E-Mail in Government:
Networks in the Shadow of Hierarchy

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E-MAIL IN PUBLIC ADMINISTRATION

Government organizations all around the world use e-mail as a medium for internal and external communication. One could easily argue that many governments could not function properly without the use of e-mail. Communication research has led to interesting insights in the effects of the use of e-mail on organizations (for an overview: Van den Hooff, 1997). One of the most significant findings is that the use of e-mail may lead to other connections between people in organizations (Sproull & Kiesler, 1991). This research has not paid specific attention to the effects of e-mail on government organizations.

The effects of the use of e-mail on government organizations warrant special attention since these organizations function within accountability requirements. Parliamentary control depends on the ability of political representatives to control the functioning of bureaucracies and steer bureaucratic output. Political representatives must rely on bureaucracies to execute policies in a reliable manner. The principles of bureaucracies have been laid down by Max Weber (1968) and these principles have been used to form government bureaucracies. Formal hierarchical relations are a crucial element in Weber's ideal-typical bureaucracy.

Research in public administration has led to interesting findings concerning the effects of information and communication technologies on government organizations (Snellen & Van de Donk, 1997; Heeks, 1999; Fountain, 2001). This research has paid little attention to the effects of e-mail. It has been suggested that e-mail is different from other technologies (Bekkers, 1993; Blanton, 1995; Meijer, 2002). Use of e-mail seems to challenge bureaucratic coordination whereas workflow systems and databases strengthen bureaucratic control.

Systematic empirical research concerning the effects of e-mail on government organizations is lacking. In this paper I will deal with the following research questions: (1) how do civil servants in a government organization use e-mail? and (2) what are the effects of the use of e-mail on this government organization? I have investigated the use and the effects of e-mail in one government organization in the Netherlands. I will call this organization 'Government Office' since it is primarily an organization with office workers.

The empirical research in Government Office was explorative and focused on creating an in-depth understanding of how e-mail is actually used by office workers. The research consisted of extensive interviews with nine civil servants with different functions in the organization. Seven of these civil servants also registered their e-mail communication during a period of several days. Documents concerning e-mail facilities and policies were studied. The objective of this case study was not to test theoretical relation but to build theory on the basis of empirical findings and theoretical assumptions.

E-MAIL AND ORGANIZATIONS:
A THEORETICAL PERSPECTIVE

Research into the effect of e-mail systems on organizations fits within the broader research domain of information and communication technology (ICT) and organization. Traditionally, two perspectives have been developed concerning the relation between ICT and organization: a social-deterministic (or strategic choice) approach and a technological-deterministic (or technological imperative) approach. The social-deterministic approach states that organizations use ICT to support organizational functions. The resulting application of ICT can be explained in terms of organizational properties: ICT is the dependent variable and organization the independent variable. The technological-deterministic approach focuses on properties of ICT. These properties explain the effects of ICT on organizations: organization is the dependent variable and ICT the independent variable.

Theoretical discussions and empirical research have led to the conclusion that the relation between ICT and organization can only be explained in terms of an interplay between organizational and technological properties. An interesting perspective on this interplay has been developed by Orlikowski (1992, also: Orlikowski, Yates, Okamura & Fujimoto, 1995). On the basis of Giddens' (1994) Structuration Theory, Orlikowski indicates that technology influences the properties of organizations and, at the same time, these properties also influence the shaping of technology. This interplay takes place in actions of human agents who are bounded by (institutional) properties of the organization but also create these properties through their own actions. In this approach ICT and organization are both the dependent and independent variable.

Orlikowski *et al*. (1995) argue that researchers should focus on the context of use. To understand how technology influences organizations and, at the same time, technology is shaped by the organization, we should focus on the actual use of technology in organizations. Studying the design of a technology may show us how this technology could be used, but technologies always have a certain 'interpretative flexibility'. Users interpret, appropriate, and manipulate technologies in various way and, in effect, redesign the technology when they are using it in their work.

When compared to information and communication technologies that have been designed to perform specific tasks, e-mail systems are technologies with a large interpretative flexibility. Users can make various choices in using e-mail for communication and in the way they preserve messages. The system is flexible and, therefore, largely shaped in the context of use. Studying this context of use can show us how the interplay between organizational and technological properties takes place in government organizations.

E-MAIL FACILITIES AT GOVERNMENT OFFICE

The organization I investigated, Government Office, forms part of a larger, international government organization and therefore internal e-mail communication includes worldwide contacts. Several hundred civil servants work at Government Office. Safety is important to this organization: there are strict procedures for visitors entering the office and strict procedures for external communication. Government Office is a formal organization with strict rules and procedures. However, the respondents indicated that internal contacts are fairly informal.

Mainframe e-mail facilities – the software package All-In-One – were introduced to the organization in 1989. This software package could be

used for text editing, scheduling and mail services. Text editing and scheduling were considered to be the relevant features of All-In-One, the mail services were considered to be just an extra feature. In 1995 standard Microsoft facilities were introduced. Outlook became the standard e-mail program and the use of All-In-One was slowly phased out. In the late nineties, e-mail became a more important medium for internal communication and started to replace paper communication, but – as the respondents emphasized – this was never planned that way.

At this moment, every civil servant at Government Office has an e-mail account and can use e-mail for internal communication. The use of e-mail for external communication, however, is limited to a small number of civil servants. The original reason for limiting external e-mail communication was safety of the electronic network. However, slowly the amount of civil servants that use e-mail for external communication has grown. The expectation is that in the future all civil servants will be able to use e-mail for external communication. As for now, civil servants can use a standalone PC for external e-mail communication.

Government Office has set up rules for internal and external e-mail communication. Official – not confidential – documents can be sent by e-mail but must also be sent in paper form. E-mail is not to be used for transmitting pornographic material, graphic files and long stories. Private use of e-mail is allowed for as long as the contents and quantity of the communication do not interfere with the execution of tasks and the reputation of Government Office. Record managers at Government Office recognized that e-mail communication may contain records and drafted a rule for preserving e-mail records. The rule for preserving these records is that relevant messages must be printed out in paper form and sent to the record keeping department.

One can conclude that e-mail facilities and procedures for e-mail use at Government Organization are fairly standard. Most government organizations use Microsoft software for e-mail communication and the rules for e-mail communication are similar to two other government organizations I have investigated in the Netherlands. A difference between Government Office and other government organizations is the limited number of civil servants that can use e-mail for external communication. Interestingly, Government Office has not planned the effects of e-mail on the organization. E-mail was introduced as an additional feature to office software and slowly grew more important to the organization. Management of Government Office did not foresee its importance for internal and external communication.

USE OF E-MAIL IN GOVERNMENT OFFICE

The facilities for using e-mail as a communication medium are available at Government Office. How do civil servants use e-mail? And what do they use it for? At Government Office, I investigated how many messages civil servants send and receive, whether patterns in the use of e-mail can be distinguished, when civil servants prefer e-mail above other media and how e-mail influences the style of communication.

Seven respondents have registered their e-mail use for a period of 2 to 39 days. They indicated how many messages they sent and received and whether these were task related or private messages. Their registrations lead to the following findings:

- On average, civil servants send 5 messages per day and receive 10 messages. They receive approximately twice as many messages as they send. The reason for this is that they send messages to more than one person.
- In amount of messages, task related communication is much larger than private communication. The amount of private communication is relatively higher in external communication (15 %) than in internal communication (4 %).
- Civil servants daily send and receive many more internal (15 e-mails per day) than external messages (3 e-mails per day). This also applies to the civil servants that can send and receive external e-mail from their desktop.

General and function specific patterns could be distinguished in the use of e-mail by civil servants in Government Office. The first general patterns concerned meetings. Nearly all respondents indicated that they use e-mail for communications before meetings (planning, agenda's, documents) and also after them (minutes). A second general pattern was the cooperative working on documents. Various respondents indicated that they use e-mail to send and receive comments and draft documents.

Function specific patterns concerned managers, secretaries, human resource managers and policy advisors. Managers use e-mail for steering projects and monitoring progress. Secretaries mainly use e-mail for agenda maintenance. Human resource managers send and receive many messages that specifically relate to personal situations. Policy advisors mainly use e-mail for communication concerning substantial matters.

The respondents were asked when they choose e-mail for communication and when they prefer other media. Their answers fit well within Media Richness Theory (Daft & Lengel, 1986): civil servants prefer a richer medium when the message is more complex or of a more private nature. E-mail is considered to be richer than paper communication and leaner than telephone or face-to-face conversations. Additionally, three other advantages of e-mail were highlighted by respondents: asynchronicity (the receiver can read the message in his own time), record making (communication is automatically recorded and can be preserved in a digital memory) and one to many communication (information can easily be sent to many receivers).

The style of e-mail communication is informal. Respondents indicated that they use first names and language that is closer to talking than to writing. This may lead to less careful formulations. E-mail messages also generally contain less contextual information. However, many respondents indicated that they do think that the quality of messages is important: incorrect spelling is accepted but should be avoided. Respondents also indicated that messages may be informal in style but contain formal agreements.

EFFECTS OF E-MAIL USE IN GOVERNMENT OFFICE

I have indicated how civil servants at Government Office use e-mail in their work. What are the effects of the communication through e-mail on the execution of tasks and the structure of the organization? At Government Office, I have looked at first order effects (speed of work, quality of work, quality of information, efficiency of communication and task efficiency) and second order effects (patterns of communications) (Sproull & Kiesler, 1991). Additionally, I have looked at the reliability of communication and hierarchical relations.

The respondents were very positive about the first order effects of e-mail: they indicated that e-mail increases the speed of work, the quality of work, the quality of information, the efficiency of communication and the task efficiency. Only minor drawbacks were mentioned: two respondents indicated that the use of e-mail can increase their workload since they need to answer more questions and need to comments more on concept documents. One other respondent indicated that the quality of interpersonal contact can deteriorate when interaction takes place through computer-mediated communication.

The second order effects of e-mail mainly concerned communication deviating from hierarchical lines. Most respondents indicated that it is easier to contact persons high up in the hierarchy. More significantly, respondents stressed that 'horizontal communication' is facilitated. Traditionally, communication with other departments would go from civil servant in one department to the head of the department, then to the head of another department and finally to an civil servant in that department. Through e-mail the communication goes directly from civil servant to civil servant. Often heads of departments are informed through CC's. Two respondents indicated that the increase in horizontal communication could not just be attributed to the use of e-mail. They stressed that many civil servants know each other and general cultural changes in the organization.

All respondents indicated that e-mail positively influences the reliability of internal and external communication at Government Office.

Communication is recorded and therefore everybody knows exactly what has been 'said' and agreed upon. Compared to telephone or face-to-face conversations, there are fewer misunderstanding. The fact that messages are recorded is used in a strategic manner: civil servants prefer e-mail if they think that contacts may result in a conflict. If the conflict escalates, they can use the e-mail message to show what has been said.

Respondents were asked whether their superiors are better informed about their work because of the communication through e-mail. The answers were mixed: some indicated that their superiors are better informed because they receive CC's of e-mail communication. Others stressed that superiors loose their central position and cannot keep track of all the communication that goes on. When asked whether e-mail influences their autonomy, all civil servants stressed that e-mail does not change their autonomy in the execution of tasks. However, e-mail does enlarge the autonomy in information management. Civil servants can communicate with whom they want and have easier access to information. E-mail also grants civil servants more autonomy in time: they can do things when they want.

THE FUTURE OF GOVERNMENT ORGANIZATIONS

The empirical findings of our research into the use of e-mail and the effects of e-mail are presented. The picture of e-mail use and its effects is diverse. What does this mean for government organizations? Do they function differently? And what are the consequences for public administration? Does e-mail influence the institutions of government?

In the findings of the effects of e-mail the contours of a new type of organization can be recognized. This organization deviates from the formal bureaucratic organizations as described by Weber. Hierarchy is no longer the central mechanism for coordination. The autonomy of civil servant grows and coordination takes place in horizontal networks. In this respect, government organizations seem to change into post-bureaucratic organizations (Hekscher & Donnellon, 1994). The most significant second order effect of e-mail was an increase in horizontal communication between civil servants.

However, these post-bureaucratic organizations function in the shadow of hierarchy (cf. Scharpf, 1994). There is less ex-ante control but civil servants enable monitoring by their superiors by keeping them informed with CC's. Managers survey e-mail messages and intervene when they feel intervention is needed. All respondents indicated that decision making takes place according to formal procedures. Hierarchical relations pop up in critical decision making processes.

Although the changes in government organizations can not only be attributed to the use of e-mail, properties of e-mail facilitate the functioning of this new type of organization. Three properties of e-mail were specifically highlighted by the respondents: asychronicity, record making and one to many communication. These properties trigger the change from a bureaucratic organization to 'networks in the shadow of hierarchy'. Asynchronicity is required for loose couplings. In a network organization civil servants need to interact with many other people inside and outside the organization. Record making is needed for reliable contacts between civil servants in the absence of hierarchical relations. One to many communication is required to keep superiors and other contacts informed and thus keep the network together.

This new type of government organization requires new forms of accountability and leads to different forms of policy execution. Increasingly, political representatives will not be able to control the output of bureaucracies. They will need to enable civil servants to do their works well and monitor their work closely. Thus, parliament can not hold political representatives accountable for steering the organization but for creating conditions for adequate output and for monitoring their output.

The findings indicate that e-mail is indeed a technology with a high interpretative flexibility (Orlikowski, 1992): the technology is introduced without direct organizational and task related objectives. Users were given much autonomy in deciding how they wanted to use the technology in their context of use. This resulted in a broad variety of patterns of use which exhibit differences – e.g. the secretary use e-mail

for agenda maintenance and policy advisors for substantial discussion – and similarities – e.g. all respondent use CC's to inform superiors. These patterns reflect both specific properties of the tasks of respondents and also general properties of Government Office.

Orlikowski's (1992) perspective on the interplay between technology and organization can be used to interpret the results and the emerging type of organization. One can conclude that the use of e-mail reflects the properties of government organizations. The emphasis on record making and informing hierarchical superiors results from the bureaucratic nature of government. The emphasis on record making and informing superiors has not been reported in research into the use of e-mail in private companies. The introduction of e-mail does also challenge the properties of government organizations. Bureaucracy is not reproduced but shifts to an new forms of coordination: networks in the shadow of hierarchy. This emerging form of organization results from the interplay between organizational and technological properties and the way these properties are combined in the context of use.

On the basis of explorative research I have sketched the interplay between e-mail and government organizations. This sketch is based on one case study and needs further testing and elaboration in empirical research. This explorative study, however, has resulted in a provocative perspective on the future of government. The use of e-mail seems to strengthen a drive to a more post-bureaucratic organization that still stands in the shadow of hierarchy. In the near future, this new type of organizations will confront democratic societies with the need for new forms of accountability and democratic control.

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