

# E-mail in Government: From Bureaucratic to Post-Bureaucratic Organizations?

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## 1. INTRODUCTION

Government organizations all around the world use e-mail as a medium for internal and external communications. The effects of the use of e-mail on the structure of government organizations warrant special attention since these organizations function within public accountability requirements. Parliamentary control depends on the ability of political representatives to control the functioning of bureaucracies and steer bureaucratic output (Behn, 2001). Use of e-mail may challenge bureaucratic coordination and undermine bureaucratic control.

Research on the use of information and communication technologies in government can have an instrumental or an institutional focus. Instrumental research addresses the question how technologies should be used to execute government tasks, institutional research aims to provide a description and explanation for changes in core government institutions. In the latter line of research, there has been some research into the effect of information and communication technologies on the bureaucratic structure of government organizations (Zuurmond, 1994; Zouridis, 2000). The general thrust of their research findings is that the use of information technology strengthens bureaucratic structures and turns these into 'infocracies'. Behavior is standardized and formalized through information infrastructures and autonomy of employees is decreased.

Aforementioned research findings, however, mainly focus on large database systems and workflow management systems. Work procedures are embedded in these systems and leave employees no choice but to work according to these procedures. Previously, I have challenged the assumption that the use of all information and communication technologies enhances bureaucratic structures (Meijer, 2002). I have suggested that e-mail is a technology with different characteristics and other effects on government organizations. Explorative research suggested that the use of e-mail enhances informal communication and challenges traditional hierarchical structures in government. E-mail may enhance individualization in government bureaucracies (see also Frissen, 2003; Van den Hooff, 1997).

Attention for the effects of information and communication technologies on government bureaucracies is needed since this type of structure is not only connected to the effectiveness and efficiency of government but also to its legitimacy. Bureaucracy is a key element of the chain of political and hierarchical control through which democratic control

over government is ensured. Civil servants are controlled by their superiors, these are controlled by political appointees and these are held accountable by representatives. These representatives are periodically elected by citizens. Breaches in government bureaucracies could mean that civil servants escape this chain of democratic control (Bovens, 1998).

Systematic empirical research concerning the effects of e-mail on government organizations is lacking. In this paper I will deal with the following research question: what are the effects of the use of e-mail on the structure of government organizations and how do these (structural) changes affect the efficiency, effectiveness and reliability of government? Additionally I also looked into the effects on work satisfaction.

I have investigated the use and the effects of e-mail in three government organizations in the Netherlands: the Head Quarters of the Royal Navy, the Central Department of a Local Government and the Head office of the National Bank. These three organizations were all office environments with standard e-mail facilities. They all contained a mix of policymaking and policy execution tasks.

## **2. CONCEPTUAL FRAMEWORK**

The first element of my conceptual framework is a perspective on the relation between e-mail and (bureaucratic) organization. There has been a long debate about the effects of information and communication technologies (ICTs) on organizations (for an overview: Williams & Edge, 1996). Traditional perspectives include a *techno-deterministic perspective* – i.e. organizational structures and cultures change because of the use of ICTs – and a *voluntaristic perspective* – i.e. organizations choose how to use ICTs to fit their specific situation. In the deterministic perspective organization is the dependent variable and ICT the independent one, in a voluntaristic perspective these relations are reversed.

A sophisticated perspective on the interrelation between technology and organization has been developed by Orlikowski (1992) on the basis of Giddens' (1984) *Structuration Theory*. She indicates that the introduction of ICTs in organizations has to be studied as a process of institutional change. ICTs have certain properties but these properties are enacted by employees who use ICTs in a specific institutional context. This means that ICTs and organizations change in an interrelated process. The Structuration Perspective is used for studying the relation between e-mail and organizational change. This means that I assume that, at the same time, e-mail systems are adapted and structured to fit the institutional context and the organizational context is changed in this process of structuration.

The second element of my conceptual framework concerns the concept of bureaucracy. In Public Administration bureaucracy is one of the core concepts since bureaucracies are needed of effective and efficient policy implementation and are also a structure of legitimacy. Weber developed his ideal type of a bureaucracy and indicated that a core assumption of bureaucracy is that it obeys its ruler. In democratic societies the rule of bureaucracies is a political appointee, a minister or a secretary or their local equivalents, who is held accountable by a parliament of representatives. Optimal bureaucracies should result in effective and efficient organizations and, furthermore, these organizations should also be reliable (Weber, 1968).

There are several key characteristics that ensure that bureaucracies obey their ruler. Obedience, continuity, effectiveness, efficiency and calculability are key values of bureaucracies (Zuurmond, 1994: 326). These values form the basis for organizational structures that are formed according to the following principles (Perrow, 1986):

1. Hierarchy: clear division of competencies
2. Centralization: bureaus are organized in a single line of command
3. Formalization: work processes are documented
4. Specialization: good education is crucial
5. Standardization: task execution according to fixed rules

As I have already indicated in the introduction, Zuurmond (1994) indicates that ICTs are used to strengthen bureaucratic structures. He indicates that the principles are applied to information infrastructures and that these information infrastructures are implemented to ensure the key values of bureaucracies (although he does stress that the organizational implementation is different from ‘traditional bureaucracies’).

In this paper I will focus on the changes in two of the above mentioned principles: hierarchy and formalization. The reason for this focus is that previous research (Meijer, 2002: 224 - 226) indicated that the use of e-mail facilitates less hierarchy and less formalized relations. I propose the following:

1. The outcome of changes triggered by the use of e-mail in government bureaucracies is more individual control and less central steering.
2. The distinction between task related and private communication of civil servants will become fuzzy because of processes of change triggered by the use of e-mail.

In this paper I present new empirical work to test the two propositions. I will also test to what extent and in which way these changes affect the (perceived) effectiveness, efficiency and reliability of government bureaucracies. Additionally, I have looked at the effects of the changes on work satisfaction.

**3. RESEARCH DESIGN**

The empirical research in the organizations was explorative and focused on creating an in-depth understanding of how e-mail is actually used by office workers. Many other research projects focus on communication between governments and citizens. This was not the focus of my research: I looked at research from the perspective of civil servants to reconstruct the changes they experience in their work environment.

The research was explorative and therefore three most different cases were selected for the empirical research. The cases differed in national and local government, level of autonomy from central departments and policy domain. The following three cases were selected:

<b>Organization</b>	<b>Level of government</b>	<b>Policy Domain</b>
Head Quarters of the Royal Navy	National, departmental	Defense
Central Department at a Local Government	Local	Diverse
National Bank	National, autonomous	Financial

Table 1. Case selection

The research consisted of extensive interviews with civil servants with different functions in the organizations. Nine civil servants were interviewed in the first organization, thirteen respondents in the second organization and eight respondents at the third organization. Additionally, in each organization one or two interviews were held to get information about the e-mail facilities at the organization.

In the Central Department of a Local Government, e-mail messages of a group of 13 civil servants were analyzed. At the Head Quarters of the Royal Navy, 7 civil servants registered their e-mail communication during a period of several days. Documents concerning e-mail facilities and policies were studied in all three organizations. The objective of this case

study was not to test theoretical relations but to build theory on the basis of empirical findings and theoretical assumptions.

To measure the impacts of e-mail on the perceived effectiveness and efficiency of government bureaucracies I asked employees about the so-called first order effects of e-mail (speed of work, quality of work, quality of information, efficiency of communication and task efficiency) (Sproull & Kiesler, 1991; Van den Hooff, 1997) (see question 10 in the questionnaire, appendix A). Speed of work, efficiency of communication and task efficiency were regarded as measurements of efficiency; quality of work and quality of information were indicators for effectiveness. There were no direct measurements of effectiveness and efficiency.

Additionally, I looked at the perceived reliability of communication and hierarchical relations (see question 12 in the questionnaire). The perceived reliability was measured at three levels: the reliability of internal communication, the reliability of external communication and the reliability of organizational memory.

To measure the effects of e-mail on work satisfaction, I asked respondents to indicate whether the use of e-mail enhances their work satisfaction (see question 15 in the questionnaire).

Changes in the hierarchy of government bureaucracies were measured by asking employees about their autonomy and about informing their superiors (see questions 14 and 17 in the questionnaire, appendix A). The same questions were asked to managers but then they had to indicate whether their employees had more autonomy and whether they were well informed about their activities. Additionally, I also looked at second order effects of e-mail (Sproull & Kiesler, 1991). These effects concern changes in patterns of communications and may also influence hierarchical relations (see question 11).

Formalization was a more difficult concept to operationalize. Changes in the formalization of communication were measured by asking question about the style of communication (question 7, appendix A), the degree of informalization (question 5, appendix A) and separation of task related and private communication (question 4, appendix A).

Respondents were always asked for explanations of their answers. I did not only want to investigate whether e-mail had a positive effect on effectiveness, efficiency, legitimacy and work satisfaction but I also wanted to know the nature of the effects. These explanations are used to explain the outcomes that are presented in tables in the next section.<sup>1</sup>

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<sup>1</sup> A full description of the research and a separate description of the three cases in Dutch is available at <http://www.usg.uu.nl/onderzoek/e-mail-project/>.

## 4. FINDINGS

### 4.1. Hierarchical relations in government bureaucracies

To evaluate the effects of e-mail on hierarchical relations, I first investigated the so-called ‘second order effects’. Two types of second order effects were put forward to the respondents: communication with people outside their own department and communication which deviated from hierarchical lines. A slight majority of respondents indicated e-mail has led to more communication outside their own department and a clear majority indicated that e-mail has enhanced deviation from hierarchical lines. The results are shown in table 2.

	More contact with other departments	Deviation from hierarchical lines
Royal Navy (N = 9)	.556	.556
Local Government (N = 13)	.154	.538
National Bank (N = 8)	.375	.750
Total (N = 30)	.333	.600

Table 2. Impact of e-mail on the communication patterns<sup>2</sup>

The score for contacts outside their own departments is not very high because a majority of respondents – especially at the Local Government – indicated that e-mail had no effect on their contacts outside their own department. Many respondents emphasized that, although they often use e-mail for contacts outside their own departments, these contact are not influenced by e-mail since they would also have these contact without e-mail.

Most respondents in all three organizations 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

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<sup>2</sup> To calculate scores the number of positive answers minus the negative answers were divided by the number of respondents.

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. Some respondents indicated that the increase in horizontal communication could not just be attributed to the use of e-mail but reflects general cultural changes in the organization.

To probe the effects of e-mail on hierarchical relation I also looked at informing superiors. Respondents were asked whether their superiors are better informed about their work because of the communication through e-mail. Most respondents indicated that their superiors are better informed because they receive CC's of e-mail communication. Some stressed that superiors loose their central position and cannot keep track of all the communication that goes on. The results are shown in table 3.

	Superiors better informed?
Royal Navy (N = 9)	.000
Local Government (N = 13)	.615
National Bank (N = 8)	.600
Total (N = 30)	.433

Table 3. Impact of e-mail on informing superiors<sup>3</sup>

The difference between the Royal Navy and the other two organizations is interesting. More respondents in this organizations than in the other organizations emphasized that informing superiors depends on the attitude of civil servants and not on the medium used. I'll come back to this difference in the discussion of table 4.

Thirdly, I looked at the autonomy of civil servants. I asked civil servants whether e-mail enhanced their autonomy in the execution of tasks, in the management of information and communication and in decision-making. The results are shown in table 4.

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<sup>3</sup> To calculate scores the number of positive answers minus the negative answers were divided by the number of respondents.

	Autonomy in tasks	Autonomy in information and communication management	Autonomy in decision-making
Royal Navy (N = 9)	.000	.444	.000
Local Government (N = 13)	.385	.308	.154
National Bank (N = 8)	.375	.375	.125
Total (N = 30)	.333	.433	.100

Table 4. Impact of e-mail on autonomy<sup>4</sup>

Again, respondents at the Royal Navy perceive less changes in autonomy than the respondents in the other organizations. I can not provide a sound explanation for this difference. One could argue that the Royal Navy has a stronger hierarchical structure which is challenged less by e-mail than the other organizations.

When asked whether e-mail influences their autonomy, most civil servants stressed that e-mail does not change their autonomy in the execution of tasks or in decision-making. 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.

#### 4.2. Formalization of communication

In my evaluation of the effects of e-mail on the degree of formalization in government bureaucracies, I first looked at the use of e-mail for private, not task-related communication. Only at the Royal Navy I got an estimate of the number of task related and non-task related messages (table 5).

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<sup>4</sup> To calculate scores the number of positive answers minus the negative answers were divided by the number of respondents.

	Total	Internal communication	External communication
Task related (number of messages)	18 (5 – 33)	15 (5 – 30)	3 (0 – 9)
Private (number of messages)	1,3 (0 – 5)	0,7 (0 – 1,5)	0,5 (0 – 2,6)
Private (percentage of all messages)	7	5	17

Tabel 5. Private and task related communication at the Royal Navy (N=7)

These findings were qualitatively confirmed in the other case studies. Most respondents indicated that they make limited use of e-mail for private communication. An analysis of messages at the Local Government also showed that e-mail is not used much for private communication. Furthermore, the research at all three organizations indicated that there is generally a clear distinction between task-related and private communication. The line between task-related and private communication becomes blurred only in a few exceptional situations. This is not general practice.

Secondly, I looked at the perception of contact within the organization. I asked the respondents whether they thought these contacts became more or less formalized. For the Royal Navy and the National Bank, there are no exact numbers available concerning this question. An overview of answers:

- A majority of the respondents of the Royal Navy indicated that they thought contacts had become more formalized. They indicated that contact through e-mail are more formal than face-to-face contacts. Communication is limited to task-related aspects and civil servants are well aware that all communication is recorded.
- Also at the Local Government, a majority of the respondents indicated that contacts became more formalized because of e-mail. They mentioned the same changes as the respondents at the Royal Navy and added that e-mail messages are easily forwarded and therefore one needs to be careful with what one writes.
- At the National Bank opinions of respondents varied but a majority was of the opinion that contact became more informal. The changes they highlighted, however, seem more directly related to the style of communication than to the degree of formalization of contact.

Thirdly, I looked at the style of communication. All respondents at the three organizations indicated that the style of communication is more informal. They indicated that the use of language in e-mail messages is closer to speech, messages start informally, may be sloppier and also provide less context than written documents. Several respondents, however, stressed that this does not mean that in e-mail communication ‘anything goes’. They indicated that they value correct use of language and check their messages for spelling errors.

#### 4.3. Effectiveness and efficiency of government bureaucracies

The respondents in all three government organizations 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: a few 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. Some respondents indicated that the quality of interpersonal contact can deteriorate when interaction takes place through computer-mediated communication. The results of the research are shown in table 6.

	Speed of work	Quality of work	Quality of information	Efficiency of communication	Task efficiency
Royal Navy (N = 9)	1.000	.778	.889	1.000	.889
Local Government (N = 13)	.923	.615	.692	.846	.923
National Bank (N = 8)	.875	.500	.375	1.000	1.000
Total (N = 30)	.933	.633	.667	.933	.933

Table 6. Impact of e-mail on the effectiveness and efficiency of government bureaucracies<sup>5</sup>

The table shows that the gains of e-mail in speed and efficiency are considerably higher than the gains in quality (which I consider to be a proxy for effectiveness). Speed of work,

efficiency of communication and task efficiency all get a score of above 0.9 which means that nearly all respondents perceive a positive effect of e-mail. Quality of work gets the lowest score at 0.633 and the quality of information is slightly higher at 0.667. This means that most respondents still think there is a positive effect of e-mail on the quality of work and information but there is a considerable minority who disagrees.

#### 4.4. Reliability of internal and external communication and organizational memory

The respondents at all three organizations were also very positive about the effects of e-mail on the reliability of communication. The dominant effect here is that communication is recorded and, therefore, everybody knows exactly what has been ‘said’ and agreed upon.<sup>6</sup> Compared to telephone or face-to-face conversations, there are fewer misunderstandings. Additionally, an instant memory is created of (internal and external) communication which can prevent misunderstandings over time. The results are shown in table 7.

	Reliability of internal communication	Reliability of external communication
Royal Navy (N = 9) <sup>7</sup>	1.000	.600
Local Government (N = 13)	.923	.923
National Bank (N = 8)	.500	.375
Total (N = 30)	.833	.600

Table 7. Impact of e-mail on the reliability of communication in government bureaucracies<sup>8</sup>

The effect of e-mail on the reliability of external communication is not as strong as the effect on internal communication. The explanation for this difference is that paper documents are

<sup>5</sup> To calculate scores the number of positive answers minus the negative answers were divided by the number of respondents.

<sup>6</sup> The fact that messages are recorded is sometimes 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.

<sup>7</sup> Only the five respondents with external e-mail answered the question about external e-mail.

<sup>8</sup> To calculate scores the number of positive answers minus the negative answers were divided by the number of respondents.

still quite important in external communication. If communication is considered to be important, paper letters are used for external communication in stead of e-mail. In internal communication paper documents are less common since memo's have largely been replaced by e-mail. This accounts for the stronger effect of e-mail on the reliability of internal communication.

Additionally, respondents were asked if the use of e-mail causes problems for organizational memory. In none of the organizations there were problems. This does not mean that all e-mail messages can always be retrieved. It does mean that relevant messages can always be retrieved. None of the respondents could recall a situation in which an important e-mail message could not be retrieved. Some respondents explicitly stated that paper documents are still used when the message should be retained for the organizational memory.

4.5. Work satisfaction

A large majority of the respondents in all three organizations indicated that the use of e-mail had a positive effect on their work satisfaction. Although some disadvantages were mentioned, most respondents concluded that overall e-mail has a positive effect on their work satisfaction (see table 8).

	Work satisfaction
Royal Navy (N = 9)	.778
Local Government (N = 13)	.846
National Bank (N = 8)	1.000
Total (N = 30)	.867

Table 8. Impact of e-mail on work satisfaction<sup>9</sup>

The respondents indicated that e-mail enhances their work satisfaction because it enables them to do their work well. They also indicate that they value the cordial style of

<sup>9</sup> To calculate scores the number of positive answers minus the negative answers were divided by the number of respondents.

communication in e-mail. Another positive aspect was because of e-mail employees are not interrupted in their work as they are with phone calls. Also the possibility to work in different places – at home – was valued positively. A small minority of respondents indicated that e-mail can also impoverish social contact and some highlighted the information overload' and increased pressure. Overall, however, the advantages of e-mail were more important than the disadvantages.

## **5. ANALYSIS**

The results of the empirical research have been presented. I will now analyze these results and look back at the two propositions concerning the impact of e-mail on government bureaucracies:

1. The outcome of changes triggered by the use of e-mail in government bureaucracies is more individual control and less central steering.

The empirical research provides support for this proposition. The research indicated that in all three organizations e-mail enables communication that deviates from hierarchical lines. The respondents also indicated that their autonomy is enhanced. They highlighted that there are few changes in the autonomy in decision-making but stressed that the autonomy in information and communication management and in task execution is enhanced. This indicates that the outcome of changes triggered by the use of e-mail in government bureaucracies is more individual control and less central steering. It was interesting to notice that these changes do not mean that managers loose grip: most respondents indicated that through e-mail managers are better informed about what they are doing. CC's are important. This means that there is less central steering but more central monitoring. I'll come back to this conclusion later.

2. The distinction between task related and private communication of civil servants will become fuzzy because of processes of change triggered by the use of e-mail.

There was little support for this proposition. E-mail is used for private communication but to a limited extent. There are no indications that the distinction between task related and private communication becomes fuzzy. The findings did show that e-mail enhances an informal style

of communication. Wordings in e-mail messages are more informal than wordings in memoranda. The research did not lead to clear conclusions concerning the impact of e-mail on the degree of formalization of contacts. In two organizations respondents highlighted that contacts become more formalized, in one organization respondents indicated that contact become more informal. These findings seem to point at a contradictory effect: in style of communication and accessibility of functionaries within the bureaucracy contact become more informal. At the same time contact become more formalized because communication is recorded and kept in an electronic memory. This indicates that e-mail does strengthen the principle of formalization that was formulated for bureaucracies.

These findings describe the changes in the structure of government bureaucracies. I also investigated what the effects of these changes are for the (perceived) effectiveness, efficiency and reliability of government bureaucracies. The findings indicated that the changes in the structure of bureaucratic organizations are paralleled by an increase in speed and efficiency. Nearly all respondents indicated that e-mail enhances the efficiency of their work. Interestingly, there was less support for a positive effect on the quality of work although majority of the respondents still perceived a positive effect of e-mail on the quality of their work.

The research provided no evidence for a negative effect of the changes in government bureaucracies through the use of e-mail on the reliability of these organizations. Generally, respondents indicated that e-mail has a positive effect on the reliability of internal and external communication and saw no problem for organization memory. The important factor here is that the use of e-mail enhances record making in organizations: more communication is recorded and this has a positive effect on the reliability of government bureaucracies since misunderstandings can be prevented.

The findings about the effects of e-mail on work satisfaction were very clear: e-mail makes work more enjoyable. Important are the style of communication and, even more, the autonomy it gives to employees. They can decide when and where they want to do their work and therefore they feel that they have more grip on what they do.

## **6. CONCLUSIONS**

On the basis of these findings we can now answer the research question: what are the effects of the use of e-mail on the structure of government organizations and how do these (structural) changes affect the efficiency, effectiveness and reliability of government? E-mail

definitely has a different effect on the structure of government bureaucracies than the large scale information systems that have been studied by Zuurmond (1994) en Zouridis (2000). E-mail does not enhance bureaucracy and does not lead to an 'infocracy'. 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. This indicates that the changes in organizational structure do not need to have a negative effect on democratic and bureaucratic control but changes its forms. Democratic and bureaucratic control need to rely more on monitoring and less on ex-ante steering.

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: asynchronicity, 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. The resulting organizational structure consists of 'weak ties' (Granovetter, 1973) and this type of organization enhances work satisfaction.

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.

## References

Behn, R.D. (2001). *Rethinking Democratic Accountability*. Washington DC: Brookings Institution Press.

Bovens, M.A.P. (1998). *The Quest for Responsibility: Accountability and Citizenship in Complex Organisations*, Cambridge: Cambridge University Press.

Frissen V. (2003). De digitalisering van de werkvloer: de integratie van ICT in dagelijkse werkprocessen. In: Ester, P. et al. (red.), *ICT, arbeid en organisatie*. Den Haag: Reed Business Information.

Giddens, A. (1984). *The constitution of society: outline of the theory of structure*. Berkeley CA: University of California Press.

Granovetter, M. (1973). The Strength of Weak Ties, *American Journal of Sociology*, 78, 1360-1380.

Hekscher, C. & A. Donnellon (eds.) (1994). *The post-bureaucratic organization. New perspectives on organizational change*, Thousand Oaks: Sage Publications.

Hooff, B.J. van den (1997). *Incorporating electronic mail : adoption, use and effects of electronic mail in organizations*, Amsterdam: Cramwinckel.

Orlikowski, W.J. (1992). The Duality of Technology: Rethinking the Concept of Technology in Organizations, *Organization Science*, 3, 398 – 427.

Perrow, C. 1986, *Complex Organizations: A Critical Essay*, New York.

Scharpf, F.W. (1994). Games real actors could play: positive and negative coordination in embedded negotiations, *Journal of Theoretical Politics*, 6, 27- 53

Sproull, L. & S. Kiesler, 1991, *Connections. New ways of working in the networked organization*, Cambridge (Massachusetts): The MIT Press.

Weber, M., (1968). *Economy and society : an outline of interpretive sociology*, New York: Bedminister Press.

Williams, R. and D. Edge, 1996, The social shaping of technology, *Research Policy*, 25, 865 – 899.

Zouridis, S. (2000). *Digitale disciplineren, Over ICT, organisatie, wetgeving en het automatiseren van beschikkingen*, Delft: Eburon.

Zuurmond, A. (1994). *De Infocratie, Een theoretische en empirische heroriëntatie op Weber's ideaaltype in het informatietijdperk*, Delft: Eburon.

## Appendix A: Questionnaire (in Dutch)

### E-mail praktijk

1. Hoe vaak per dag leest u uw e-mail? Hoeveel tijd besteedt u per dag aan het schrijven en lezen van e-mail? Kunt u vanaf thuis uw e-mail adres van het werk gebruiken? Heeft u ook een persoonlijk e-mail adres (bijvoorbeeld hotmail)?
2. Waarvoor gebruikt u e-mail? Welke onderwerpen behandelt u in een e-mail-bericht? Welke niet? Wanneer besluit u in plaats van e-mail de telefoon te gebruiken? Wanneer besluit u in plaats van e-mail een memo of brief te versturen? Maakt u in contacten afwisselend gebruik van verschillende media?
3. Heeft u een training gehad in het gebruik van e-mail?
4. Gebruikt u e-mail zowel voor persoonlijke als voor zakelijke contacten? Gebruikt u voor beide uw zakelijke e-mail-adres? Zijn berichten vaak vervlochten: dat wil zeggen dat berichten zowel persoonlijke als zakelijke informatie bevatten. In hoeverre verschilt dat van het gebruik van telefoon en papier?
5. Heeft gebruik van e-mail geleid tot informelere communicatie binnen de organisatie? Kunt u hier voorbeelden van geven?
6. Van wie ontvangt u vooral e-mail? Krijgt u veel spam? En veel berichten van mailservers?
7. Gebruikt u bij e-mail-berichten een andere stijl dan bij brieven of memo's? Waarin verschilt de stijl? Past u een verschillende stijl toe bij verschillende soorten berichten? Kunt u hiervan voorbeelden geven?
8. Bewaart u e-mail-berichten? Bewaart u de berichten digitaal of op papier? Welke berichten verwijdert u? Welke argumenten spelen hierbij een rol? In hoeverre verschilt dit van de manier waarop u papieren informatie bewaart?
9. Heeft u wel eens problemen bij het terugzoeken van oude e-mail-berichten? Eigen e-mail-berichten? Of berichten van anderen?

### Effecten

10. Maakt gebruik van e-mail uw werk effectiever (snelheid van werken, kwaliteit van het werk, kwaliteit van de informatie, efficiency van de communicatie, efficiency van de taak)? Waarom?
11. Heeft gebruik van e-mail geleid tot andere communicatiepatronen (meer externe contacten buiten de directie, nieuwe contacten, flexibeler communicatie, passeren van hiërarchische lijnen)?
12. Wat betekent e-mail voor de betrouwbaarheid van uw communicatie? Waarom?
  - a. Je kunt vertrouwen op afspraken binnen de organisatie.
  - b. Externe contacten kunnen vertrouwen op afspraken met de organisatie.
  - c. De organisatie kan relevante afspraken altijd weer boven tafel halen.
13. Hoe is het beleid van uw organisatie inzake het verzenden van e-mail en bewaren van e-mail berichten? [Deze vraag is bedoeld als check om te achterhalen óf de medewerker van het beleid op de hoogte is.]
14. Is uw autonomie – de vrijheid die u heeft om dingen te doen zoals u wilt – toegenomen in termen van (a) omgang met informatie, (b) uitvoering van werkzaamheden en (c) besluitvorming?
15. Draagt e-mail bij aan het plezier in uw werk? Maakt e-mail voor u het werk prettiger?
16. Maakt e-mail het afleggen van interne en externe verantwoording (parlement, Rekenkamer, Ombudsman, rechters) makkelijker of moeilijker? Kunt u hier voorbeelden van geven?
17. Is met gebruik van e-mail uw baas beter of slechter op de hoogte van uw werkzaamheden?

### Contingentie

18. Zijn uw taken routine of ad-hoc? Gebruikt u e-mail voor routine of ad-hoc taken? Houdt u zich bezig met beleidsontwikkeling of beleidsuitvoering?
19. Zou u de cultuur binnen uw organisatie omschrijven als formeel of informeel? Waarom?