest improvements to the management of the government organization. Other measures could include the way the system is used within the organization and is embedded in business activities.

Design of Personal ICTs: Transparency as an Alternative Accountability Principle

Personal ICTs stimulate personal responsibility in government organizations but may lead to tensions with democratic arrangements. In western democracies, civil servants are supposed to execute the guidelines of democratically elected leaders. Processes of individualization and informalization inhibit central steering and control of the work of civil servants: they can escape Weber's iron cage. Civil servants will do as they see good and possibly not act according to the 'will of the people'. They may have a different perspective on the public cause than the democratically elected leaders. Also, there are more opportunities for corruption.

The relatively informal structure therefore impedes 'traditional' accountability processes. Other forms of accountability have to be sought to compensate for the diminished possibilities for 'traditional' ones. One way to do this would be to make these organizations more transparent to scrutiny, which may also include public scrutiny. We suggest that transparency to the public should be a guiding principle when implementing personal ICTs in government bureaucracies. This would enable the public (citizens, action groups, media) to watch closely what happens within government bureaucracies (Brin, 1998).

Another (complementing) way to do this is to replace the relatively impersonal, traditional notion of accountability with a more personal one. Traditionally, accountability processes trigger impersonal vertical flows of information, from the lower hierarchical levels to top management, to politicians, and eventually to parliament. An alternative notion of accountability is that accountability forums (such as parliament, ombudsmen or administrative courts) refer to individual civil servants directly, bypassing the traditional hierarchical chain of command. It is then part of the professional competence of civil servants to take into account that their personal ICTs and the information embodied in these

technologies can be used for accountability purposes.

Note that a combination of the two ways could imply that bureaucratic organizations require from individual civil servants to make their personal ICTs public in order to enable public accountability processes by societal actors. In doing so, the 'source code' of bureaucracies is exposed to public accountability forums. In practice, this could include exposing civil servants' email messages on the World Wide Web for reasons of public accountability.

6. REFLECTION

In this paper, we have analyzed the interrelation between characteristics of ICTs and bureaucracies' organizational parameters. On the basis of a theoretical and empirical exploration of this interrelation, we have proposed divergent patterns of informatization: organizations which are relatively strongly bureaucratized become even stronger bureaucratized because they use organizational ICTs, organizations that are relatively weakly bureaucratized become less bureaucratized because of the use of personal ICTs. We have indicated that these divergent patterns of informatization also have divergent impacts on accountability, which was identified as a core value for bureaucracies.

This analysis and our interpretation are, in our opinion, of interest in a number of ways. For system designers, the message is that matters of centralization and formalization (both in terms of organizational parameters as well as in terms of ICT characteristics) are directly linked to the normative function of government bureaucracies, and explicitly relate to matters of public accountability. Therefore, effects of the use of ICTs on centralization and formalization affect the core identity of a government bureaucracy and its institutional functioning.

For public administration scientists theorizing about the role and impact of informatization in government organizations, we have tried to make clear that characteristics of ICTs are crucial for explaining effects on bureaucracies. Normative and empirically-oriented debates on the structuring and functioning of bureaucracies should therefore take the characteristics of different technologies explicitly into account.

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