

Electronic Records Management and Public Accountability: Beyond an Instrumental Approach

Albert Meijer

Erasmus University, Rotterdam, The Netherlands

In evaluating government actions, accountability fora depend on public records. Information and communication technologies (ICTs) can—depending on how they are used—positively or negatively affect the availability of records for accountability. Dominant trends in the effect of ICTs on records management are (1) the mixing of “on the record” and “off the record” communication, (2) the shift of control over information to the individual, (3) the focus on present rather than on historic information, (4) the interlinking of information managed by several organizations, and (5) the integration of procedures into computer systems. These trends indicate that the introduction of ICTs challenges the existing balance between organizational values (e.g., formality and informality, central control and individual autonomy). Electronic records management is therefore about finding an organizational design that balances values to fit the organization’s accountability situation.

The introduction of information and communication technologies (ICTs) has fostered much discussion on the issue of electronic records management. Some authors pointed at technical problems associated with long-term storage of electronic records (see, among others, Rothenberg, 1995; Dollar, 1993). Others highlighted the risks that organizations overlook electronic records in setting up a management system and warned that electronic records may be lost because public organizations do not manage them in the same way as paper records (Netherlands Court of Audit, 1998).¹ The extent of these problems and the consequences of poor electronic records management are not well understood. Since an important function of records management is to create and preserve the records through which government organizations can be

held accountable, the loss of electronic records can seriously hamper public accountability.²

In this article the possible implications of the use of ICTs are explored based on a consultation of an expert panel. Using the panel’s opinions, risks and opportunities for the availability of records for accountability are identified. These risks and opportunities may be grouped into five dominant trends in the implementation and use of ICTs. A further analysis indicates that these trends can be regarded as manifestations of organizational value conflicts. I conclude that these value conflicts form the “building blocks” for adequate and specific organizational design.

PUBLIC ACCOUNTABILITY AND RECORDS MANAGEMENT

In spite of its significance in democratic societies, public accountability is not a well-defined term (Day & Klein, 1987, p. 26).³ There is however, wide agreement that accountability involves a relationship between two parties be it individuals or organizations. A general definition is provided by Romzek (1998, p. 195): “Accountability is a relationship in which an individual or agency is held to answer for performance that involves some delegation of authority to act.” This implies that accountability always involves an actor with a duty to render an account and another actor with the power to judge or impose sanctions (White & Hollingworth, 1999).⁴ All accountability relations are maintained, reinforced, or challenged in communication processes. Performance audits, policy evaluations, legal procedures, and congressional investigations are examples of communication processes used in accountability, which may be triggered by incidents or take place periodically to evaluate the performance of individuals or agencies according to fixed criteria such as laws, quality standards, and financial bookkeeping standards.

Bovens (1998) distinguishes three phases in accountability processes. In the first phase, information is gathered

Received 8 May 1999; accepted 1 October 2000.

Address correspondence to Albert Meijer, Center for Public Management, Faculty of Social Sciences, Erasmus University Rotterdam, Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands. E-mail: meijer@fsw.eur.nl

from various sources to reconstruct what has happened. In the second phase, the actions are discussed and judged according to fixed criteria. In the third phase, sanctions can be applied. The scientific literature on public administration has concentrated on the discussion and sanction phases of accountability processes (see Romzek & Dubnick, 1987; Bovens, 1998; Day & Klein, 1987), but the information phase seems to have drawn less attention. However, since this phase is influenced most by the digitization of records management, this article focuses on the information phase and how it relates to records management.

As indicated, in the information phase a forum reconstructs the actions of an individual or agency in order to form an opinion.⁵ For example, an executive will need to reconstruct what his or her subordinates have done before he or she is able to evaluate actions. A judge in court will first thoroughly study a case before coming to a sentence. Similarly, fact finding is an important element in every parliamentary enquiry. Records kept by individuals and agencies are an important source of information in all of these examples (McKemmish & Upward, 1993). Public organizations design internal procedures to safeguard the registration and preservation of this information. In democratic societies these have also become institutionalized in laws and legislation imposed on governmental organizations. Apart from their role in external accountability, records management is also in the interest of individuals and agencies themselves, as they need records to legitimize their actions and to maintain the trust of superiors or the citizens they serve. It may also be in the interest of individuals or agencies to expose themselves to external evaluation to learn from others. In conflicts, records may be needed to justify individual actions.

A systematic records management policy is required to ensure that the appropriate records will be available for accountability processes. This involves developing and maintaining policies, procedures, and methodologies, appointing experts, and creating and managing specialized departments. The existing forms of records management have generally been structured to deal with records in a paper form, but increasingly, records are dealt with in an electronic form, which may sometimes be printed on paper. The use of ICTs may affect the procedures for creating, preserving, and disposing of documents, may affect the accessibility of electronic information, and may result in new ways in which organizations communicate and execute business processes. In most organizations today records management has not been adjusted yet to these technical and organizational changes (Bikson & Frieling, 1993; Netherlands Court of Audit, 1998). The fact that many records are not converted to paper and are handled exclusively in an electronic form may have an important

impact on the content and quality of records kept for purposes of accountability.⁶

RECORDS MANAGEMENT IN THE INFORMATION AGE

The issues related to electronic records management have been widely acknowledged in the international archival and records management communities.⁷ The International Committee on Archives (1998) published an excellent overview. These discussions involved issues such as the definition of information versus records, the design of record-keeping systems, the role of records managers in designing these systems, appraisal of electronic records, description of archives, access to electronic records, and long-term preservation. Interesting ideas about electronic records management were developed at the University of Pittsburgh (Bearman, 1994; www.lis.pitt.edu/~nhprc/) and at the University of British Columbia (Duranti, 1998; www.slais.ubc.ca/users/duranti/intro.htm). These assume that the existing principles guiding records management need to be translated to the information age. The University of Pittsburgh proposes that the central principle for electronic records management is the idea that records are evidence of business transactions or business-acceptable communications. This research project was aimed at developing a set of record-keeping functional requirements to be used in the design and implementation of electronic information systems. The researchers of the University of British Columbia based their discussions on concepts derived from diplomacy science, in which reliability and authenticity are the central concepts.⁸ These two approaches are followed at the New York State Adirondack Park Agency and at Indiana University (Cox, 2000).⁹

The nature of the problems specifically associated with electronic records management has rarely been investigated in detail. Problems are often summarized briefly and possible solutions are explored, with the underlying assumption being that the relation between ICTs and records management is a technical and management problem. ICTs are regarded as tools that just have to be shaped properly, ignoring that shaping a tool in itself can be highly controversial.

In contrast, the controversial character of ICTs in general has extensively been investigated and different approaches to shaping ICTs have been proposed (for an overview see Kling, 1996a, and Snellen & van de Donk, 1998). Researchers have emphasized the divisions of power (e.g., Kraemer et al., 1989), and others the perceptions of ICTs (e.g., Zuboff, 1988) or underlying values (Kling, 1987). These three factors are, however, related, and only seem to differ in their starting point for analysis. A value approach is useful when ICTs are not discussed in discrete implementations but at a general level.

Kling (1987, 1996b) highlights the social controversies triggered by computerization and shows how value conflicts are at the heart of the discussions about ICTs. This is illustrated using cars as a metaphor (Kling, 1996c). Cars are very useful for transporting individuals, but also cause serious environmental problems. Cars thus trigger a conflict between the values of individual mobility and a clean environment, economic growth, and esthetics of the countryside. To deal with value conflicts, social choices will have to be made. Will everybody be allowed to drive a car? Under what conditions? Should cars be made less polluting but more expensive by incorporating extra components, such as catalytic converters? Kling (1996a) shows that computerization similarly confronts societies with questions concerning the transformation of work, social relationships, privacy and social control, and system safety and social vulnerability. Like societies, organizations may be confronted with value conflicts when using ICTs (Kling, 1996a, pp. 278–423). Examples are conflicts concerning gender equity, control, and privacy.

The implications of the use of ICTs for records management and public accountability have thus been acknowledged but are mainly dealt with from an instrumental perspective. In this article these implications are described and analyzed from a value perspective. The present objective in exploring the implications of ICTs for public accountability is to highlight the value conflicts involved in electronic records management.

ELECTRONIC RECORDS MANAGEMENT AND ACCOUNTABILITY: RISKS AND OPPORTUNITIES

Highlighting value conflicts in electronic records management first demands a systematic overview of the possible implications of ICTs for accountability. This overview was obtained by consulting an international expert panel on electronic records management. These experts were questioned in consecutive rounds on the risks and opportunities elicited by the use of ICTs. Qualitative analysis of the answers resulted in a rich overview of possible risks and opportunities of the use of ICTs for the availability of information for accountability. A description of the methodology of the survey can be found in the appendix.¹⁰

The results of the consultation of experts confirmed that the type of software application influences the risks and opportunities for managing records for accountability. The software applications presented in the survey were therefore divided into five groups of technologies: e-mail systems, database management systems, individual software for creation of office documents, web technology systems, and “smart” systems. The most important results for these five groups of technologies are presented next.

E-Mail Systems

The first group of technologies presented in the survey was e-mail. An e-mail system can be defined as “a medium which enables users to asynchronously exchange messages between addressable electronic mailboxes, using computers linked by telecommunications” (van den Hooff, 1997, p. 8). E-mail systems are increasingly used by government organizations in Western societies in their internal and external communication. E-mail is widely regarded as a means for supporting internal coordination and improving communication with citizens. Sproull and Kiesler (1991) demonstrated that these systems drastically change communication: They lead to new connections between people within organizations, and between different organizations.¹¹

In the present survey, respondents discussed the impact of the use of e-mail on the capture of information. Some respondents indicated that one of the uses of e-mail systems is to replace “paper communication” and concerns messages that would have been captured and saved if they had been on paper. Consequently, not saving e-mail messages will decrease the availability of information for accountability. Other respondents argued that e-mail messages partly replace telephone conversations, which organizations usually do not retain. If these messages are now captured and saved, more information can be available for accountability. Some respondents, however, questioned the usefulness of this information. As one respondent argued, “Volume of information is the least in importance. A few good records from the right people on a particular transaction are vastly more important than many poor records from the wrong people.”

Another issue respondents raised was control over electronic communication. Some argued that control over e-mail tends to be highly individual and often lacking in organizational control. Lack of central control is an important problem for the management, retrieval, and use of messages; e-mail messages may not be registered or saved. As one respondent put it, “Typically individuals control the continued existence of e-mail. As such it is likely not to be present and not to be trustworthy.”

Database Management Systems

Database management systems were the second group of technologies researched. “A database management system (DBMS) is a software system that manages the creation and use of databases” (Davis & Olson, 1984, p. 104). These systems are widely used in public administration (Snellen & van de Donk, 1998), either to manage transactional data or as a source of information to processes [such as the use of geographical database management systems for spatial planning]. Since data can be selected, aggregated, and

analyzed, they are also extremely important as a source of management information.

Some respondents argued in their answers to the questionnaire that database management systems may not store the preceding data elements when they are updated. When, for example, a client moves to another address, the new address is entered in the database. As one respondent argued, "Databases seldom have historical components." Because of the dynamic nature of databases, organizations run the risk that information for accountability is not saved or cannot be trusted.

Some respondents highlighted the risks concerning the origins of a dataset. If these are not known, some respondents argued, it may be difficult to interpret or trust those data. One respondent mentioned this problem specifically for geographical information systems: "A G.I.S. is only a collection of geographical information. It does not show how, when, and in what functional context a specific information element was generated. The trustworthiness of the information is closely related to interpretation: If you don't know anything about the creation context of the information, you can hardly trust it."

Individual Software for Creation of Office Documents

The third group of technologies studied was individual software for the creation of office documents.¹² Examples of this type of software are text editors, spreadsheet applications, and software for creating slides. These applications are widely available and are probably the applications used most by individual civil servants in public administration in their daily work. Nowadays, almost every document is created with a text editor.¹³

In their answers, some respondents indicated that the introduction of office software applications confronts organizations with a lack of control over the creation and capturing of data. It may be difficult, for example, to find out which version of a document is the final version. As one respondent explained:

These are facilitative software applications distributed out to people to enable them to create their own documents with no infrastructure in place to manage the electronic records management requirements and very little understanding from the system vendors that this is needed. This may be historically interpreted as an extension of the unexpected growth of the PC market expanding from its anticipated home user who would have little requirement for formal systems into the corporate world.

The frequent release of new versions of office software applications may also present a serious problem. Some respondents indicated that the lack of compatibility between software versions could hamper long-term access to the data. One respondent said: "Information being accessible

and interpretable are at risk when software is upgraded or changed."

Web Technology Systems

Web technology systems were the fourth group studied. "The World Wide Web is a system with universally accepted standards for storing, retrieving, formatting and displaying information in a networked environment" (Laudon & Laudon, 2000, p. 17). Government organizations use web technology for promotional purposes but also increasingly for interactions and transactions with clients. The information systems that organizations use can be called web technology systems.¹⁴

Some respondents indicated that organizations risk loss of information when web sites are updated and the "old" information is not preserved. One respondent said, "Web-sites are constantly updated and normally there is no history file that provides for information about what was on the web site at what point of time."

Another point—specifically relevant to web technology systems—concerns the "hyperlinks." Some respondents argued that links may not function anymore because the location of the information or the information itself changed. It may then be difficult if not impossible to access the information indicated by the link.

A third group of remarks by respondents involved the network to which web technology systems are connected. Without adequate measures, the data in an open network technology system can be changed by hackers from outside. On the other hand, connection to an open network also offers organizations a strong opportunity: They can offer better access to their data.

"Smart Systems"

The last group of technologies examined was "smart systems," [expert systems and simulation software expert systems]. Expert systems can be defined as "information systems that solve problems by capturing knowledge for a very specific and limited domain of human expertise" (Laudon & Laudon, 2000, p. 446); Simulation software is used to simulate developments or processes. Examples are flight simulators or software to model economic growth in society. The essential feature of smart systems is that they contain codified knowledge.

Some respondents argued that when capturing information for accountability, organizations have to capture the "logic" on which consultations, decisions, or simulations are based. During a process of accountability, information about the decision or advice cannot be interpreted or trusted without this "logic." One respondent explained:

Expert systems produce decisions based on a given set of rules and on an input of specific parameters. To make a

decision accountable, it is a minimum requirement to document the functionalities of the expert system and to document the built-in rules that were used to produce each single decision in a human readable form. In simple expert systems it may be sufficient to generally document all in built rules. If it is not possible to reconstruct the way the system produced a decision at a given time you can hardly interpret and trust the information.

Furthermore, some respondents indicated that organizations that use smart software risk that data for accountability (i.e., input, output, and the program itself) become inaccessible in the long term due to software obsolescence and difficulties of system maintenance and migration.

ELECTRONIC RECORDS MANAGEMENT AND ACCOUNTABILITY: TRENDS AND VALUE CONFLICTS

The answers of the experts give a broad view of the risks and opportunities of the five types of ICTs for records management and consequently for accountability. Assuming that risks and opportunities are connected to the way in which ICTs are implemented, common patterns or "trends" can be distinguished.¹⁵ The interpretation of these trends may differ: Often a trend was regarded as an opportunity by some respondents and as a risk by others. The risks and opportunities previously described can be grouped into five dominant trends, as described next. I will show that the five dominant trends identified result from five organizational value conflicts. These are value conflicts well described in government organizations, but the implementation of ICTs challenges the existing balance between these values.

"On the Record" and "Off the Record" Communications Tend to Become Mixed: A Conflict Between Formality and Informality

The first trend in the use of ICTs that appeared from the respondents' answers to the questionnaire is the mixing of "on the record" and "off the record" communication. Organizations keep official records; nonofficial communication is not retained. Accountability is based on the formal representation of what has happened. A judge generally uses official records to evaluate government actions. "Off the record" communication is important to support intra- or interorganizational cooperation. Zuboff (1988), for example, refers to studies that indicate how important networks can be to gather information and stimulate new ideas. Present records management practices are based on the assumption that "on the record" and "off the record" communication can be distinguished.

Some of the risks and opportunities the experts mentioned for e-mail systems resulted from the trend that "on the record" and "off the record" communication tend to

become mixed.¹⁶ Letters are generally regarded as "on the record" and will be saved, while telephone conversations are assumed to be "off the record." Since e-mail systems are used to substitute for both communication media (this article; see also van den Hooff, 1997), the distinction between "on the record" and "off the record" communication is not obvious. This creates risks and opportunities. Saving all e-mail messages will result in more information available for accountability. Not only are the equivalents of written documents maintained in files, but also records of conversations previously conducted by telephone. On the other hand, organizations will lose information compared to the "paper situation" if they choose not to save any e-mail messages.

The basis value conflict that is triggered by the implementation of ICTs is that between formality and informality. Informal communication may be hampered if all e-mail messages are labeled "formal" and saved. If the conversations in the coffee corner are recorded, they lose their value for informal exchange of ideas. On the other hand, crucial information for accountability may be lost if e-mail messages are labeled "informal" and no messages are saved. The conflict between formality and informality is not new to organizations. It was first observed in the famous Hawthorne experiments (Mayo, 1933). The use of ICTs, however, reinvigorates this conflict.

Control Over Information and Communication Tends to be Individualized: A Conflict Between Individual Autonomy and Organizational Control

The second trend in the implementation and use of ICTs that can be distilled from the results of the consultation is that control over information and communication tends to become individualized by the use of ICTs. The use of certain ICTs shifts the control over the creation and management of information from centralized to individual control.¹⁷ Some of the risks and opportunities mentioned for e-mail systems can be regarded as implications of this trend. Organizations have formal procedures to register paper documents before they are forwarded. Information about these letters is maintained and outgoing communication can be controlled. For e-mail messages this is generally not the case: They are sent directly from an individual civil servant to another individual. Outgoing e-mail messages are usually not registered. As Bekkers put it, "E-mail is often seen as a 'slippery' way of communication which enables civil servants to place themselves outside the control of the organization" (1998, p. 74).

Some of the risks and opportunities identified by the respondents about individual software also shows this control shift to individuals. The use of word-processing software has dramatically decreased the need for secretaries to type paper letters, and consequently the process of

document creation may escape from official centralized organizational procedures.

For accountability this trend may result in loss of information, as documents may not be preserved by the individual. Compared to organizations, individuals focus on their present work and tend to be less aware of long-term interests. On the other hand, individuals perhaps know better what the value of certain documents is and how they relate to other documents, which may lead to better records management practices and more information for accountability.

Underlying this trend in the loss of centralized control, there seems to be a conflict between values concerning individual autonomy and organizational control. One value pattern is that the individual works according to procedures and policies set by the organization. The organization is accountable for the actions of the individual and will assume responsibility for records management to warrant organizational accountability through central control. Another value pattern is that an organization consists of individuals who are in the end responsible for what they do and should therefore keep records of their actions. The use of ICTs emphasizes individual autonomy. In many organizations, for example, e-mail messages are managed by individuals. They decide which messages have to be saved or deleted and thus control these records.

Just like the previous conflicts, the conflict between individual autonomy and organizational control is not new to organizations but has been discussed extensively in the scientific literature. Mintzberg (1983), for example, elaborates upon the advantages and disadvantages of configurations that put an emphasis on central control (machine bureaucracies) and those that put an emphasis on individual autonomy (professional bureaucracies). Again, the use of ICTs seems to reinvigorate this existing conflict and demands that it be readdressed.

Focus Tends to be on Present Information Rather Than on Historic Information: A Conflict Between Adaptability and Continuity

An increased focus on present information at the cost of historic information was identified as a third trend in the implementation and use of ICTs. Up-to-date information is important to organizations as a basis for their daily work processes. Outdated information could, for example, cause mail to be sent to the wrong address. Up-to-date information becomes ever more important to adapt to a continuously changing environment in which government organizations find themselves. The use of ICTs reinforces this emphasis on up-to-date information as it offers the possibility to update information continuously. This is particularly true for databases that offer users direct access to the most up-to-date information and also for web tech-

nology systems. Web sites must be up to date, and “old information” is not considered relevant.

For accountability this trend toward “new information” is highly relevant because it may not be possible to reconstruct certain situations without “old information.” Historic information is important for bureaucratic, professional, legal, and political accountability to reconstruct government actions. Updating information may mean that the old information is deleted. Organizations often prefer to spend their budget on keeping their information up to date instead of preserving historic information.

The values conflicting in updating information and retaining historic information are adaptability and continuity. The need for adaptability has been emphasized by authors on organizations learning (e.g., Senge, 1990). These authors stress that organizations need to adapt continuously to new circumstances. Classical thinkers on bureaucracy like Weber (1964), on the other hand, emphasize the need for continuity in government organizations. Records management for accountability plays an important role in Weber’s ideas. Although continuity and adaptability do not have to be conflicting, a focus on either one of these values can lead to insufficient attention to the other. Pollitt (2000) argues that an emphasis on organizational learning may even lead to “institutional amnesia.” Again, this is an existing organizational value conflict that is brought to the fore by the implementation of ICTs.

Information Tends to be Connected to Other Information Managed by Other People and Organizations: A Conflict Between Cooperation and Organizational Autonomy

The fourth trend in the implementation and use of ICTs discussed here is the increased interlinking of information in and outside the organization. Connections between organizations have always existed and are important to support cooperation between organizations. However, the use of ICTs has dramatically increased the importance of these connections. Organizations share information through network technology and the exchange of data sets. An example is the connection of web sites by hyperlinks. Another example is the exchange of geographical data sets between organizations, which may even lead to the setup of interorganizational information systems (Homburg, 1999).

Some argue that the boundaries between organizations are becoming blurred (Bekkers, 1998; Bekkers & Zouridis, 1999).¹⁸ The blurring of boundaries between organizations also impacts on records management. It may become difficult or even impossible for organizations to keep records for accountability because they cannot control these records anymore. Cooperation may thus lead to incomplete records management and consequently to problems for accountability.

This trend implies that it may become unclear to which organization information belongs. Does one only need to preserve the pages that are on the organization's web sites, or also the hyperlinks to other web sites? Is it clear what the origin of a data set is? These questions can have serious implications for accountability. As Bekkers (1998, p. 74) put it:

When informational domains entangle, it is quite difficult to find out where something has gone wrong. And, if information is shared and refined, where lies the right of ownership? Who is responsible for the use of new, virtual databases that are based on the combination and refinement of data which is stored in database management systems in different organizations with different jurisdictions?

Underlying this trend is a conflict of the values of cooperation and autonomy. The complexity of societies seems to demand cooperation between organizations, while accountability demands autonomy. Bekkers argues: "Processes of communication, negotiation, competition and exchange move between two needs: the necessity to cooperate on the one hand and the desire to maintain the organization's autonomy to secure the organizational boundaries on the other hand" (1998, p. 63). ICT again shifts the existing need for cooperation and autonomy.

Rules and Procedures Tend to be Integrated in Computer Systems: A Conflict Between Artificial Authority and Intellectual Autonomy

The final trend I like to point out in the implementation and use of ICTs is the integration of rules and procedures in computer systems. This becomes more difficult when computers are taking over part of the decision-making process. Van den Hoven argues: "As the personal authorities associated with traditional organizations are replaced by artificial and impersonal authorities, epistemic empowerment within the new 'infocracies' may lead to a relativization of our ideal of intellectual autonomy and individual responsibility" (1998, p. 97). If rules and procedures are integrated in information systems, the human being may lose control. As Zuboff writes about computer systems to support production processes, "Operators saw that if they did not make a serious attempt to develop intellectual skill, any possibility of judgment and accountability would be lost to the systems that claimed to supplant human direction" (1988, p. 287).

The rules underlying decision-making processes need to be made explicit in the design of information systems. Some of the risks and opportunities identified by the experts for "smart systems" (expert systems, simulation software, etc.) can be attributed to this trend. For example, in an information system developed for a social security office, the rules to determine eligibility for social benefits will have to be made more explicit (Zuurmond, 1998).

People can interpret rules; computers cannot deal with ambiguities.

The relevance of this trend for accountability is that the output of a system has no meaning without knowledge of the "logic" of the system. Decisions become more transparent when the rules are explicitly written down into the software. However, it may not be easy to read thousands of lines of code in a software program and figure out the "logic." Reading the system design documentation may not be sufficient since programs are often implemented differently from the design. Effectively this means that the rules cannot be traced and the "logic" behind decisions is lost.¹⁹

In this case the values of artificial authority and intellectual autonomy are conflicting.²⁰ Technically, a computer may be preferred above a human being to do a job, but this makes it difficult to assess who is accountable when the job goes wrong. Is it the person who used the computer? The person who wrote the software? Who designed the software? The person who ordered the software? Or the computer itself? From a normative point of view these questions are already difficult to answer. However, one may not even be able to ask these normative questions if the "logic" underlying the computer output cannot be reconstructed. In this, the present study identified a new value conflict between artificial authority and intellectual autonomy that is introduced to organizations by the implementation of ICTs.

ELECTRONIC RECORDS MANAGEMENT AND ACCOUNTABILITY: ORGANIZATIONAL DESIGN

In this article I have shown that the use of ICTs may influence the availability of information for accountability in various ways. Depending on how ICTs are used, they can create risks and opportunities for the capacity of an individual or agency to answer to performance involving the delegation of authority to act. Organizations that use ICTs are therefore confronted with choices concerning the implementation and use of ICTs. Underlying these choices, value conflicts can be identified. Values of informality, individual autonomy, adaptability, cooperation, and artificial authority conflict with values of formality, central control, continuity, organizational autonomy, and intellectual autonomy, respectively. Too much emphasis on any one of these values may present a risks for accountability. Strong central control, for example, may make it impossible for civil servants to write down additional notes that may be important for accountability but cannot be entered into a database consisting of data fields with fixed formats. On the other hand, too little emphasis on central control may create risks. The lack of control over e-mail, for example, may lead to the loss of messages important for accountability. There is not

one simple answer to the question which value should dominate.

Researchers in the field of organizational design have paid considerable attention to organizational value conflicts. The traditional literature on public management focused on the one best way to design a government organization and deal with these value conflicts. More recent literature challenged this idea and urged organizational designers to search for values of parameters that fit specific situations. The findings presented in this article support the second view with respect to electronic records management and accountability. Emphasis on certain values may lead to advantages in some accountability situations and disadvantage or failure to use new opportunities in others. No one best way can be identified, but situation specific designs are required. The value conflicts presented in this article should be regarded as important design parameters for electronic records management.

APPENDIX: METHODOLOGY EXPERT SURVEY

A survey was conducted to study the possible implications of the use of ICTs on accountability. This survey was based on Delphi methodology (Gordon & Helmer, 1964) and consisted of two consecutive questionnaires. The question underlying the survey was: What are the implications of the introduction and use of ICT applications for the availability of information for accountability? It is important to realize that changes in electronic record keeping are taking place at this moment; this makes it very difficult to assess these changes. Therefore, although the survey was partly based on observations, experts were also invited to state their educated guess.²¹

Methodology

To obtain a variety of expert opinions, 30 experts in the field of electronic record keeping were selected on the basis of membership of international committees (DLM, monitoring committee; ICA/CER, Committee on Electronic and Other Current Records), participation in international conferences (European Experts' Meeting on Electronic Records, 18 June 1997, The Hague, the Netherlands; Electronic Records Research and Development, 28–29 June 1996, Ann Arbor, MI; Working Meeting on Electronic Records Research, May 1997, Pittsburgh, PA; Playing for Keeps Conference on Electronic Records Management, November 1994, Canberra, Australia), publications of reports and articles on electronic record keeping, and projects in the field of electronic record keeping. A selection was made of experts in different parts of the world (Australia, Canada, Denmark, Germany, Hungary, Ireland, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States).

After a pretest in May 1998, the first questionnaire was sent as e-mail message to these experts (most of them had indicated beforehand that they were prepared to participate). Most of the returned questionnaires were received as e-mail messages (using the e-mail reply facility). One, however, was received per fax, one per (snail) mail, and one as a word-processing document (attached to an e-mail message). Later, the questionnaire was sent two more times to the experts that had not replied yet. The answers were analyzed quantitatively and qualitatively. The results of this analysis were written down in a report (Meijer, 1998). A summary of the analysis was sent to all respondents. On request the full report was sent (to five respondents).

In November 1998 the second questionnaire and, once more, the summary of the answers to the first questionnaire were sent per e-mail to the respondents who had answered the first questionnaire. Again, most of the answers were received per e-mail. This time five respondents returned the questionnaire as an attachment. One respondent faxed the questionnaire back. This questionnaire was sent four more times to experts who had not yet sent it back. Again, the answers were analyzed quantitatively and qualitatively. The results of this analysis were written down in a report (Meijer, 1999). A summary of the analysis was sent to all respondents. On request the full report was sent (to two respondents).

First Questionnaire

The survey was based upon three premises. The first premise was that the possible implications of ICTs for accountability should be evaluated for different software applications.²² The second premise was that the implications of the use of ICTs can be evaluated by looking at the risks of not having adequate information for accountability, opportunities of having more adequate information, and problems when trying to find an adequate manner to deal with the software application. The third premise was that the risks and opportunities can be evaluated by ranking four different criteria concerning the availability of information for accountability (information is present, can be accessed, can be interpreted, and can be trusted) and problems can be evaluated by ranking three types of problems (technical, organizational, and legal problems).

The questionnaire was structured around these three notions. Therefore, the experts were asked to answer questions for 10 different software applications (e-mail, databases, groupware, office software, web sites, geographical information systems, expert systems, document management systems, management information systems, and simulation software). Per software application, they were asked to answer six questions. In question 1 they were asked to indicate what they knew about the implications of the application for the availability of information (very

much, much, something, or nothing). If they did not know anything about the software application they could skip the question. Then they were asked to rank risks (question 2) and opportunities (question 3) for having adequate information for accountability that there would be for an organization using that software application. They were also asked to explain their ranking. The fourth question about the software application concerned the problems organizations could face when trying to find an adequate manner to manage the information. They were also asked to explain their ranking. Then they were also asked if they knew examples (question 5) and if they had any other remarks (question 6).

Additional to the questions for these 10 software applications, the respondents were asked to indicate which software application will cause most problems for accountability: They were asked to rank the 10 software applications and explain this ranking. Then they were asked if there were any important software applications missing from the list and to explain why this application was important for assessing the impact of ICTs on the availability of information for accountability. Finally, they were asked if they had any other remarks.

Second Questionnaire

The objectives of the second round were to verify the findings, explore remaining differences, and find answers to remaining questions. The second questionnaire consisted of three parts. The first part contained general and specific questions about the results of the first round. In question 1 the respondents were asked if the results provided a good overview of the risks, opportunities and problems for keeping data for accountability that are elicited by the use of ICTs and whether there were any important consequences missing. In question 2 the respondents were asked to comment on the grouping of technologies. The second part (question 3) concerned issues that had remained unanswered. The respondents were asked to comment on which data in databases need to be preserved, whether there will be adequate record-keeping systems in the near future, which data concerning a web site need to be preserved, and why the record-keeping community pays so little attention to expert systems and simulation software. The third part (question 4) contained questions concerning issues on which respondents had expressed confronting opinions. The respondents were asked to take sides on confrontations concerning capture of context data by e-mail systems, trustworthiness of e-mail messages, long-term preservation of e-mail, and the connection between business processes and database management systems. Finally (question 5), the respondents were asked if they had any other remarks.

Response and Quality of Answers

For the first questionnaire the response rate was 40% after sending the questionnaire for the first time, 60% after sending it for the second time, and 70% after the third time. For the second questionnaire the response rate was 38% after sending the questionnaire for the first time, 62% after the second time, 71% after the third time, 81% after the fourth time, and 95% after the fifth time. The response was well spread over the different countries. The response per country was (number of experts approached; number of experts that responded to the first questionnaire; number of experts that responded to the second questionnaire): Australia (4;2;2), Canada (2;2;2), Denmark (1;1;1), Germany (3;2;2), Hungary (1;1;1), Ireland (1;1;1), Netherlands (4;3;3), Sweden (2;2;1), Switzerland (1;1;1), United Kingdom (2;1;1), and United States (9;5;5). The response was also spread evenly over the criteria to select the experts. The response per source was (number of experts approached; number of experts that responded to the first questionnaire; number of experts that responded to the second questionnaire): committees (11;8;7), participation in international conferences (24;17;16), publications (3;2;2), and involved in projects (2;1;1). For some applications (e-mail, databases, office software, web sites, and DMS) the response was fairly high (40 to 60%). For other applications (groupware, GIS, and MIS) the response was low (23 to 30%) and for others (expert systems and simulation software) even very low (7 to 10%). Some respondents gave long explanations for their answers; others gave no explanation at all. It turned out to be quite difficult to interpret the rankings in the first questionnaire when the respondents did not explain their ranking. On the other hand, the comments turned out to be very useful in gaining more understanding of the possible implications of ICTs for the availability of records for accountability. The answers to the second questionnaire were generally quite elaborate. These comments turned out to be very useful for a further qualitative analysis of the results. The results presented here are primarily based on a qualitative analysis of the answers.

NOTES

1. The arguments presented here may also apply to private organizations. However, since my research is restricted to public organizations, the arguments and presented findings in this article are limited to public organizations.

2. Some argue that ICTs may facilitate public accountability. They argue that use of ICT increases the transparency of organizations (Zuboff, 1988; Bekkers, 1998; Bekkers & Zouridis, 1999). Information systems may, for example, generate additional information about work processes. The use of database management systems coupled to networks can improve access to information dramatically.

3. Weber (1999) describes how conceptualizations of accountability have changed considerably in the United States in the last 200 years. He distinguishes five conceptualizations: (1) Jacksonian (mass-based political parties coordinate demands of localized political organizations), (2) Progressives/New Deal (large-scale, centralized, top-down control), (3) public interest egalitarianism (expands large-scale, centralized, top-down control), (4) neoconservative efficiency (decentralized control in deregulated areas but more stringent centralized, top-down control of remaining federal programs), and (5) grass-roots ecosystem management (small-scale, decentralized control within macrostructure of federal law).

4. Romzek and Dubnick (1987) distinguish four classes of accountability: bureaucratic, legal, professional, and political. Bureaucratic accountability refers to an organized and legitimate relationship between a superior and a subordinate with close supervision or standard operating procedures. Legal accountability involves the frequent application of control, but it is based on a relation between the legal and executive powers. Professional accountability is characterized by a transfer of control to a civil servant with recognized expertise in a certain field. Finally, for political accountability the key relationship is that between a representative and the constituents. The source of control may be internal as in bureaucratic and professional accountability, or external as in legal and political accountability. Bureaucratic and legal accountability exercise a high degree of control over agency actions, while professional and political accountability exercise a low degree of control. Other authors make similar distinctions. White and Hollingsworth (1999), for example, call internal accountability "management accountability" and external accountability "democratic accountability."

5. I would also like to highlight the "potential" accountability of governmental organizations. Even if an organization is not actually held accountable, the possibility that it can be controlled will make it more likely that government officials act responsibly (see Bovens, 1998).

6. Records management of paper records should not be idealized. Individuals or agencies may be unaware of the requirement to manage records. Or they may choose not to spend many resources on records management. The initial situation reflects the social choices which have been made before concerning records management. A recent parliamentary investigation of records management of military secret services in the Netherlands gives us a good example of poor records management (Lower House of the Dutch Parliament, 1998).

7. Cox (2000) provides a comprehensive overview of North American publications about electronic records management. An overview of European ideas about electronic records management can be found in the proceedings of the 1996 DLM (Données Lisibles par Machine—Machine Readable Files) Forum on electronic records (European Communities, 1997a). Important Australian references can be found on the web site of the records continuum research group (<http://www.sims.monash.edu.au/rcrg/>). A list of relevant websites can be retrieved from the web site of the Dutch Program Digital Longevity (<http://www.archief.nl/digiduur/csites.html>).

8. At the moment, these ideas are further developed in the international INTER PARES (International Research on Preservation of Authentic Records in Electronic Systems) project. Information about this project can be retrieved from their web site (www.interpares.org).

9. Interesting ideas can be found on web sites of (national) archival institutions and universities. Some examples are the Models for Action Project of the Center for Technology in Government (www.ctg.albany.edu),

Public Records Office (www.pro.gov.uk), State Records New South Wales (www.records.nsw.gov.au), and National Archives of Canada (www.archives.ca). Interesting is also a publication by the European Communities (1997b) and the International Committee on Archives (1998).

10. The results of the consultation of experts were written down in two reports (Meijer, 1998, 1999). These reports can be retrieved from the web site of the Dutch Program Digital Longevity (www.digitale.duurzaamheid.nl).

11. Ideas about e-mail systems and records management were first developed at the United Nations Advisory Committee for the Coordination of Information Systems (1989). Policy recommendations included defining records, assigning responsibility, assuring legality, scheduling, appraisal, integrating access, documenting, storing, preserving media, preserving functionality, ensuring security, and providing for use. In later discussions these issues remain relevant. Although ideas were developed, however, policies were not rapidly implemented. In 1993 Bikson and Law noted that there was a lack of policies for identification, capture and management of e-mail as electronic records at the United Nations. In subsequent years awareness in the United States about the need to preserve e-mail has been strongly influenced by the lawsuit known as the PROFs case. Between 1989 and 1997 private citizen plaintiffs challenged the Executive Office of the President, the National Security Council, and the National Archives and Records Administrations for their illegal destruction of e-mail messages. This case was extensively studied by Wallace (1997). In a subsequent paper, Wallace (1998) presents a thorough overview of the "state of thought and the state of the practice" concerning electronic mail policies and record keeping. In his paper he first presents an overview of the developments of ideas concerning records management and e-mail systems. Then he analyzes 38 records-oriented e-mail policies according to three dimensions (identifying records, filing and maintaining records, and general issues). In his conclusions, Wallace highlights the absence of record-keeping systems in these policies. One may conclude that important ideas about managing e-mail as records have been developed, but these have not yet readily been implemented by organizations. Wallace (1998) observes that the vast majority of e-mail policies focuses on "appropriate use": "This dominant email policy form is typically directed towards issues on the proper uses of email, employee expectations of privacy for their email, employee ownership of email, email etiquette, proper composition of messages, copyright, security, and the like."

12. The term *individual software for creation of office documents* is used to distinguish these applications from other software for office environments like document management systems, work-flow management systems, and groupware. These latter applications are used by groups, whereas text editors, spreadsheet applications, etc. are generally used by individuals. Laudon and Laudon (2000, p. 437) group all these applications under *office automation systems*. The answers to the survey, however, were quite different for individual and collective software. Lack of central control, for example, seemed less relevant for document management systems and groupware. Therefore these applications were split in two groups. The answers to the questions concerning collective office software are not presented in this article.

13. Interesting ideas about records management and in the electronic work environment have been developed at the National Archives of Canada (http://www.archives.ca/06/0603_e.html). These ideas start from the vision of the integration of previously separate applications

such as library and records systems with automated work processes. Records of automated work processes are then automatically captured based on rules built into the design of the processes.

14. Extensive guidelines for electronic records management of information available on web sites were developed by McClure and Sprehe (1998). A central element in their approach is an "accountability exposure analysis": "an appraisal of the extent to which the agency is or is not fulfilling its legal and other responsibilities under recordkeeping statutes and other obligations, and the real possibility the agency will be called to account." They draw parallels between this approach and risk analysis.

15. Instead of *trend* sometimes the term *natural trajectories* is used. Kraemer and Perry (1999) indicated that this concept implies the idea that technological change could be driven not only by the demand for the technology, but also by certain "technological imperatives."

16. Interesting examples of mixing of "on the record" and "off the record" communication in the White House can be found in Blanton (1995). Blanton (1995, p. 21) notes: "These are not memos written for the file or to cover a bureaucratic rear; instead, the White House e-mail features seat-of-the-pant judgments and instant responses to world-shaking issues, in tones that are often highly emotional, sometimes vicious, sometimes jocular, but almost always using the colloquial language with which these powerful officials speak to each other in private, but never in public."

17. Other ICTs may lead to enhanced organizational control. The centralization-decentralization discussion is one of the most debated issues in social informatics. Homburg (1999) provides a comprehensive overview of this debate and groups this literature under four hypotheses: (1) Information technology (IT) leads to centralization in organizations, (2) IT leads to decentralization in organizations, (3) organizations have a considerable degree of discretion in designing structure and applying IT, and (4) there are various consistent combinations of IT and structure.

18. Blurring of organizational boundaries may have serious implications for the organizational jurisdiction, which can be described as "the exclusive authority of an actor as a unified entity to determine right and obligations of citizens in a task domain with (a certain degree of) discretion for which the actor is legally and politically accountable" (Bekkers, 1998, p. 58).

19. Attention for requirements tracing is increasing (Jarke, 1998). For accountability, so-called pretraceability is especially relevant. Pre-tracing is about documenting the rationale and sociopolitical context from which the requirements emerge.

20. The conflict between artificial authority and intellectual autonomy is also prevalent in the conflicts Kling (1996b) describes for human safety and critical computer systems and for the dependence on computer systems for military security.

21. Sixteen of the 20 experts who had answered both questionnaires gave permission to list their names. These experts were T. Adami, R. Barry, D. Bearman, N. Buetikofer, R. Cox, A. Erlandsson, K. Hanigan, S. Harries, P. Horsman, J. McDonald, C. Noordam, B. Reed, D. Torning, J. Uijlenbroek, A. Ulfsparré, and M. Wettengel.

22. Information from preliminary interviews indicated that the implications of the use of ICTs can vary strongly between the different software applications. Use of e-mail systems, for example, seemed to lead to different implications for electronic records management than use of database management systems. The relevance of differences between software applications seems to be confirmed by research on social informatics (e.g., Snellen & van de Donk, 1998; Kling, 1996a). One of

the objectives of the survey was to find out if these differences were significant and also to investigate what these differences are. Thus, for the survey a categorization of software applications was made up. In spite of the many shortcomings of the categorization (not exclusive, not complete, not timely) and criticism on this approach by the respondents, it proved to be useful for studying the implications of the use of ICTs. By studying different software applications, a rich overview of the possible implications of the use of ICTs for records management could be obtained.

REFERENCES

- Bearman, D. 1994. *Electronic evidence. Strategies for managing records in contemporary organizations*. Pittsburgh, PA: Archives and Museum Informatics.
- Bekkers, V. J. J. M. 1998. Wiring public organizations and changing organizational jurisdictions. In *Public administration in an information age*, eds. I. T. M. Snellen and W. B. H. J. van de Donk, pp. 57-77 Amsterdam: IOS Press.
- Bekkers, V. J. J. M., and Zouridis, S. 1999. Electronic service delivery in public administration: Some trends and issues. *International Review of Administrative Sciences* 65(2):183-195.
- Bikson, T. K., and Frieling, E. J. 1993. *Preserving the present. Toward viable electronic records*. The Hague: Sdu Uitgeverij.
- Bikson, T. K., and Law, S. A. 1993. Electronic information media and records management methods: A survey of practices in UN organizations. *The Information Society* 9(2):125-144.
- Blanton, T., ed. 1995. *White House e-mail. The top secret computer messages the Reagan/Bush White House tried to destroy*. New York: New Press.
- Bovens, M. 1998. *The quest for responsibility: Accountability and citizenship in complex organisations*. Cambridge: Cambridge University Press.
- Cox, R. J. 2000. Searching for authority: Archivists and electronic records in the New World at the fin-de-siècle. *First Monday* 5(1). (http://firstmonday.org/issues/issue5_1/cox) Access date 11 January 2000.
- Davis, G. B., and Olson, M. H. 1985. *Management information systems. Conceptual foundations, structure and development*, 2nd ed. New York: McGraw-Hill.
- Day, P., and Klein, R. 1987. *Accountabilities. Five public services*. London: Tavistock.
- Dollar, C. M. 1993. New developments and the implication on information handling. In *Information handling in offices and archives*, ed. A. Menne-Haritz, pp. 56-66. München: K. G. Saur.
- Duranti, L. 1998. *Diplomatics: New uses for an old science*. Lanham, Md: Scarecrow Press.
- European Communities. 1997a. *Proceedings of the DLM-Forum on electronic records, Brussels, 18-20 December 1996*. Luxembourg: Office for Official Publications of the European Union.
- European Communities. 1997b. *Guidelines on best practices for using electronic information. How to deal with machine-readable data and electronic documents*. Luxembourg: Office for Official Publications of the European Union.
- Gordon, T. J., and Helmer, O. 1964. *Report on a long-range forecasting study*. Santa Monica, CA: RAND Corporation.
- Homburg, V. F. M. 1999. *The political economy of information management. A theoretical and empirical analysis of decision making*

- regarding interorganizational information systems. PhD thesis, University of Groningen, Groningen, The Netherlands.
- International Council on Archives. 1998. *Guide for managing electronic records from an archival perspective*. Paris: International Council on Archives, Committee on Electronic Records.
- Jarke, M. 1998. Requirements tracing. *Communications of the ACM* 41(12):32–36.
- Kling, R. 1987. Computerization as an ongoing social and political process. In *Computers and democracy*, eds. G. Bjerkness, P. Ehn, and M. Kyng, pp. 117–136. Aldershot: Brookfield.
- Kling, R., ed. 1996a. *Computerization and controversy. Value conflicts and social choices*, 2nd ed. San Diego: Academic Press.
- Kling, R. 1996b. Social controversies about computerization. In *Computerization and controversy. Value conflicts and social choices*, ed. R. Kling, 2nd ed., pp. 10–15. San Diego: Academic Press.
- Kling, R. 1996c. Computers as tools and social systems: The car-computer analogy. In *Computerization and controversy. Value conflicts and social choices*, ed. R. Kling, 2nd ed., pp. 16–21. San Diego: Academic Press.
- Kraemer, K. L., King, J. L., Dunkle, D. E., and Lane, J. P. 1989. *Managing information systems. Change and control in organizational computing*. San Francisco: Jossey-Bass.
- Kramer, K. L., and Perry, J. L. 1999. Innovation and computing in the public sector: A review of research. *Knowledge, Technology, and Policy* 12(1):3–18.
- Laudon, K. C., and Laudon, J. P. 2000. *Management information systems. Organization and technology in the networked enterprise*, 6th ed. Upper Saddle River, NJ: Prentice Hall.
- Lower House of the Dutch Parliament (Tweede Kamer). 1998. *Archieven militaire inlichtingendienst*, 25809, No. 5 (in Dutch).
- Mayo, E. 1933. *The human problems of an industrial organization*. New York: Macmillan.
- McClure, R. C., and Sprehe, J. T. 1998. *Analysis and development of model quality guidelines for electronic records management on state and federal websites*. Research study sponsored by the National Historical Publications and Records Commission. (http://istweb.syr.edu/~mclure/nhprc/nhprc_title.html) Access date 11 January 2000.
- McKemmish, S., and Upward, F. 1993. *Archival documents: Providing accountability through recordkeeping*. Melbourne: Ancora Press.
- Meijer, A. 1998. *Consequences of the use of information and communication technologies for the availability of data for accountability. First round Delphi survey: Report*. Rotterdam: Center for Public Management, Erasmus University Rotterdam.
- Meijer, A. 1999. *Consequences of the use of information and communication technologies for the availability of data for accountability. Second round Delphi survey: Report*. Rotterdam: Center for Public Management, Erasmus University Rotterdam.
- Mintzberg, H. 1983. *Structure in fives. Designing effective organizations*. Englewood Cliffs, NJ: Prentice Hall.
- Netherlands Court of Audit (Algemene Rekenkamer). 1998. *Beheer en archivering van digitale bestanden*, Tweede Kamer 25 970, No. 1–2 (in Dutch).
- Pollitt, C. 2000. Institutional amnesia: A paradox of the “Information age”? *Prometheus* 18(1):5–16.
- Romzek, B. S. 1998. Where the buck stops. Accountability in reformed public organizations. In *Transforming government. Lessons from the reinvention laboratories*, eds. P. W. Ingraham, J. R. Thompson, and R. S. Sanders, pp. 192–219. San Francisco: Jossey-Bass.
- Romzek, B. S., and Dubnick, M. J. 1987. Accountability in the public sector: Lessons from the Challenger tragedy. *Public Administration Review* 47(3):227–238.
- Rothenberg, J. 1995. Ensuring the longevity of digital documents. *Scientific American* 272(1):42–47.
- Senge, P. 1990. *The fifth discipline*. New York: Doubleday.
- Snellen, I. T. M., and van de Donk, W. B. H. J., eds. 1998. *Public administration in an information age. A handbook*. Amsterdam: IOS Press.
- Sproull, L., and Kiesler, S. 1991. *Connections. New ways of working in the networked organization*. Cambridge, MA: MIT Press.
- United Nations Advisory Committee for the Coordination of Information Systems. 1989. *Management of electronic records: Issues and guidelines*. pp. 17–34. New York: United Nations.
- van den Hooff, B. 1997. *Incorporating electronic mail. Adoption, use and effects of electronic mail in organizations*. Amsterdam: Otto Cramwinckel Uitgever.
- van den Hoven, M. J. 1998. Moral responsibility, public office and information technology. In *Public administration in an information age*, eds. I. T. M. Snellen and W. B. H. J. van de Donk, pp. 97–111. Amsterdam: IOS Press.
- Wallace, D. A. 1997. *The public's use of federal recordkeeping statutes to shape federal information policy: A study of the PROFs case*. PhD thesis, University of Pittsburgh.
- Wallace, D. A. 1998. *Recordkeeping and electronic mail policy. The state of thought and the state of the practice*. Paper prepared for the 1998 Annual Meeting of the Society of American Archivists, Orlando, FL (<http://www.rbarry.com>) Access date 11 January 2000.
- Weber, M. 1964. *Wirtschaft und Gesellschaft. Grindriss der verstehende Soziologie*. Köln-Berlin: Johannes Winckelman.
- Weber, E. P. 1999. The question of accountability in historical perspective. From Jackson to contemporary grassroots ecosystem management. *Administration and society* 31(4):451–494.
- White, F., and Hollingsworth, K. 1999. *Audit, accountability and government*. Oxford: Clarendon Press.
- Zuboff, S. 1988. *In the age of the smart machine. The future of work and power*. New York: Basic Books.
- Zuurmond, A. 1998. From bureaucracy to infocracy: Are democratic institutions lagging behind? In *Public administration in an information age. A handbook*, eds. I. T. M. Snellen and W. B. H. J. van de Donk, pp. 260–272. Amsterdam: IOS Press.

Copyright of Information Society is the property of Routledge and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.