

1. Introduction, problem and theses

The overall topic of this thesis is an investigation of technical, political and economic aspects of introducing integrated information systems in the administration. An information system can be defined in relation to one administrative unit as "collection, storage, processing and transmission of information" ¹. Initially, information can be storage, processing and transmission of information". defined as information related to the tasks of the administration. This definition

emphasizes that information is part of the knowledge that exists in the administration about a

given subject area. This definition should be seen in contrast to information understood as physical data.

By introducing an integrated information system in the administration, a centralization of the storage and processing of information is carried out across administrative units.² The aim of an

integrated information system in the administration is that a given information in an area is not stored in several administrative units. This means that applications only need to be developed once, which can then be used by users across administrative boundaries. In addition, the aim is that the

collection of information about a given company or person is not carried out by several administrative units. This effort is evident from the report *The Info Society 2000*:

"The public administration in the state, counties and municipalities must be connected in a comprehensive electronic service network. As part of this, a principle is realized that information that has already been submitted by citizens and companies to a public institution, and which can be transferred electronically, must not be requested again by other public bodies."³

There are thus great expectations for efficiency gains from the use of integrated information systems. The focus in this context will be on the process itself of introducing integrated information systems in the administration. In relation to this, three paradigms can be observed.

The first paradigm focuses on efficiency and management issues. This position has become well- established under the terms "Business Process Reengineering", "Information Engineering" and "Information Resource Management".⁴ This perspective is dominant in management literature in the attempt to use information technology for efficiency purposes.

The second paradigm is based on a more traditional view of information as an element in the political-parliamentary decision-making process.⁵ This paradigm is based on the traditional separation between the political-parliamentary use of information and the neutral-technical storage and processing of information in the administration. The focus is on how increased access

to information can be used in political-parliamentary decision-making processes. The perspective often

appears in the information policy debate. In *the Information Society of the Year 2000*, great expectations are thus formulated for information technology used in the name of democracy.⁶

The third paradigm places greater emphasis on information technology in relation to political processes in administration. A central thesis in this paradigm is the "reinforcement" thesis developed by Danziger, Dutton and Kraemer.⁷ According to this thesis, computer technology is seen as an additional resource of power and influence, which can thereby contribute to reinforcing existing positions of power.

¹ Emme, 1986, p. 3.

² This issue is addressed by Marrku Nurminen. However, he does not provide an actual definition of an integrated information system. Nurminen, 1988, pp. 33ff.

³ *The Information Society in the Year 2000*, p. 2. Ministry of Research, 1994.

⁴ Date, 1990, Edwards et al. 1991, Clive Finkelstein, 1992, Pries-Heje, 1995.

⁵ Donk & Meyer, 1994 and 1995, Hoff, 1996, pp. 5ff.

⁶ "We must create a strategy that can bring Denmark to the forefront of the development towards the information society. The strategy must be based on values such as openness, democracy and responsibility for everyone in society", *Info-samfundet år 2000*, p. 1.

Ministry of Research, 1994.

⁷ Danziger, Dutton and Kraemer, 1982. p. 18.

The analysis in this thesis will be based on the third paradigm. However, the aim of the assignment is

to establish a broader and more general conceptual framework with a view to achieving a better theoretical understanding but also with a view to analyzing a specific case.

Information technology considered as a resource of power and influence only rarely comes to light. However, two current cases can be pointed out where the problem of power in relation to the establishment of integrated information systems has been revealed. The first concerns the Ministry of Taxation's reluctance to provide information for an attempt to integrate legal information into a legal information database in the Ministry of Justice. The Ministry of Taxation is not interested in the Ministry of Justice gaining access to tax information.

The second course of action concerns the dispute between Statistics Denmark and the Danish Environmental Protection Agency over waste information. The Danish Environmental Protection Agency demanded approval of how Statistics Denmark uses information on waste from the so-called ISAG database (Information System for

Waste and Recycling). The common denominator for these two cases is access to information and responsibility for the use of information.

In this thesis, I have chosen to analyze a specific example of the establishment of an integrated information system in the administration.

The case concerns the establishment of a central business register (CVR). By Act No. L 417 of 22 May 1996, the Danish Parliament adopted the establishment of the CVR. The purpose of the CVR is to integrate information about business enterprises that is available in the Ministry of Economic Affairs, the Ministry of Labour, the Ministry of Business and the Ministry of Taxation.

The focus of the analysis will be on the decision-making process that precedes the adoption of the CVR Act.

The analysis is based on a decision in principle on CVR, made by the Ministry of Finance in 1992. The focus will then be specifically on the period from January 1994 to June 1995.

During this period, both technical, economic and departmental and information responsibility aspects of the decision in principle made by the Ministry of Finance in 1992 changed. The case material that sheds light on this problem consists of faxes, memos, letters, official reports, legislation on CVR, etc.⁸

In relation to the CVR case, the key point will be to demonstrate that the establishment of the CVR cannot be considered a neutral-technical implementation of a common database. Instead, it is a question

of negotiation processes and political battles that concern who should have departmental responsibility for the CVR and responsibility for the information in the common database, which technical design should be chosen, and how the establishment and operation of the CVR should be financed. By negotiation here is meant how problems are continuously pointed out in communication and solutions argued for, etc. In this thesis, by communication I will understand the formal, concrete observable communication in reports, faxes, notes, letters, etc.

The theoretical contribution of the thesis will consist of establishing a general

theoretical framework for the analysis of technical, economic, information responsibility and departmental aspects in establishing integrated information systems. CVR will be used here as an example. First, an analysis of a traditional view of administration and integrated information systems, respectively, is made. In this view, both administration and integrated information systems are defined as technically neutral phenomena.

With such a basis, the introduction of information systems cannot be conceptualized as a complex interplay between technical, economic and information responsibility and departmental aspects. Instead, the aim is to establish a general theoretical framework that can understand this complex interplay. The establishment of this framework is divided into a technology and information part and a management part.

⁸ The material is primarily obtained through Statistics Denmark. I am employed there, and as a result have had access to extensive material on the CVR decision-making process.

In the technology and information part, the aim will be to develop concepts that are both capable of conceptualizing information and technology as phenomena that are up for negotiation but which can also be used as resources of influence. By the concept of resource of influence, I will understand resources used to change the direction of a decision-making process. Resources of influence can be technical design, departmental responsibility, responsibility for information and economic organization. First, the concept of technology is analyzed, and a position is argued that is capable of viewing technology as artifacts that are shaped and negotiated in social and political processes.

Next, the specific features of information technology in relation to other forms of technology are discussed.

It argues for a definition of information in integrated information systems not as physical phenomena but as information considered as knowledge.

Against this background, it generally analyses how information considered as knowledge is a central element in society. Based on Daniel Bell's analysis

of post-industrial society and Peter Berger & Thomas Luckmann's concepts of socially constructed reality, a perspective is formulated that emphasises the importance of the distribution of and the struggle

for knowledge in society.⁹ The purpose of the technology and information section is generally to arrive at concepts of technology and information that are able to see how technical design and the placement of information responsibility constitute central aspects that are both up for negotiation and can be used as resources of influence.

The aim of the administration section is to establish an institutional theoretical framework that can analyse technology design and information responsibility both as historically shaped phenomena in institutionalisation processes in administration, and as resources of influence. First, three different institutional perspectives on administration are established, all of which can be considered as an alternative to the traditional view. These are an economic new institutional direction¹⁰, a sociological new institutional direction¹¹ and finally a historical-institutional direction.¹² Next, the overall aim is that these three perspectives should function as a foundation for the development of an expanded institutional perspective.

The institutional framework has been chosen over a traditional organizational and power analysis, firstly because hierarchical power relations have been partially eliminated by the establishment of information systems across ministerial boundaries. Secondly, the modernization of the public sector has meant that organizations are made responsible for compliance with budgets and securing revenues. This means that the environment of public organizations can generally be said to be characterized

by changing political pressure, conflicting interests, struggle for grants, etc.¹³ As a result, a main task for public organizations has become dynamic conflict management.¹⁴ Thus, public organizations will generally be viewed in a dynamic conflict perspective, where “values, rationales, norms, political considerations are produced and reproduced through social relations and interaction processes that cross formal organizational boundaries”.¹⁵ Administration will thus be analyzed in an expanded institutional perspective, corresponding to the dynamic conflict perspective, with a focus partly on communication in the administration as institutionalization processes, and partly with a focus on

⁹ *The Coming of Postindustrial Society* Bell, 1973. *The socially constructed reality*, Berger & Luckmann, 1966.

¹⁰ Williamson, 1987, Christensen, 1994.

¹¹ This position is primarily represented through the main work *Rediscovering Institutions* by March and Olsen, 1989.

¹² Thelen & Steinmo, 1992.

¹³ This problem is described in *Life in Public Organizations* by Beck Jørgensen, Melander et al., 1992.

¹⁴ Jørgensen, Melander et al. 1992, p. 21.

¹⁵ Jørgensen, Melander et al. 1992, p. 22.

structural properties of management that are produced and reproduced in the interaction within management.

Based on the expanded institutional perspective, the CVR case will be methodologically analyzed in what I have chosen to call a process and structure perspective, respectively.
¹⁶ In a

process perspective, the focus is on historical-genetic explanations and interpretations of _____ how a particular solution emerged from the negotiations. Emphasis is placed on an interpretation and explanation of communication as institutionalization processes, including the concepts of discourse and definitional power. The analysis will show how changed information responsibility, technological, economic and departmental _____ conditions are perceived and attributed meaning by central political actors, and how they consciously choose to act or not to act in order to change the political conditions. Access to meaning will be achieved by separating themes in the analyzed documents. A central element of the case is thus an examination of the actors' own arguments to see how they reason and make decisions in light of existing institutional conditions.

The structural perspective analyses how information responsibility, technical design and economic organisation as structural aspects of administration are produced and _____ reproduced in communication. A concept of power will be presented that focuses on how the four mentioned structural characteristics are used as resources of influence in negotiations. In the analysis of this use of resources to exert influence, interpretative frameworks and legitimation will be central concepts.

The application of the above two perspectives in the analysis of the CVR process is not a traditional understanding of cases, where a number of cases are analyzed and generalizations are made based on common features. In the present context, only a single case is used, and the aim is not to generalize empirically but instead to arrive at a better theoretical understanding of the processes that apply when introducing integrated information systems. This method is described by Bent Flyvbjerg, among others, who points out that generalizations based on a single case are of central importance for the development of social scientific knowledge.¹⁷ I will return to this issue later in chapter two.

¹⁶The two perspectives are defined in Scott 1995, p. 65 and in Miles and Huberman, 1994, p. 103.

¹⁷Flyvbjerg, 1991, p. 145.

1.1 PROBLEMS AND THESES

The overall problem in the thesis will be:

An analysis of the introduction of integrated information systems in public administration.

The overall thesis is that the introduction of integrated information systems cannot be considered as technically neutral problems. Instead, the complex interplay between technical design, economic organization, departmental responsibility and responsibility for information means that, first, the introduction must be considered as a negotiation issue, and second, that these four aspects are all used as resources of influence in negotiations, in accordance with the overall perspective on administration presented in the introduction.

The problem will first be analyzed with a view to a better theoretical understanding of technology, information

and management. This theoretical framework will then be applied in relation to the CVR decision-making process. The theoretical part is divided into an analysis focusing partly on technology and information and partly on management. This leads to the following problems and theses in the theoretical part:

How to theoretically understand technology and information, partly as phenomena that are formed in an interaction between "the technical" and "the social", and partly as phenomena that are used as resources of influence in a political context.

Thesis: If technology is defined as artifacts, where the technology in a specific context is given meaning and can be negotiated, and information stored in an information system as a section of knowledge in an area for which a given person or organization is responsible, then technology and responsibility for information constitute central aspects that are both negotiable and can be used as resources of influence.

Based on institutional-political theories of administration, it is analyzed how technology and information can be theoretically understood, firstly, as phenomena that are shaped in communication in administration and, secondly, as phenomena that are produced and reproduced through negotiation as "structural" properties of administration.

Thesis: If communication is not considered neutral but instead as active meaning-making, the complex interaction can be understood as both a shaping of CVR and structurally, how these are used strategically to influence. understood as CVR is shaped in communication, as structural properties that are used to influence.

Thesis: If governance is defined firstly by communication processes understood as collective opinion formation, and secondly by technology and information understood as structural properties used and shaped in communication, this means that technology and

information

can be understood as produced and reproduced properties of governance, and secondly that these can be used as resources of influence in negotiations.

The theoretical analysis will then be applied in relation to the CVR process. This leads to the following empirical issues: *How have information*

responsibility, technology design, departmental responsibility and economic organization been shaped historically in the CVR decision-making process?

How have information responsibility, technical design, departmental responsibility and economic organization understood as structural characteristics of administration been produced and reproduced in the CVR process?

It appears that the same aspects are analyzed in both the theoretical and the empirical issues. The emphasis in the assignment will primarily be on the theoretical analysis of processes in administration. In the development of a comprehensive theoretical conceptual framework, the case material will be used continuously to make certain theoretical interpretations more plausible than others. The aim is thus primarily to contribute to a better theoretical understanding of processes in administration and to a lesser extent to arrive at "finished" explanations of the development in the CVR process.

1.2 DOCUMENT STRUCTURE

After a general introduction to the problem of information sharing in government, chapter two includes the first part of the CVR case analysis and the method used in the thesis.

The case analysis is primarily descriptive and will be used subsequently in the theoretical analysis.

Chapter three presents, first, the traditional view of management and, second, the traditional theory of integrated information systems. It is argued that the traditional theories of integrated information systems and management focus exclusively on technical aspects. This basis is considered insufficient in understanding the introduction of integrated information systems in management.

In chapter four, the concept of technology is first analyzed based on the traditional distinction between a "voluntaristic" and a "deterministic" conceptual framework. Next, a social constructivist conceptual framework is included in understanding the interaction between the "social" and the "technical". The concepts of knowledge, information and data are then analyzed. Information is defined contextually in relation to knowledge in an area. Against this background, a sociological and a political understanding of

information and knowledge is introduced. The chapter generally argues for the use of an understanding of information and technology as phenomena that are both shaped and used as resources of influence in a specific political context.

Chapter five first introduces the critique of the traditional approach to administration. Next, three different perspectives on administration are examined, each of which can be considered as alternative theoretical positions in relation to the traditional approach. These are an economic neo-institutional direction, a sociological neo-institutional direction and finally a historical-institutional direction. It is concluded that sociological neo-institutionalism is able to capture communication as meaning formation, and that historical institutionalism is able to see structural conditions and their use as resources of influence.

Chapter six introduces an expanded institutional analysis framework. A general distinction is made between a process approach and a structural approach. In the process approach, power and discourse are first explained as central concepts in the understanding of communication. Institutionalization is then examined in relation to the three institutional theories in chapter five. Against this background, an argument is made for institutionalization processes understood as obligations on negotiated elements in the discourse. In the structural approach, the issues of action and rationality are first presented. Anthony Giddens' structuration theory is then included. Against this background, an overall theoretical framework is established that is able to understand structural properties as produced and reproduced in communication. With this model, an argument is made for an understanding of technical design, economic organization, departmental responsibility and responsibility for information as structural properties that are produced and reproduced in communication in the administration. Furthermore, an argument is made for a perception of power understood as an actor's use of resources as means to change the course of a decision-making process.

In chapter seven, the CVR case is analyzed first using the process approach, then using the structural approach. In

the process analysis, different interpretations of CVR are first explained, after which these are related to the CVR decision-making process. In the structural analysis, the focus is on how technical design, economic organization, departmental responsibility and responsibility for information are produced and reproduced in communication. Specifically, the focus is on how these elements are used as resources of influence in the decision-making process.

Chapter eight concludes the chapters first. Then a table is drawn up with the theoretical framework developed in the thesis, which is compared to the traditional theoretical framework. The chapter ends with some general considerations.