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An Archival Science Approach to Collaborative Decision Making, Records, and Knowledge Management

Angelika Menne-Haritz

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An Archival Science Approach to Collaborative Decision Making, Records, and Knowledge Management

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INTRODUCTION

Records, their creation and use as sources have rarely been a subject of attention outside archives. Only since the availability of document management systems and electronic archives has records management begun to experience new interest. However, it seems that there is not much to theorise about. Nevertheless, after the introduction of electronic office systems some problems have occurred when the easier retrieval and the higher flexibility have lead to people forgetting things. Which version of a draft was the final one and which one was sent? Who made the PDF version and when? Is the collection in the folder on the server complete or is there other data stored somewhere else? These and more complicated questions arise and allow the difference separating the usual ways of working with documents, records and files in the tangible world from the new methods using electronic recordings become obvious. The introduction of a new medium has far reaching consequences on the way of handling recordings and on communication in general.

However this is not the first discontinuity in media that mankind has experienced. The changes which occurred during the introduction of writing into a society based mainly on oral tradition have been described by Eric Havelock [Havelock (1982)] using the example of antique Greece. He showed how literacy first was used in the economic sphere and had nothing to do with cultural abilities, whilst instead learning by heart and recitation was the main way in which literature was distributed. Oral language had developed techniques of remembering that were not available in the written forms and therefore the oral tradition was more trusted than writing. However that form of oral communication was not that of everyday life. It was more formal and that formality facilitated memorising. During the following centuries the techniques of oral communications, including the purposeful use of their special impacts on transmitting messages and memorising, however, were less trained and trusted.

A similar shift occurred when writing was introduced into an administration system relying mainly on oral communication for finding solutions many centuries later. In the Prussian administrative tradition boards were the main form for the core administrative work, in contrast to other European countries like France and even in contrast to the central government of the Holy Roman Empire of German Nation, which was situated in Vienna. Prussia was situated far away and was integrated into the administrative structures of the Empire rather late. At that time the legal traditions of the south relying on written procedures were integrated into a deeply rooted oral tradition of committee based work. Even up to the 19th century, for instance, the heads of the provincial government could be outvoted by a majority of the heads of its departments, the so called ministers. A royal decision in the 17th century conserved these oral working techniques for administrative work, whilst the written procedures of Roman law were adopted for legal cases, both inside the same body. The long tradition of deliberations finally led to a special form of processes using writing as non textual disposals for activities to be done. Internal writing took over the form of

internal memos not addressing anyone explicitly, placed on the papers, and meant for whoever was concerned. They were put on the margins of incoming letters, minutes or drafts that were the subject of the deliberations. The meaning was clear because of the layout. The responsibilities to carry out what was planned with such disposals had been attributed in advance by distributing competencies among the members of the organisation. These working methods led to new forms of records and files. The decision making process used the records for its internal organisation, and the files, bound to volums, represented the developement of the actions belonging together, like a chain, leading from the open problem to the final solution. Each process thus was clearly delimited from other processes by its own recordings.

These experiences with the shift from one medium to the next may help in finding out how the shift from writing to electronic communication might learn from it. The comparision of oral and written processes might help to understand what identifies collaborative decision making. Their differences may show how the functions are converted when forms are changing and that the conservation of forms may hinder functions from been usable anymore.

Decision making in organisations is, in several aspects, different from the taking of decisions by individual persons. As a process integrating contributions from various numbers of persons it is dependent on the smooth functioning of communication between them. It uses the individual decisions as parts, combines them, and emerges as a whole, which cannot be attributed to one or several of its contributors. The members of an organisation who come together in the solution of such a problem have many other responsibilities in other processes at the same time. As persons they are not members of all those processes, but they contribute to them. Therefore these processes are composed of their contributions during communications and not of humans as their elements. Therefore they can be seen as communication systems created by the contributions and vanishing when they stop. The processes consist of communication events, linked together because they are initiated by and react to each other.

In an oral environment these processes can only follow each other because of the sequentiality of oral communications. One of the big advantages of the written form is that written processes can be interrupted and mixed or brought together. Historically they survived because they offered greater internal complexity for increasingly complex problems on the agendas of administrations. It will be interesting to see what the special achievements of electronic processes will be. However, probably they will need the same functions of the process: initiated by a commonly accepted problem, constructed by single communication events building upon each other, and finished by a solution which is delivered to the outside as the expected performance of the organisation. One decisive aspect is however, that in both cases of the oral and the written form the processes are autonomous in deciding what they are about to do next. External attempts to influence the further development are observed and their integration is decided internally. If such processes are forced to allow control from the outside, they finish and the responsibility for the final decision is then with the

external person. This operationally closed character of decision making processes is often underestimated when electronic media are introduced.

The higher ranks in the hierarchy often tend to neglect this effect because this interference seems to be the only way of obtaining information and controlling the quality. This interference happens in electronic office systems when the superior can see every step, login or date stamp. However, its effects are the opposite of what is aimed at. Responsibility vanishes. Therefore it is vital, especially for organisations using electronic communication, to understand how collaborative decision making occurs. Its independence and its self organisation are needed so that the enhanced productivity of collaborative work can become effective.

The built in mechanisms of decision making processes, organised autonomously, ensure a strong capacity of control by the superiors; however, only before and after the decision is made. What processes need internally for their own construction, namely, their own history, can also serve as sources for their examination, especially if it uses stabilised openly accessible traces. If they were created for internal purposes, than they cannot very well be drafted for external observers at the same time. Therefore they are extremely open and trustworthy. If a process internally uses collaborative notes and itself refers to them for its further construction then these notes deliver a true image to outside observers of what happened inside.

Electronic records are not stable. In contrast, their mix of writing with timeless longevity and fluidity is what they are needed and used for instead of other communication media. However, the processes need both this special new character and the stable reference points in their own past as anchors for the common memory while constructing their own future.

So the stability has to be achieved in a way that does not disturb the fluidity of the process. This seems to be contradictory; however, also the way in which the oral communication was transformed into writing in the history of Prussian administration has found surprising solutions ensuring the ability of reshaping the common memory according top every new need inside the process without the possibly obstructing effects of re-readability of fixed messages.

The forms of communication follow their intended functions. Functions are more interesting for the quality of future collaborative work than a duplication of paper based forms in electronic media. To understand how the functions of the collaborative process can be converted into the new medium, it is necessary to see how the processes work and which functions are necessary and should therefore be available in electronic media too.

The questions concerning functions of electronic records as communication tools emerging from decision making processes are those questions that are typically asked by archival science. Archives ensure the reusability of closed communication as sources for knowledge. To use records as tools for insight into what happened at a certain time archival science has developed a complete set of methods and tools for describing and presenting the original networks from where the records, made

available by in the archives, emerged. Archival science has developed strategies for preserving the meaning of paper records using their structures. Oriented towards the inherent structures of archival sources archival science is independent from the media used for the original intraorganisational communication.

Archival science sees administration and its decision making processes from the outside, using traces, which are left behind after the processes have taken place. Analysing the records it asks what was behind them and their creation. Understanding these circumstances techniques were developed to open the traces for the consultation and understanding by thirds, by demonstrating implicit contexts and underlying relations with the structured presentation of descriptive information in archival finding aids.

Electronic records have been widely discussed in archival science in the last years. Finding overall archival solutions for them is much more difficult than with paper records. This book seeks to offer a new approach to the challenges they present by suggesting to begin with an analysis of the needs leading to the emergence of records. Hence the centre of attention here will be business processes as main originating purposes for their creation, and especially decision making processes in their oral, written, and electronic forms.

Electronic communication in offices today consists either in a wide spread use of e-mail and messaging systems or in the use of complete office systems that offer automated sequences of steps. Databases are used to a large extent for capturing data and for structuring collaborative work. Office systems can be purchased offering business processes ready for implementation and appearing to capture the knowledge of entire professions, such as economics and the organisational sciences. In many cases they function better than humans, ensuring that any new matter will be handled in the same succession of steps. However, designers of work flow systems have been heard complaining loudly about how users are constantly expressing special needs they were not able to articulate at the design stage. This experience indicates that a different approach might be of interest. Software systems, as they are used for office communication, are never finished. Like digital recordings, they exist in different versions and are constantly being reworked. Improvements take the form of attempts to implement new technical solutions by adapting them to the needs of the users. This method of developing new software systems out of old ones through the integration of new technology encourages the practice of accepting those needs of users which are compliant with the new possibilities, whilst rejecting those which are not as being outdated and obsolete. This perspective focuses on what can be done, rather than on what should be done, and it has had the negative consequence that, for some time, users were regarded as hindering technical progress and as being technophobic. However, ever since e-mail was widely adopted also for personal communication, this view can no longer be taken seriously. The reasons for the difficulties encountered must be looked for in other fields.

The latest developments in information and communication technology have led to such a large number of possible further developments that, in order to choose

intelligently amongst them, it is necessary to go back to understanding the needs of the users. However, interviews do not often reveal their needs because many unarticulated conditions and inter-relations play an important role, and it is useful for their functioning that they remain tacit.

It therefore might be of some interest to understand how work was carried out before the introduction of electronic communication media from the outside, and to see from a less partial point of view why the particular forms used were chosen. From this perspective the functions of the different tools used in daily communication are of particular interest, especially because these functions are not articulated in rules or policies, and they work precisely because it is not necessary to think about why they are used. These internally necessary, yet tacit, functions have rarely been the subject of research. They were mostly regarded as mere bureaucratic techniques. In fact, they are implicitly altered when a new medium is introduced, in a manner similar to the way communication changes with the introduction of writing into oral environments.

Even if oral communication was followed by written communication in a historical sequence, that does not mean that oral forms do not exist any more. They are, in fact, used to a large extent in parallel with written forms. However, they have less credibility and the written forms are predominant. In modern societies people have, to a large extent, lost their capacity to use oral forms in a purpose oriented and self-confident way as techniques adapted to certain effects and as tools for certain purposes and to trust it like they trust writing. With the availability of a third communication form it now seems necessary to regain experience and to develop a deeper understanding of the different effects of oral, written, or electronic media and how to use their special effects for communication purposes.

The attempt in this study is not to draft a sequential model of oral, written, and electronic communication following each other in a sort of upgrading of techniques. It seems to be more interesting to look for strategies for using all three simultaneously and deliberately when they are useful for the attempted goals of implementing their special effects on communication. A sort of media literacy is needed which does not value one of them above the others, but offers the capacity to use what is most suitable for a specific situation and the intended results of communication processes. So the study would like to contribute to constructing tools for intra-organisational communication as parts of a sort of governmental workbench for collaborative decision making.

This book seeks to give an example for a differentiated view of the use of media in the special situation of collaborative decision making. Besides the necessary interdisciplinary nature concerning elements of social sciences, it understands itself as a study in administrative sciences as well as archival sciences, and in doing so, it tries to show a way of joining efforts on both sides, administration and archives, for common goals, to design useful tools for high quality daily government, which besides good governance for the citizens leaves behind traces of internal communications that can be opened with the archival working techniques as sources for third parties and make good governance even more accountable and transparent.

The book substantiates its findings with examples from German administrative history. It is the first publication concentrating on collaborative decision making processes, their internal communication and the records. One of its main intentions, however, is to help to stimulate similar studies in other countries, and thus improve the ability of comparing methods of administrative work and the way in which records are organised. Such comparative studies will be useful in developing practical strategies for the design of new electronic office systems. This would better enable archives to fulfil their task of providing improved access to the information on activities of governments.

The study is based on a research thesis which was accepted by the German University of Administrative Sciences Speyer in fulfilment of the requirements for the *venia legendi* in Administrative Sciences and Administrative Computer Sciences and presents its findings in a reworked form. The German book contains more details concerning the actual historical forms, which are omitted here. The sources were taken mainly from the Federal Archives and the Prussian Privy State Archives.

I am especially obliged to Heinrich Reinermann, *German University for Administrative Sciences Speyer*, for his strong encouragement during the research and the writing of the thesis. I am further grateful to the archival students in my courses at the *Archivschule Marburg,* who have been most perceptive critics and who provided me with generous feedback on new ideas. Finally, I thank Thea Miller, *University of Toronto*, for the many discussions on the subject and for her help with the English language.

1 DECISION MAKING PROCESSES

The starting point of this book is an understanding of collaborative decision making as a process involving contributions from different parts and constructed during its work. It can be clearly discerned from its environment and is created by internal contributions referring to each other. It is started when a problem is accepted for being worked on in common and it is finished when everything is said or no better solution could be found.

This form of a process integrates individual decisions about parts of the problem insofar as they are needed for the advancement and have been contributed. Therefore its elements are communications, not persons, and therefore it is fairly different from divisions, groups, teams, project groups and so on. Nevertheless these communication networks are as real as the groups with stable membership and they work according to their own rules.

1.1 Research methods

The study applies methods from various fields. The main field is archival science. Central to the study is the analysis of the traces of administrative communicative activity irrespective of their material carrier, be it paper, parchment, or anything else. The method of analysis was developed in archival science with the intention of generating all knowledge necessary for opening access to administrative records for third parties without being involved in the processes and intentions which generated the records.

With the purpose of opening the remains of all types of government transactions for all types of questions, archival science has developed methods of reconstructing and recalling the original intentions that led to the creation of notes and disposals remaining as written traces. The reconstructed and recalled purposes make the records accessible to third parties who might be unaware of their original context. The interesting intentions and purposes in this context, however, do not have their roots in personal interests. They were shaped by structural conditions and by the framework of the communication and of the joint activities inside the organisation.

Therefore the analysis entails an impartial understanding of structures and relations in collaborative actions irrespective of the nature of these actions. The necessary neutrality is in many governments ensured by organisational boundaries between separate archival institutions independent from the creating agencies. It is furthermore supported by the actions being past when the records are transferred to the archives. A searcher in the archives cannot be involved in the actions any more at this time, but can inspect them thoroughly.

The neutrality of the archives towards the nature of the actions reflected in the records enables an impartial opening of the motives, intentions, and purposes as well

as of their results without prior evaluation, as a prerequisite for any historical or other interpretation and evaluation of what had happened by any user.

The analysis of historical events using methods of historical criticism made possible through archives leads to further advantages. The actions have been done, and hence can be examined contextually and viewed as components within an evolving network of spatial, temporal, and functional relations. In contrast in conducting an empirical analysis of current operations the observer cannot avoid influencing the operatives because they are aware of being observed. This makes it difficult to distinguish between elements which are indigenous and those, which are brought in from the outside. In addition, a thorough understanding of the event requires knowledge of its consequences, and this knowledge is not available until the event itself has become past. Archives enable users to investigate past, even a very recent past, without, however, taking part in the interpretation.

This study uses archives created during the organisation of the administrative work, and instead of an empirical analysis of directly observed business processes it studies them using their traces and analysing what the traces can tell. It sees business processes as chains of consecutive communication operations, using those communication media that are most adapted to their aims. If paper had been used texts and signs are there and can be read and interpreted. In between the notes, drafts, entries, and letters, words might have been exchanged. Even if they are not recorded as such, the whole processes can be imagined, and thus the whole communication can be reconstructed. Different processes here are seen as distinguished by a differing amount of oral or written parts, including nonverbal communication, and by analysing what was the leading communication medium. Historical examples of administrative practices are analysed in order to identify the typifying phenomena involved in the functioning of the different forms of communication.

Following Max Weber, the examples found in history are used to construct ideal types. The ideal types are defined in order to characterise relations and functions which can regularly be observed in certain circumstances. As Weber noted, such ideal types represent a potentiality - or in modern terms a contingency - for an infinite number of realisations but do not describe a reality. The actual realisations do not constitute the ideal type with their special differences, but serve rather to reinforce and develop it.

A historical analysis facilitates the understanding of what was done, because no influence can be purposefully or un-purposefully exercised any more on what happened. Activities as such cannot be stored. In practice, only the traces or results of the organisation of an action, or of its observation, can survive. Hence there may be protocols or minutes as well as incoming and outgoing correspondence. They do not show how the decisions were really produced. But they help to reconstruct what happened in the mind of the reader. This reconstruction may be based on indications concerning the target of the activity, as well as on evidence that it was carried out. A reliable indication of an intention initiating an action is that a subsequent action

depends on the preceding action actually being carried out. Evidence of the intent to make something happen can be seen in the effects of operations that were initiated or organised by that intention. In addition, further planning of subsequent operations will reveal whether the original intentions had the desired effects.

Historical analysis shows which action followed another as a reaction or as a consequence of it by demonstrating which actions provoked others. It makes the temporal relationships explicit and therefore accounts for inherent relations which were implicit in the actual operations when they took place. Connectivity between operations of different persons requires the mutual understanding of the actors. In order to initiate a further operation the preceding one must be understandable as an expression of expectations and as a stimulus to action. Such an understanding does not necessarily involve the exchange of verbal messages. It can just simply be based on special behaviour, on the one hand and its observation, on the other. It can make use of its own specialised language, often based on shared cultural values or mental attitudes, which in turn account for the significance of behaviour. This language can also be apparent in conventional codes.

Specialised languages, especially non-spoken languages, work best when used implicitly. Implicitness is a most efficient stabilising factor fore social behaviour, even for rules. Nevertheless, when difficulties in understanding arise they must be made explicit. Explicitness alerts the users to attend to their behaviour lest it cause misunderstanding. If a community has begun to make its common language explicit it needs to introduce new techniques in order to provide stability for the commonly accepted version and its use. A practical guide to semantics and syntax is required. In the spoken languages of communities based on membership by birth, dictionaries and grammars fill this need. Vocabularies and grammar books are also needed for the initial training of foreigners and children. Specialised dictionaries help ensure the normalisation of the spoken language once the basics have been learned and accepted. For non-spoken languages similar tools are available, such as codes of behaviour. For those situations where communication is guided by forms of behaviour, etiquette ensures that behaviour is not misinterpreted. Codes of ethics provide a similar understanding of what is right or wrong.

Organisations may use rules and guidelines as internal grammars for the unspoken communication about the coordination of commonly targeted actions. The Prussian government used a special set of such guidelines in the 19th century, and the modern German government has inherited them. On a rather practical level, such guidelines describing the handling of incoming mail and the producing of common decisions up to the final outgoing letter represent a complex structure of explicit and tacit knowledge serving as a tool for the organisation of personal and administrative communication within the decision making process. These guidelines function in a manner similar to internal regulations used in teams or groups for meetings, in order to identify the contributions to the discussion and to distinguish them from other communications between the members of the meeting or of the organisation [March, Schulz, Zhou (2000), p.197]. Within German administrations these written guidelines

serve to organise the communication within written decision making processes by providing articulation strategies, semantic structures, and syntactical rules.

To a large extent, the following research is based on such guidelines. Those guidelines have been commonly applied in German administrations from the 16th century up to today. Just recently the current text of the general procedural guidelines for the federal ministries has again been revised. The process leading to the revision demonstrates the intention of the guidelines. They are not formulated to describe practice. As does a grammar they pick up problematic cases, however, without naming them, and suggest solutions for ensuring a common understanding of the situation. So they do not describe actuality. Instead they describe what should be the case. They instruct those working within the organisation how to arrange future collaborative work.

Used as sources by an external observer they must not be misinterpreted as actual practice. However, the focus on improving the work process led to a choice of expressions which implicitly indicate what was not wanted, since, after all, undesirable behaviour was intended to be replaced by new forms. Just as dictionaries discriminate in their selection of words and exclusion of other words, so, too, these guidelines exclude certain forms of behaviour, especially those which are contrary to the forms being explicitly prescribed. They are thus very useful as sources in determining what was to be done, implicitly indicating where the problems were, and what was going wrong. Through their implicit criticism of the actual situation they permit the reconstruction of what actually happened. Understood this way the regulations and guidelines are open sources on what went wrong, where the problems were, and what remedies were tried out with what effects. This seems to be a very helpful way of gaining experiences and of learning from the past, at least it frees from the unproductive alternative of copying or rejecting it.

A typology of decision making processes in historical contexts is used with the intention of revealing the functional aspects of the different media used for communication. These functional aspects can well be separated from their general association with certain types of government. They depend on the way in which the different media are used and have themselves effects on the openness and effectiveness of the business processes. The aim is to know more about how such forms influence the final product and to understand why and how communication operations can be done in such a way that they succeed.

The main difficulty in transferring the findings from analyses of oral and written tools in joint decision making processes to the electronic environment lies in the differences between utterances or oral messages, written notes or disposals on stabilised paper and the fluidity of electronic communication and transfer of documents. The third seems to be able to behave like both. When the paper forms are transferred to the digital world they loose their unique and inalienable history and show their fluid character. When oral messages are written down electronically they suddenly can receive a new stability and their own history, being kept or forwarded at

will without the knowledge of their author. Thus one central question will concern what this special history of stabilised communication operations is useful for, and how the needs of a successful communication can be addressed when digital forms are employed. And here records enter the scene.

1.2 Records

Records are at the centre of the archival theory and work. Paper records, filling the stacks of many repositories around the world, have an undeniable physical presence. They are tangible things which can be stored, transported, ordered in stacks or filing cabinets, and they can be locked away or given out. In times when there was no alternative to paper records for business purposes, before the advent of the idea of the paperless office, this attitude could not be questioned. It is just sufficient and the most effective one when it is necessary to design techniques and strategies for managing archives.

Records are what remain when business processes have finished and attained their aims. Therefore they tend to seduce the minds of their readers into reducing decision making to the creation of records. However, much more happens when they are created. And only in very rare cases are records created consciously for archives which open them up for the public. Records are only part of the whole, and the portion this part takes depends on many factors, amongst which the communication media play an important role. To understand records therefore the whole must be seen and analysed, and then the impact of the media can reveal why particular records came into being and why they do tell what they tell. The whole is the business process. The forms and functioning of the processes determine the role and purposes of records and the reasons for their creation. Thus the part reveals the whole in demonstrating what is absent and in pointing to the importance of its influence.

Records can be used as sources because they tell more than is written in their texts. They can explain how they came into being and they can uncover their underlying networks. Understanding business processes as being an environment for the generation of records according to internal communication needs allows the comparison of the role of records in different forms and seeing and understanding what is not recorded in the respective forms.

Because records are parts of business processes, records management systems cannot be autonomous. They develop as a function of the business processes they support. They are structured by the business processes and the latter's needs for written documentation, by the physical conditions of the use of records during the actual work, and, finally, by the structurally assigned competencies and personal skills of the persons in charge, their professional decisions and the tools they implement.

Handling paper records impacts greatly on the business processes. However, in the paper world the impacts are known and can be instrumentalised. Records management systems in the electronic environment are still new and many of their effects are not

yet clear, and so cannot be purposefully used. When electronic records come into play the old habits of seeing records as physical units experience their limits. If electronic records are just regarded as representatives of paper documents, and if the traditional methods of handling them are converted into software, the results are nevertheless no longer the same. A paper document suddenly appears as something different from an electronic document, even if the second is a true image of the first. Paper can tell its own history as a tangible thing, while an electronic document may only have different versions, if someone thought to store them. Paper allows reading between the lines, which becomes much more difficult with electronic writings. Paper records obviously provide control over a lot of events and facts which were not recorded intentionally. Electronic records do not allow the same effect to be expected.

It seems to be especially difficult to find out how electronically based communication inside organisations can lead to the creation of records, what these new records are for, and how they can be used to open up insight into their primary purposes when offered to public use. The introduction of electronic media into communication has the effects of fundamental changes, and it will alter the processes in a way similar to the introduction of writing into an oral environment. To analyse the effects of communication on the production of records, business processes need to be understood in a technical way. It seems to be helpful to this purpose to distinguish decision making from collaborative production processes.

1.3 Two forms of business processes: decision making versus production processes

Business processes are seen here as sequences composed of interlinked events. The characteristics of these events are that they are built upon and initiated by their predecessors and lead step by step to the final common target with identifiable initiators, internal activities, and identifiable results at the end. They bring together resources, supplied by the organisation, into ephemeral and constantly changing forms. They need time to transform the initial problem which caused their initiation from an open question step by step into its solution. This definition, however, is mainly valuable for open, yet operationally closed, decision making processes, whilst also production processes, as operationally open processes yet with a closed end, can be seen as business processes. Both have distinctive differences, and that should be taken into account.

The differences between decision making processes and production processes are not based on the differences between administrative and enterprise business processes. In both fields both forms can be used and observed. Their application only depends on the function for which they are applied. If there is a certain predefined product to be established in a joint effort, the resulting common actions have the form of a joint production process. However, if an open question has to be solved, and that may be the decision on the specific characteristics of a new product, a decision making

process with an open end starts and is closed when the product, which means the solution, can be defined.

Both processes are forms of collaborative work involving the integration of various efforts through a series of steps to attain common goals. Nevertheless, they each have distinctive characteristics according to what those goals are and the methods used to attain them. Administrative agencies use production processes, for instance, when an outgoing letter is produced or a road is constructed by a state agency. A business firm also uses decision making processes in the preparation of the production of a certain good. However, the main output of administration is decisions for solving problems in a certain area which they are responsible of while business firms are selling their products on the market if they meet corresponding demand. Although neither decision making processes nor production processes occur as a pure form in the real world, an understanding of their principal characteristics as ideal types in the sense of Max Weber may assist in determining their role in collaborative work.

Production processes are characterised by their having clearly defined goals which are established before the processes begin. Adequate processes can be designed which are economic, efficient, and best adapted to the resources available. For example, if a car has been ordered with certain features, the process of producing it in a quick and efficient manner can be optimised. With regard to its technical aspects, service production does not distinguish administrative from enterprise business processes. Services are also delivered as pre-defined products, which are offered to the public after the decision has been made with regard to their form and content. The processes of delivery can be treated like other production processes and optimised in similar ways.

However, before designing the production process, decisions have to be made about what the product is to be like, and how it is to be offered. These decisions can be reached in the form of a collaborative decision making process, as it takes place in a board meeting. The character of this process however differs very much from the production process in that it is not determined by a final goal, but is rather continuously shaped and directed with each new contribution, and by consensus as to the appropriateness of each addition.

In contrast to collaborative production, a collaborative decision is the result of an open ended process. This form of process is characterised by the internal definition of its goals. It is closed as soon as the goal is reached. Its result is the answer to the question which initiated the collaboration. The American philosopher Heinz von Foerster developed the model of trivial and non-trivial machines as an explanation of the difference between operationally open and operationally closed processes. Operationally closed are those processes that are self-organised referring to themselves and their own history and not being able to integrate external steering attempts. This model can help characterise the difference between decision making and production processes. Trivial in Foerster's sense means that the outcome is always the same given the same input. Hence the result is predictable. Non-trivial machines, on the other

hand, may produce different results with the same input, because they reference their own internal history [Foerster (1984]. If trivial machines turn into non-trivial machines, such as a car that does not start when the key is turned, they need repair. The non-trivial machine can be seen as a description of the self-organisation in an open ended process, which cannot be controlled from the outside.

This has fundamental consequences for the analysis of business processes. If they are used to close open problems through collaboratively found solutions, then they can only rely on self-organisation and cannot be controlled from the outside. This conclusion contradicts however the assumptions of critics of bureaucratic structures which view individual personal submission to the orders of the upper levels in the hierarchy as a functional requirement of bureaucracies. In contrast, decision making processes cannot work without individual engagement and responsibility. The distinction between trivial and non-trivial machines and its consequences for the assumption of necessary self-organisation of decision making processes characterises a technical approach to the form of decision making process. It focuses on the way in which the goals are achieved and not on the kinds of problems and solutions which form the content of the process. It regards decision making not as something important in itself, but simply as a kind of tool.

This approach is therefore different from the common heroic picture of decision-makers as occupying high positions within hierarchies, positions which ensure their influence. Individual decisions, however, make use of the capacity of only one mind, whilst decision making processes link the knowledge and experiences of several minds, and thus attain a higher level of productivity. However, as processes involving several persons and linking their capacities together, they are based on communication and therefore need communication techniques in order to happen.

The technical approach sees the form as independent from the content of the problem. A problem which has been solved is no longer a problem and so does not require further decisions. The process is finished and, as it cannot initiate further communications, it disappears. Its records become useless for internal purposes and can then be disposed of or be used by an external observer to follow the sequence of the internal steps from the outside.

Hence the form of the process depends on the initial problem, and a problem which is solved is no longer a problem, no other problem will occur, which is completely the same and therefore might use completely the same process. And even if the problem were to be the same it could not refer to an external problem solving process because the choice of a pre-defined problem solving process would itself be an open ended problem solving and decision making process.

Therefore the form of an individual process cannot be re-used. However, past processes can be used for learning from them, seeing what was done with which effects, and thus avoiding time consuming and inefficient repetitions. Therefore past decision making processes can serve for gaining experience. Awareness of past experiences, flexibility, and tools for internal communication are the best means of

optimising the construction of new processes from the inside. Each decision making process differs from other ones, whereas production processes work best if they are as similar as possible for similar products. The form of a decision making process depends on the initiating problem and the required solution. It also depends on its own history, that is to say, on how the problem is initially defined and on the succession of steps undertaken to solve it. This means that special techniques are required in the design of each new decision making process in order to avoid wasting resources on unnecessary steps and duplication. These techniques will assist in the analysis of the actual situation within the process, and in planning the next steps in an autonomous yet efficient manner.

Whilst production processes, with their special methods for improvement, are suited to the collaborative pursuit of pre-defined goals, decision making processes need a different set of techniques for the structuring of the collaboration, and understanding these techniques helps in supporting the creation of new decision making processes in electronic environments.

1.4 Decision making

Administrative work is based on making decisions in processes, which serve to provide solutions of problems in constantly changing situations. Decision making is a technique for producing a solution for a problem which was first accepted by the organisation as a task to work on. From this perspective it is not so much an issue of who is speaking for the organisation, or of who is taking on the individual tasks required by the external world. In preparing for the final, or crucial, decision many small preparatory decisions must be made, and all the members of the organisation make such decisions continuously. For example, in choosing an alternative source of information, in comparing a problematic situation with others, in applying standard behaviour to it, in selecting someone to address a question to and also in the choice of style for outgoing correspondence, decisions are being made which contribute to the achievement of the organisation's overall goals.

The term decision making process is derived from Herbert A. Simon, who compared the preparation of the final crucial decision in an organisation to a river fed from many different sources. “A complete decision is like a great river, drawing from its many tributaries the innumerable component premises of which it is constituted. Many individuals and organisational units contribute to every large decision, and the problem of centralisation and decentralisation is the problem of arranging this complex system into an effective scheme.” [Simon (1997)]

More recent decision making theories employ similar models and distinguish phases within each process. The administrative decision making process is usually divided into four phases: (1) the perception of the problem; (2) analysis of the underlying cause of the problem; (3) investigation of possible solutions and testing for consequences, costs, effectiveness, and applicability; and (4) selection of the most

appropriate solution. Each phase is itself a decision making process, choosing information specific to its own purposes, and determining the next steps to be initiated. The result is a chain of consecutive operations, each phase of which is based on the preceding decision making, and is in turn followed by the next phase, all of which are possible because they are defined by the context of the entire process. The internal form of this kind of process did not, however, attract much reflection outside archival science. After all, it appears to be exceptionally self-evident. The sphere of routine office techniques is usually regarded as unavoidable, and it is only when things do not function as they should that interest is generated. This is the current situation, which first arose when computers were introduced into office work some decades ago. Once computers began to be linked to each other traditional ideas no longer appeared to be valid, and a re-thinking of the concepts was required.

1.5 Bureaucracy

Collaborative decision making processes within organisations have to do with bureaucracy. Bureaucracy's negative image has not stimulated research into its forms and implications. The very word 'bureaucracy' serves as a shield against further inquiry, being usually used in a pejorative sense, without any attempt at analysing what is actually occurring. It first appeared as a negative characterisation of absolutist régimes, and it served to describe collegial boards and their increased use of writing.

Contemporary critics used it in denouncing monocratic centralism in France, and it serves as a sociological denomination of the personnel in administrations of all forms. Because it is used for widely differing phenomena it is hardly a precise term, and the chief purpose of its use is to cast the subject in a negative light. In short, the term 'bureaucracy' normally describes a deplorable situation, and is used more with the intent of suggesting the urgent necessity of change rather than of understanding the actual state of affairs.

In the analysis of office processes, however, bureaucracy is a necessary concept when understood in a technical sense, namely, as referring to a special type of collaboration. In what follows, the term 'bureaucracy' will be used to denote a special office technique that was applied in a very efficient way in the Prussian and German administrations of the 19th and early 20th centuries. This administration organised decision making processes into such a form that the advantages of both oral and written communication were combined. This form of process was given the untranslatable term of *Vorgang* ("unit of sequential actions") including the process, the steps themselves, and also the bound volumes of files aggregating all the paper records, produced by it. Analysis of this kind of administration using the business process type of *Vorgang* as a special decision making method can shed light on how both the oral and the written communications can be implemented. These experiences may enable a better start to be made in the designing of new business process which rely on a combination of oral, written, and electronic communication, insofar as their

function within communication is understood and can be facilitated by appropriate tools.

Discussion of the bureaucratic model, especially in the approach accorded to Max Weber, has focused on the division of labour and the need for specialised knowledge as the central problems of bureaucratic organisations. Professional knowledge is viewed as a force working against cohesion, and hierarchical order is regarded as necessary to hold the organisation together. A contradiction between professional qualifications and the ability to communicate is perceived as typifying bureaucratic régimes. “Where professionalisation is increased too far, growing dissimilarity threatens to build unbridgeable communication gaps, if democracy is increased too much, fusion and the end of all useful labour division is threatening.” [Schluchter (1985), p.174] The solution appears to lie in integrating professional skills into the hierarchical structure, even at the cost of diminishing their effectiveness. Consensus management within a formal hierarchy of authority is indicated as a more effective solution. Conflict resolution becomes informal and discrete. If this is not possible then the conflict is suppressed, and an atmosphere of well being created. This dichotomy between specialised professional skills on the one hand, and their reduced effectiveness by integration into hierarchical organisations on the other, has been repeatedly demonstrated by American social science studies.

It has been noted that professional specialists in bureaucratic organisations tend to protest and rebel, and if internal regulations place strictures on their work their loyalty is diminished. The only alternative seems to be to employ non-specialised staff with more generalized skills. Beneath this problem lies the assumption that hierarchy and centralised management are necessary and more important for modern bureaucracies than professional qualifications.

This same assumption can be detected in historical studies as well. For example, Tibor Süle, in a very useful study of 19th century Prussian administration, concludes that what he identified as incomplete bureaucratisation of this administration resulted from inconsequential formalisation. In modern legal literature as well, where hierarchy is presumed to be a functional necessity for democratic control of administration, the same idea is found, since the politicisation apparently implicit in the democratisation of administration is unacceptable.

Whilst Max Weber had characterised bureaucracy as the most efficient method of administration, these empirical studies seem to demonstrate that bureaucracies cannot be other than inflexible and inefficient. As alternatives, team building and the establishment of project groups have been proposed as counterweights to hierarchy. Teams are supposed to be able to create an atmosphere in which all the participants are equal and collaborate on a common footing.

However, the proponents of the use of more group and team forms in organisations are often unaware that they are re-inventing old forms of collegial co-operation. As they do not realise that they are actually counterbalancing hierarchy with self-organisation, which is what happens in oral group processes, they do not look for

alternatives to teams or groups. Other ways to allow self-organisation without the inconveniences of such stable structures are more difficult to terminate. As a result they inherit the problems of oral communication along with its advantages. When groups and teamwork are implemented, often the same problems arise, that led to the almost complete abolition of this form of decision making in the course of the 19th century.

Max Weber's analysis of bureaucracy is often misunderstood as a description of monocratic hierarchy. However, his claim for the superiority of bureaucratic organisations was based on a comparison with the previous administrative structures of absolutist régimes, just those monocratic forms which were far less efficient for solving problems than modern collaborative systems. Although he did not make it explicit, what he was actually describing was a form intermediate between the monocratic structure typical of absolutist régimes and the collegial structure represented by the boards of German administrations in the 18th century.

Hence it appears justifiable to employ the term ‘bureaucratic’ in this sense, that is as designating a form of administration which differs from monocratic and collegial types and includes elements of both. As a technical concept useful in analysing a particular way of exercising government, bureaucratic organisation is characterised by the use of writing in a process similar to that of oral discussion, built up with a unique method of interconnecting actions contributing sub-decision to the flow of collaborative problem solving.

Simon described this insight into the potential for combining different skills within a single process: "It is possible to add the knowledge of a lawyer to that of an engineer in order to improve the quality of a particular decision." [Simon (1997), p.10]. Seen this way there is no redundancy. The qualifications are not doubled but are added to a common solution based explicitly not on similarities, but on their differences to each other. No argument and compromise regarding the solution is needed, because there are no differing opinions which have to be reconciled. Instead, different expertise is combined into a whole which is more than the sum of its parts. And this whole, the process with a common target, creates a cohesion which is even stronger than hierarchy because it is self-determined.

At the beginning of the process the problem is analysed according to the internal distribution of assignable competencies, and the solution is conceived by drawing the component perspectives together. It may appear as something of a revelation that this is actually a form of self-organisation, and hence something very democratic within a form of administration which is often criticised for being the opposite.

A central point in the literature on bureaucracy is often the complaint about the obviously unavoidable loss of control, perceived to be the inevitable consequence of even rudimentary forms of self-organisation which also emerges in project groups and teams. Within the sociological debates the inefficiency of hierarchical control even led to the idea of introducing market structures into public administration to control inter-relations and communications. After these debates it was acknowledged that “Social

theory has to abandon the cybernetic model implied by the old theory of control, without being able to replace it with a model of autopoietic self-regulation." [Mayntz (1997), p.286]. However, issues which are raised in the criticism of bureaucratic organisation concern (1) the integration of specialised qualifications within the whole, and (2) the overall control of the work of the organisation, including (3) the role and functioning of regulations in prescribing individual behaviour.

The following reflections will provide some hints on how new perspectives of these issues are possible, and will describe the main elements of the third type of administrative labour, a type which is intermediate between the monocratic and the collegial systems, and which has its roots in collegial structures, and may be derived from bureaucratic techniques. Modern systems theory, with its assumption of autopoiesis as driver for communication networks, might be of help.

1.6 Systems theory and business processes

Niklas Luhmann, a prominent German social scientist in the late 20th century, mainly formulated functional systems theory with autopoiesis as a central element. He had gained practical experience in public administration before occupying the new chair of social sciences in Bielefeld. During his lifetime he was a very individual thinker and developed a theory to explain how society functions as a whole or in its different areas such as science, art, politics and law and how it can be understood. His main assumption was that society and every functional system in it is built up by communication, not by human beings, and that system coherence is ensured only by the connectivity of communication operations.

In the first comprehensive explanation of his theory, in the book *Social Systems* first published in Germany in 1984 and translated into English in 1995, Luhmann supplied the instruments for observing a variety of social systems. He was not primarily interested in the results of such observations themselves, but in the techniques they use. The book is occupied with the 'how' questions instead of the 'what' questions, and this made his instruments applicable to other analyses of social phenomena [Knodt (1995)]. Luhmann himself called this the method of functional analysis, and qualified it as a kind of theoretical technique, such as mathematics[1]. With this method what is present can be seen as contingent and what is different as comparable and thus his questioning can lead to the search for functional equivalents.

Concerning decision making in organisations this approach allows to see actual forms of processes as selectable in a sphere of innumerable other possibilities and functional equivalents with different communication media can be found out. If forms are not numerable, functions are. They are closely identifiable and can be described.

[1] "It would fall under Husserl's verdict concerning mathematics, had we not already eliminated the grounds for this verdict, namely the assumption of a subject that underlies and supports meaning." Niklas Luhmann, *Social Systems*, 1995, p. 52.

Therefore the description of functions seems to be a better way to describe what is necessary in the world of electronic media. Not the forms but the functions, that identify a decision making process, if transferred between the media worlds can make a sequence of communication events comparable and identifiable as decision making process in different environments. The functional analyses can make understandable how decision making processes work in oral or paper-based worlds and can therefore help to say how they should work in other technical surroundings.

This question of functions, however, points to the concept of second order observation. Second order observation is a technical term used in systems theory to describe a certain relation. An observer observing another observer, can see more than the first one. The second can distinguish between the observation and the observed environment and thus is able to see, what is not observed. So second order observation sees first order observation as a selection and can try to understand why the observed phenomena where selected.

Observation in the sense of selection is part of any communication operation on both sides, and communication itself is seen as initiated by the recipient, not the sender. The awareness of the recipient leading to perceiving something as a message and observing this message beeing formulated is the constituting part of communication. Observation in this context on the side of the recipient is seen as the first part of any communication, and on the side of the sender it precedes the selection of the content to be communicated. So the recipient observes the sender, observing his environment, selecting a particular content as well as a special form for a message. The observer then tries to understand the meaning for himself.

If the operation of observation is observed itself and if it is seen as a selection it is made contingent. The term of second order observation point to the contingency created through the relation between both operations. First and second order observations are two actions linked together by the paradox that an observer cannot observe himself without stopping his primary observation. The first observation closes a choice by selection, which then is no longer a choice but is assumed as necessity. The second order observation replaces the selection once again inside the open choice and sees it as contingent.

In the context of business processes the concept of second order observation means to see as contingent what is accepted as necessary during a decision making. So the concept of second order observation leaves behind the necessity of establishing, what is true and what is false. Anything selected as being true can be seen as contingent through the relation of second order observation, since every truth must be communicated to be valuable. Also what is regarded as true can be seen as a selection by an observer leaving other phenomena unselected. This concept therefore supports analyses, understanding, and criticism, which is able to replace the necessity of absolute truth in the sociological concept. The concept might be called de-constructivist, yet that is not the main impetus of this analytical method. Its consequence, which is more important, is that every observation can be observed, and

thus every truth can be made contingent. Therefore it is a useful tool for de-paradoxifying a deadlock.

Concerning business processes, second order observation can be identified when further operations in the chain of interconnected activities see the traces of the preceding operations. It is operating also when records management arranges records and provides access to them for actual business purposes as well as when researchers use records in the archives. They observe the participants of the process and the registry, observing this process by delivering files without being involved, and they can concentrate on the records, while the participants in the process concentrate on the problems and the next steps that help them to find the solution.

The paradox of concentration on action, or on organizing them, for instance with the help of records, is solved by the differentiation of two sides, the action and the organizing operation, and by making each one individually connectable for further operations, namely bringing forth either the action or its framework. They are two different functions concerning the same process and bound together. This approach of creating two separated spheres of distinct functions yet regarding the same thing allows organisational solutions for supporting self-organised processes without any interference from the outside. The control than concerns the structures and builds contexts and thus prefigures what can be developed inside the process from the outside.

Systems theory instruments enable decision making processes to be seen as temporally formed systems inside organisations, whilst the systems consist of communication events. The human beings are members of organisations, not of the systems. Functional systems are entities, which exist as long as the communication lasts and as it answers to past communication. Business processes seen as communication systems have all the characteristics, which social systems in this functional sense show. As merely temporal forms they consist of communications concerning a specific common problem. Each communication, if it used a material support of any kind, leaves behind traces. The processes advance with every communication, and so these single contributions and their traces represent the events that build on each other and thus bring the sequence forth.

The communication events, depending on what happened before in the same process create an operationally closed form open for unpredictable ends, which are worked out in common. This constitutes the typical form of what functional systems theory calls an autopoietic system that recreates itself in a self-referential way and cannot be intentionally influenced from the outside. Such autopoietic systems stay opaque for their environment until they have reached their end. No single event can be predicted. It can be seen only after it had happened.

Self-control and self-reference are the two main characteristics for such operationally closed and open ended processes. As they cannot operate with external events they need reference to their own history and have a vital need for access to it. Therefore the records are kept during the process and until it is finished and are needed

inside the process for its own further development. This character of records as unintentionally left over traces after they have been used as references for planning further steps implies concepts of information and communication, which are especially interesting for the debate on electronic records.

In this context the term ‘communication’ needs some clarification. It is seen as a synthesis of selected information, its utterance on the one hand and the perception and understanding on the other. This is a concept distinct from the understanding of communication as a transfer of a message between sender and recipient, the quality of which is dependent on the performance of the transmission channel.

The systems theory concept of communication is not specifically bound to language. “Communication by means of standardised gestures is no different, in principle, from communicating through words; it merely expands a given repertoire of signs.” [Luhmann (1995), p. 19] However, such indirect communications are highly context bound and make sense only situationally. Accompanying oral communication, they can serve to control the situation, to support the intended meaning, or to reject another opinion without being forced to articulate the rejection. As signs are more imprecise than articulated words they can be used at a lower level of confrontation and can establish a consensus without any verbal argumentation.

The difference of language and signs refers to an important distinction which is required for this examination, namely, the distinction between message exchange and intentional interaction beneath the level of articulated wordings as a way of communication for organising common actions, in the sense that the latter make use of commonly understood signs. Interaction based on such more or less conventional, in any case commonly understandable, signs is based on perception. Only when it is perceived and understood, does communication happen. Without perception on the side of someone addressed by the communication its intention cannot work. If signs are used instead of words they do much less urge to be seen and understood as meaningful. Words want to be seen and read. Signs might be perceived. Perception can also pay attention to visible aspects that were not meant for communication and prepare a reaction to them.

Therefore it is clear that it is impossible not to communicate, since everything can be regarded as meaningful. The concept of perception as an integral part of communication theory recognises those forms of communication which are not verbalised, and which thus avoid some of the potentially disfunctional characteristics of verbal utterances.

As communication consists of a tri-partite action of selection, utterance, and understanding, both sides select meaning in a contingent way. The initial selection defines the information to be communicated, which is then brought into an adequate form for its articulation. The utterance then has to be perceived by someone before the effort can be made to understand it. Here appears the phenomenon of double contingency influencing the choice of words, of accompanying actions, and of sense during the communication event on both sides. Such an understanding of

communication as a set of selections producing double contingency opens up a completely new perspective on how communication works, and thus has the capacity to be a useful theoretical instrument with a high resolution power.

The understanding of perception as a special form of communication is exemplified by Niklas Luhmann's view of the function of art as non-verbal communication in society. He understands art as being rooted in perception instead of in language. That is valuable not only for pictures but even for literary texts, in the sense that what is understood is more than or at least not identical with, what is written. If everybody were to understand books in the same way no discussion or critique would be interesting. This non-verbal communication is started, and also achieved, by the person seeing, reading, or hearing what is presented as a work of art. This is a useful approach to understand communication in the analysis of business processes, especially when organising signs on paper or used by all participants without misunderstanding.

However, an old humanistic tradition arranges psychological faculties hierarchically, relegating 'sensuousness' or perception to a lower position in comparison to higher, reflective functions of reason and understanding [Luhmann (2000), p. 5]. Perception provides temporary impressions rather than persisting ideas. It is more imprecise than language. These aspects may have contributed to the theoretical neglect of perception. However, the human brain is continually busy with perceiving the world and consciousness needs it to be connected to the external world. Perception is it main means for it.

Consciousness is necessary for communication, but it is not part of it. Communication was long seen as a transmission of information from one living being or consciousness to another. But both are closed systems. And communication is more than that. As Luhmann wrote: "Compared with consciousness, communication executes an extremely slow, time consuming sequence of sign transformations (which means, amongst other things, that the participating consciousness gains time for its own perceptions, imaginations, and trains of thought)." [Luhmann (1995), p. 9]. Communication recursively recalls and anticipates further communications and that is the way how it repeatedly creates and recreates autopoietic systems.

Communication can only respond to or be followed by another communication. It must captivate perception, eventually by moving forward in the case of oral utterances, or by employing conventional signs in writing, such as the letters of the alphabet or other commonly adopted symbols. Such a view of communication frees participants from playing predefined roles. As certain functions are assigned to them by their place in the organisation, they decide by themselves how they react and what they choose to do.

The concepts of functional systems theory might seem very abstract. However, they are deeply rooted in every day life and they provide powerful tools for understanding social phenomena in their overall cohesion, just because they analyse techniques of communication instead of weighing interests and social values.

Luhmann has been criticised as a technocrat, especially by Jürgen Habermas. However, no other social theory provides comparable tools for understanding social systems. Especially for the research into how communication works, into how common goals can be reached and how cohesion can be created on free and autonomous grounds, functional system theory provides useful insights and perspectives.

The elements of functional system theory used in this study, which means (1) understanding decision making processes as communication systems; (2) understanding communication as driven by double contingency; and (3) observing deciders as observers; allows the functions behind the forms to be seen. Second order observation is central because it sees the invisible, the non-obvious side of the events. It can understand the visible as part of the whole and thus can reconstruct what cannot be seen. It can analyse paper records as a corresponding part to oral exchanges and it can analyse the character of the non-visible part, which is nevertheless present. Minutes recall debates and files let one see cooperation in action, and orders make hierarchy visible. As a very experienced historian, who has done life long research in German archives, noted, “A report, which at first glance is just a report of events, fulfilled two purposes. It confirmed to the leadership the continual functioning of the administrative machine, and provided an overview that was a tool for shaping future decisions ... The information in the sources may be positive, based on explicit passages, or negative when it is deduced from the absence of any notation or remark.” [Hilberg (2001)] These mechanisms make even oral communications recallable and they are the basis for an unintrusive research on business processes.

2 THE HISTORICAL SHIFT FROM COMMITTEE TO PAPER BASED DECISION MAKING

Three forms of decision making can be distinguished in organisations. Seen on a time line, paper based forms are the latest and oral are the first to emerge. In between, or as a replacement for oral forms are to be found monocratic forms. These did not occur as pure forms in history but were mixed or intermingled, for instance when in monocratic forms the minister alone decides but councils are formed around his position that advise him, and by doing so direct him in a certain way.

However, the characteristics of the three forms, if they are conceptually isolated as a sort of ideal type, can help to understand concrete forms by showing which parts function in which ways and what consequences can be expected from which organisational measures. Decision making in one organisation can be done in different ways adopting elements from all three forms. However, the more complex the forms are, the more difficult it is to adopt them without preparatory or supporting organisational measures.

2.1 Monocratic form

The simplest and least complex of these is the monocratic form, which is characterised by personal individual decision making at the top of a hierarchy. Even if other members of the organisation do the preparatory work, the final decision about how to act and which solution should be presented to the outside rests with the head of the organisation. As this form is the least complex it often is the last resort when more complex forms become difficult to handle.

The main tools of communication within a monocratic administration are orders from above and reports from below. The flow of official communication is generally vertically. Vertical communication uses a lot of writing. As little official communication happens horizontally the individual persons mostly keep their papers as long as they are needed. Central service departments register incoming and outgoing letters and take over the records in a sort of archive after they are no longer in use. The advantage of this kind of organisation accrues mostly to its head, where all decisions are concentrated and a complete overview of the situation is present.

However, this system has no means of providing for consensus by itself, and is therefore dependent upon personal authority, which can create a supportive environment or suppressively exercise power [Yates (1989), 16]. It entails strong hierarchical structures with strict subordination of its members and constant vigilance in maintaining these structures. Its weakest point lies in that nothing can be decided which exceeds the individual capabilities of the superiors and the management.

This form cannot manage processes. It is not able to allocate time in the process of problem solving because it has no means of controlling its use and of co-ordinating the

participants. Thus solutions do not have time to evolve gradually; instead, their need is felt at the same time as the problem appears, and hence monocratic structures are always trying to accelerate the work. It is never fast enough, because it is caught in the paradox of not being able to allow a problem to exist because it has to solve it. But first the problem has to be accepted as existing, because only then can the solution be delivered.

This form of organisation has no means of temporarily adjusting the outcomes to the needs of the environment or of planning internal work on the solution other than relying on the individual working plans of the persons involved. Time management becomes a central topic of personal qualification because the organisation has not the means of handling time.

This form of decision making never appears in its pure form, but rather is mixed with elements of collegial structures. If advisory bodies support the head, or groups gather in a regular or spontaneous manner at the lower levels, they provide an opportunity for balancing the inconveniences of the monocratic structure. Even coffee breaks enable the exchange of experiences and questions and hence help the members of the organisation to perform their work more efficiently.

However, these softening elements cannot be controlled, and they require a considerable amount of time. Only part of the effort invested in them provides work related results. Whilst they are not forbidden, they are also never really explicitly permitted, and so are merely tolerated. The amount and nature of participation depends on individual factors.

These elements of horizontal oral communication cannot really be integrated into monocratic structures; they simply compensate for its inconveniences. Nevertheless, they are necessary because they counteract the rigidity of the vertical flow of communication. The effects of such unofficial forms of direct communication are:

- ensuring the equal status of all the participants engaged in a discussion of a specific problem;
- creating an open ended environment in which contributions initially have a preliminary character which can then be further elaborated or altered without embarrassment; and
- integrating potential opponents into the process from the start.

The main advantage of informal meetings lies in the opportunity to collaboratively manage time in the solution of a jointly accepted problem. Within the discussion the process is shaped by the contributions of the participants, a process which takes time, hence providing a chance of controlling the evolution of the matter from open problem to proposed solution. This unreflective process shaped in the course of a discussion is a crucial factor in collegial forms of administration. This is illustrated by historical examples of how board based government functions in contrast to monocratic forms.

They are much more complex and thus can produce more differentiated solutions. The next section will present some of these examples. They show that elements encountered today have historical roots, and that viewed in the context of their appearance it might be easier to understand how they work and which consequences they have for collaborative decision making.

2.2 Historical forms of oral committee based government

Committee based government is oral in nature. All decisions are made in meetings. Participants have to synchronise their efforts. They must come to the same place at the same time and discuss the same matters. Every session follows the same pattern: it is opened by agreeing upon a specific topic, and it is closed when there is no longer any objection to the last statement, which thus represents the final outcome. The procedure followed by the meeting may be either informal or formal.

Joint deliberations are always like this, because the fact itself of meeting together, speaking one after the other, and listening to each other in a deliberation started by a commonly accepted problem or question produces several results which have an effect on the working process up to the final outcome, which is why they are implemented. The use of this form can be observed in the history of administration in different countries and in different forms. German administration used such forms until the first decades of the 20th century, in the end as embedded elements inside bureaucratic forms.

For several hundred years German administration was committee based and used the collegial method of deciding. The term ‘collegial’ was used to signify decision making occurring in committees or board meetings and leading to a jointly accepted solution produced by an oral discussion. The collegial debate took place during board meetings. Agencies consisted of a formally installed board headed by a president, who often could be outvoted by majority. The members of the board had no offices and were only present during the meeting. The preparation for the meeting and the reading of the files was done at home. Besides the board a chancellery handled incoming and outgoing letters as well as the internal records.

For this study a crucial criterion for collegiality is the occurrence of a final joint decision, be it by majority or consensus binding later activities. In applying this criterion, committee based decision making in the form of collegiality can also be studied within a bureaucratic structure in those cases in which committees are empowered to make binding decisions. Similar elements, which might occur in other structural forms of administration, can be identified. Such elements can always be used as instruments for achieving specific results. However, in order for this to happen it must be clearly understood how they function.

2.3 Basic forms of oral deliberation in historical administrations

Collegial structures in administration emerged from specific needs in history. They first appeared at the central level. There was never a clearly articulated intention of creating a formal structure for the operation of collegial boards. However, with the installation of the first formal boards came instructions guiding their procedures. This was the case during the 16th century when, at the height of the German Empire with its administrative centre in Vienna, two structures emerged as distinct organs: the *council aulique* and the chancellery.

During the age of the reformation, when catholic and protestant princes began to fight for their religion the world had become more complex and the central administration had to cope with more unexpected demands. The first instructions for the council mention the increasingly problematic political situation after the Reformation of 1525 and the differing religious confessions of the dynasties in the territories. The king had installed the council in order that he could draw advantage from the knowledge of its members. They were to discuss matters openly in order that all potentially problematic issues could be addressed.

The origins of this dual model of chancellery and board meetings lay in the local Austrian administration, from whence it was adopted by the imperial administration. The *council aulique* was a board whose distinguished members were valued for their extensive experience. The chancellery, on the other hand, consisted of experts in writing, which at that time did not pertain simply to the technique of writing, but also to the management of written documents, including measures for secrecy. The members of the chancellery were the professional secretaries, in other words persons who were qualified to keep texts secret from sight by third parties as well as free from misinterpretation. The chancellery was the body responsible for the management of everything pertaining to writing, and consisted of highly qualified personnel with a background in law. The council, on the other hand, relied on oral communication in finding solutions of political problems.

The separation of council and chancellery illustrates the distinction of media in a society which still trusted oral more than written forms. There were many techniques for oral-based memory, and controlling communication was easier when both parties could see each other. Writing, on the other hand, was less secure, since written texts could be read by anyone who could gain access to them, and their proper understanding could therefore not be controlled. Writing needed to be properly interpreted, usually by specialists such as lawyers. Written communication was thus less controllable than oral communication.

2.3.1 Differentiation between council and chancellery

The difference between the council and the chancellery was grounded in the different needs for handling different media inside the same administration. Different organisational forms were adopted according to their suitability for their work with the different communication tools. The chancellery, as the unit handling the writing, had a strictly organised form with a clear hierarchical structure, over which the chancellor presided. The council, for its part, as an orally working body had no permanent organisation and its members were all on an equal footing. The ways in which work was done in both was very much influenced by the media and techniques of communication and by their skills in the use of these.

The division into two separate organisational units reflected a distinction based on the different functions of writing and oral deliberation. The labour was divided between two different functional units, each capable only of making a partial contribution to the whole. Both were necessary; neither was able to accomplish the task alone.

The purpose of the oral deliberation was to find solutions, whilst the chancellery managed communication with the environment with regard both to the initial problems as well as to the resulting solutions. The functional differentiation was accomplished along the lines dictated by the use of different media, oral and written, and it provided for the perfection in the use of both for the special purposes of both divisions working together for the whole.

The chancellery managed not only all the aspects of writing, but also the conversion from oral to written form, and vice versa. In the council oral communication was used because of its special characteristics, not because its members were illiterate. On the contrary, they were advised to take notes during their meetings, and in preparation they had to consult the files. The two forms were distinct but interacted with each other. The chancellor, who simultaneously functioned as head of the chancellery and presided over the meetings of the council, facilitated this interaction. The chancellery functioned as a kind of interface for the whole government, including the provision of secrecy for the records by means of a registry which excluded sights by third parties. It thus managed the closing and the opening of government structures to the external world, and provided both the ability to recognise where decisions were necessary as well as how decisions were to be made public. The instructions described various ways of introducing new matters which had not been presented by the chancellor.

However, as the years went by the chancellor established a kind of exclusive directorate. His position of was very strong, and within the context of the Empire developed into a decisive central power. The chancellery became the site of real decision making, and the council was reduced to a secondary role. However, there were also other developments that led to a stronger position of the prince or the president.

The results of both can still be seen in western governments' forms, where either the chancellor or the president has become the most important political position. While the Imperial Chancellery had already received its first instructions towards the end of the 15th century from the Emperor Maximilian, regulations for the council are first found in the *Hofordnung* of 1527 for the Austrian court administration, in which both institutions are mentioned by way of a description of how they differ. After several revisions separate regulations were finally issued for each body, a move which signalled the completion of the institutional separation.

The last edition of an instruction for the *council aulique* was issued in 1654 and remained in force until the end of the Empire in 1806. This 17th century text had grown to a long and detailed set of paragraphs. It has the appearance of the ultimate expression of an outdated system, in which the multitude of problems is acknowledged, whilst at the same time the traditions are confirmed. It also indicates the growth in complexity of problems in administration and government and the difficulties oral deliberation had encountered in the effort to resolve them.

During the 17th century several efforts were made to combine the traditional oral forms with new elements of writing. They aimed not at replacing the traditional forms completely, but rather at enhancing their effectiveness through the use of new tools. However, these attempts only led to an increase in the complexity of the work in the boards, and were the cause of the final loss of predominance of this form in the beginning of the 19th century.

The regulations of the council, which were separate from those of other sections of the court administration, stipulated how the members of the board were to conduct their business. In contrast to the rigid organisation of the chancellery, the council was constituted only while it met. The president, who was also either the chancellor or his representative, selected the matters to be discussed from those which had been brought before the court. He set the agenda for the meeting, and initiated the discussion on each subject by reading the appropriate letters received by the court. After the discussion he announced the decision, and as chancellor oversaw the formulation of the outgoing reply, thus ensured that it conformed to the decision of the council.

The council's work was based on oral communication, a medium familiar to everyone. Reading the incoming letters ensured all had heard the same. And it established common knowledge of the problem to which everyone could refer in the following discussion. When the participants heard what was read they could start to think about a response, and during the following debate had the chance to explain their position.

Writing, in contrast, resulted in the production of text as a kind of artefact, which in turn became subject to misinterpretation, hence requiring specialised interpreters. Writing was more susceptible to misuse. Oral communication on the other hand, inspired confidence and promoted the formation of internal bonds during the course of the discussion. In addition, its volatile nature enabled incomplete thoughts to be uttered. Finally, it effectively inhibited outsiders from access to the communication.

Everything written had to be read aloud before the council could begin its deliberation. Even the outgoing correspondence which had been determined in previous sessions had to be read aloud by the secretaries in order for it to be verified. Writing was used for memory, while oral speech was used for interpersonal communication. The division between communication media and memory media could be maintained, because each had a different relationship to the content. Since the conversion of communication into a written form implied problems for interpretation, texts were converted into an oral form in order to confirm their meaning.

Oral communication, as a method of work, had certain requirements. The actual presence of all the participants was necessary, and therefore persons who would not be able to assist in a meeting had to apply for leave beforehand. Whoever was present was regarded as a participant; membership defined itself simply by attendance. The limits were obvious to everyone, even outside the meeting room. Two servants were posted in front of the doors and thus marked the boundary between members and non-members. But also the secretaries, who had to assist the meeting because their duty was to take the minutes, were excluded as non-members.

The difference between the councillors and the secretaries remained more difficult to define. The regulations repeatedly instructed the secretaries not to participate in the deliberations. Later, as the organisation of the council also acquired a more formal structure, it was easier to distinguish between those attending according to whether they had the right to vote or not. In addition, councillors were allowed several weeks' absence in order to manage their own affairs, whilst the secretaries, as members of the chancellery, were strictly forbidden to pursue other occupations.

Writing had no function during the sessions. It only established the framework for them with the letters and the minutes. In the debate nothing written could be taken note of that was not converted to the spoken word, be it by reading or by giving an abstract which everybody then could refer to. Even when by the middle of the 16th century forms of writing were introduced in the meetings to supplement the oral communication, with the intention of enhancing the quality of the deliberations, the basis of communication nevertheless retained its essentially oral character. The volatility of oral communication had become disturbing. The intention was to counteract it through the use of more durable forms. Individual cases should be prepared in advance, and presented during the meeting along with a report on the case and a vote. Whilst writing still only served an auxiliary purpose, it nevertheless quickly made the limits of oral systems evident.

2.3.2 The introduction of stricter forms for the voting procedure

The instructions for the council from the late 16th century onwards through the 17th century specified increasingly stricter forms for the voting procedure, and they introduced different uses of writing. Both movements seem to be initiated by the wish to decrease the complexity of the oral deliberations which had to deal with more and more complex problems. In handling large cases, spoken language proved to be

insufficiently precise and lacking stability for continued reference. Three different approaches to the use of writing in the communication processes were tried: The first method was to use written notes to support the oral deliberation; the second involved the use of preparatory notes on a larger topic presented by one member of the council chosen for this case, the *Referent*; the third method involved the supplementary use of preparatory notes on the same case by a co-*Referent*. Although intended to make the discussions easier, in fact they led to greater complication. Nevertheless, these efforts deserve closer scrutiny, since this development may indicate that oral communication cannot be simply converted into written forms without producing unexpected effects.

This example shows how the adoption of a new medium into a completely different environment may produce new and undesired results. Oral contributions functioned in a different way compared to written votes. The new written and stable form relying on stability for memory purposes could not just replace them. Obviously the stability of writing introduced different functionalities besides the effect of ensuring a longer presence of the contributions compared to their volatile oral counterparts.

The introduction of written elements into the decision making process was accompanied by an increasing formalisation of the oral procedures. The chancellor was responsible for tallying the votes. This was supposed to occur in a manner which avoided excessive talk and discussion, in order to bring the matter efficiently to an end. Therefore the councillors were instructed to wait their turn patiently until their opinion on the matter was requested. No one was supposed to make a presentation out of turn, nor interrupt another person. If someone thought that he had been misunderstood, he was allowed to indicate this, but he still had to wait until the president gave him the floor.

Later regulations stipulated that councillors could make additional remarks only after the vote had been tallied. The same procedure was applied in cases where councillors changed their mind after hearing the presentation of others. The president had to ensure that no one repeated something which had already been said. After everyone had submitted their vote, the chancellor's task was to formulate the decision according to the majority of the votes.

The final instructions from 1654 allowed the chancellor to repeat the tally of votes in order to better integrate any opinions which had altered during the course of the first voting.

Whilst the president collected the votes, he did not give his own opinion. Instead he occupied a neutral position in the decision making process. His role was simply to manage the session. However, he was able to influence the sequence of the votes, as well as to accelerate the procedure by stopping repetitive presentations. Details of the instructions for the council, especially those which concerned the behaviour of its members, indicate that it was not an easy procedure to follow.

These details suggest that the regulations attempted to neutralise side effects of oral debates, while maintaining them as the basic working method. They stipulated a form

of oral communication modelled on the way in which written votes would have been exchanged. In a sense the utterances, like written remarks, were detached from the persons who made them because spontaneous reaction was prevented. The natural volatility of oral expression was replaced by a kind of durability mimicking that of written votes. The inter-connectivity of oral contributions was intentionally abolished, apparently as a reaction to deliberations which got out of hand because of the difficulty of maintaining focus, especially as matters became more complex. The sequential and connected character of oral deliberation worked against keeping different aspects of the subject distinct, which in turn made the discussion controllable. If one contribution initiates different reactions to itself concerning different aspects of the case, oral debates often become bogged down in maintaining focus.

Another form attempted to make greater use of individual problem solving capabilities. Here more complex matters were assigned to one of the councillors, who then had to prepare a written report in advance of the meeting. As before, the correspondence initiating the matter was read aloud in the session, but in addition an oral report was made, which summarised the attachments. The intention here was to enable those present to better understand the details of the matter. The council instructions prescribed how these reports were to be made. First, the new correspondence was to be described. Next, an account was to be given which summarised past actions in the matter, as recorded in the files. Finally, the correspondence itself was to be read. The introduction of the written preparation definitively changed the nature of the committee based administration. Instead of facilitating the understanding of cases, the reports complicated the process, since in addition to the matter itself the report and the quality of the description that was provided also became important issues in the deliberation of the committee.

Previously the method of reading the correspondence out loud in the session required that the persons attending were able to completely understand the nature of the case. In practice, however, this meant that only those cases which were rather easy to understand and to keep in mind were really manageable. Whilst the introduction of written reports was intended to enhance the ability to understand the case and handle more details, matters could not be treated without questioning or supporting the report made about them.

To resolve this problem a third form was introduced. A second member, the co-*Referent,* was appointed to prepare another report on the same matter for the same meeting without knowledge of what the first *Referent* had prepared. This model later exerted a strong influence on the procedures of commissions in many countries, and it is still used today in university and examination contexts. However, at the time it was introduced it resulted in reinforcing the problem which it was intended to solve.

The institution of the co-*Referent* had its origins in the custom of allowing a second reading of the correspondence, something always granted to a member upon special request in more complicated matters. The later versions of the council regulations simply formalised this procedure and created a permanent second preparation. The co-*Referent* had to raise whatever issue he saw not mentioned in the report of the first

Referent originally presented. In the council instruction of 1654 this second review of the matter had finally become a regular procedure, and the duties of the co-*Referent* explicitly laid out that he had to prepare a second written report. He received the correspondence after the first *Referent*, but was not permitted to co-ordinate his text with that of the former; both *Referenten* had to present separate written reports and deliver their own vote with a minimal time difference. If the final decision of the board differed from that of the *Referenten* their reports had to be, nevertheless, integrated into the files, although they were both closed and sealed. These measures gave them, for the time after the debate, a character similar in volatility to that of oral presentations. In addition, the two *Referenten* had to sign the minutes of the meeting in which the final decision was recorded. If they wished, they could record in writing the reasons for proposing a different decision, and this paper was also filed.

The two *Referenten* had to work in tandem, but without talking to each other. Both votes were presented together one after the other, but each ignored the other. This procedure had a significant impact on the oral decision making process. The material nature of paper allows a written text to be stable, with the result that its message can be repeated, with parallel different reactions. The stability furthermore binds its author much more than an oral contribution, because the text can be re-read and permanently demonstrates the author's opinion.

For the author it is more difficult to disassociate oneself from the content and it is more embarrassing to admit to a misunderstanding, or even to being wrong, than just to not repeat an opinion orally and thus admitting a later, perhaps contradictory, contribution to be acceptable. If a *Referent* wished to alter the position he had written, he was forced to admit that he had been mistaken. This situation was even more difficult for the council as a whole. Instead of working on understanding the matter at hand, it now had to choose between two different views of it. Thus the issue itself tended to recede into the background, to be perceived only through the administration's own descriptions of it.

This problematic situation was caused by the two written reports being unable to react with each other unlike the oral presentations. The continuity of the deliberation became disrupted. The self-generating nature of oral communication, in which new contributions are initiated by those preceding, was negated. This led to the adoption of pre-established procedures, which became more and more elaborate because of their consequences. The disfunctional nature of this approach became obvious. Discussions became more time-consuming. The need for synchronicity made it difficult to focus on the matter at hand. The only thing that survived from the original form was the control exercised by the board on its members, ensuring that they could not contradict the decision of the plenary.

The installation of co-*Referenten* reinforced the pressure on the individual members to anticipate the result and to shape their presentation to conform to the opinion of the majority. Innovative ideas had no place, and committee based decision making displayed a strong tendency to conservatism. The oral discussion lost its

ability to enable the council's problem solving. Such was the situation in the central German government up until the end of the Empire at the beginning of the 19th century. The contemporary literature on administration of the period reveals much criticism of the slow and complicated procedures of collegial government.

The basic features of this form had also influenced administrative structures in other German countries with their own independent governments. Many of them had a long tradition of modelling these structures on those of the central government, and the form had thus spread throughout the nation. Thus, for example, old records preserved in the State Archives of Baden-Württemberg still contain votes filed in sealed envelopes. Committee based government had become the main form of administration and was well established in spite of all its problems in the countries which made up the German Empire.

From the historical study of the procedures within deliberating bodies the remarkable fact emerges that, almost from the very beginning, the forms employed were perceived to be inadequate for dealing with more complex matters. Nevertheless they were maintained, and the measures introduced to cope with their complexity had the effect of reducing flexibility. The original problems, rather than being resolved, became more entrenched, thus requiring even more control. In the beginning oral deliberation had been adopted because it facilitated the creation of an open forum for discussion within the session. Yet regardless of where the power lay, with the chancellery or with the board, the techniques of oral deliberation continued to be used, producing special similar written forms as a support and framework for the verbal discussions.

2.3.3 Written instruments of oral administration

Although the committees functioned orally, they could not refrain from the use of writing. At the very least, minutes had to be taken to ensure the effectiveness of the conclusion after the meeting and its communication to the outside world. Apart from the minutes the records consisted mainly of series of incoming letters and their attachments. These were arranged according to the sequence of the sessions. Registers of the incoming correspondence indicated what the business matters were and when the handling of them had begun, whilst registers with entries describing each outgoing letter in more or less detail provided a record of the decision.

The more that writing was introduced into the preparation for the meetings, the more paperwork there was, and the files became filled with internal memoranda and votes. This development led to a change in the structure of the record keeping, because within the series of individual letters in chronological order some began acquiring attachments kept together for faster access to the complete papers of more important matters. This development sometimes led to the transformation of correspondence series into case file series, each file being filled with all of the letters, attachments, internal communications, and preparations for one single case. This has become the typical form for legal files arising from court processes, even up to our own times.

Different forms of individual internal texts emerged and were used in the organisation of the councils. The notes taken by the councillors were a very ephemeral kind of writing, kept only if they became attached to the incoming letter. More official, yet still internal, were the reports which the councillors wrote in preparation for the proposed vote after the matter had been assigned to them. These two forms of writing were directly integrated into the deliberation of each matter and supported the oral communication. After the meeting they were filed.

There were three other forms of collaborative writing, each with a different function, which provided the framework for the sessions. First were the written instructions governing conduct during the deliberations. They described how each session should be held, who had the right to intervene and when, and how the final decision should be determined.

Second were the minute books in which all of the decisions were recorded; these were primarily intended for the secretaries and provided them with the basic content which they then used for drafting the official replies to the matters. At the head of each entry for a session, or at times only on the first page of the book, the members of the council were listed. In some cases, the minute books were used to organise the session. Then the cases were described prior to the meeting in the left column thus creating an agenda for the president and leaving space for the resolution in the right column. This list showed all of the new matters to be discussed, as determined by the incoming correspondence.

This practice rationalised the formulation of the decision, since the matter did not need to be repeated. Such a form illustrates a specific function of the minutes. Created by the secretaries, they were used as tools to help organise matters for the president, and to assist in their own work of formulating and writing the official replies. They could be used to organise the deliberations, because they expressed the intention prior to the actual start of the discussion, the result after it was finished, and the next matter that needed to be dealt with.

This use of such minute books had an interesting side effect. It facilitated the comparison between expectations and actual achievements. They can thus be used to determine whether a matter was really taken care of or not. Activities are represented by their own traces, not only by descriptions of them. This marks the emergence of a new method of using the organisation of writings to bring together planning and result in different time layers. Even after they were used for organisational tasks they reveal the difference of the time layers by showing that the planning preceded the action and that the action really took place and left behind the minutes taken during the meeting. Actions as phenomena which vanish in time can thus be stored if both the intention to make them happen, as well as their results, are recorded in writing. Thus writing conveys more information than that which can be read in the verbal content itself. It is enriched by indications of time between the lines of the text. Internal notes often have this potential for non-verbal supplementary information, resulting from their intentional use in organising sequences of activities. In this case they assisted both the

president in organising the session, as well as the secretaries in producing the official replies.

Finally, a third form of writing consisted of the marks and abbreviated annotations made on the letters by the councillors during the session and which were intended for the secretaries. They provided tips for their further work, such as the drafting of the outgoing answer. The Imperial instructions for the council, intended to simplify the process by integrating writing into the deliberations, only recognised reports and votes. In place of the preparation of lengthy communiqués, however, this third form is an interesting and even effective way of integrating writing into committee based administration, without disrupting its functions.

The development of this form into a standardised tool for collaborative decision making was the main achievement of the Prussian government. However, it can only be followed in the records. The records give evidence that marks and abbreviated annotations were used without any regulations concerning them. The absence of regulations does not mean that their use was improper. If they had been regarded as undesirable they would have been mentioned in the instructions and explicitly forbidden. Instead, their non-regulated use demonstrates that such notes and abbreviations were normal practice and that they provided uncomplicated tools for the internal communication. The marks were brought into a conventional form by customs, and were easily understood by everybody. Furthermore, as tools for organising collaboration they had an ephemeral character, and therefore did not require further attention once the steps they indicated were carried out.

This third form of integrating writing into oral decision making is the most effective and interesting one. The jotting down of short notes for the secretaries on the letters themselves during the deliberation was a method of using writing in a manner fundamentally different from that of normal minutes and series of records. The main reason for this is that it was not done with the intention of communicating a message. It did not contain a text meant to be read, but simply indicated that a certain action was required.

Through these signs and expressions the secretaries understood what they were supposed to do. Instead of conveying messages they functioned like a set of collaborative notes made by the organisation for itself, and not by one person for another person. For example, ‘scribatur’ indicated that the relevant text was to be written out, or ‘fiat’ indicated that a positive reply to the matter could be drafted. An action was indicated through the passive form of the verb. Considering the theories on bureaucracy it is astonishing enough that no orders were transmitted to anyone, and yet one responsible for drafting the corresponding letter executed actions determined by another person responsible for the decision. These marks and notes placed both in the position of representing the organisation for just this matter, according to their particular sphere of responsibility.

A person who, despite his presence, did not actually belong to the council, and was therefore able to observe the deliberation impartially and to make the relevant notes,

kept the minutes. The annotations, on the other hand, were made by the councillors themselves, who were participants in the proceedings. Thus the same person who had prepared a report and a vote could also indicate how the final decision was to be communicated in the outgoing letter.

This third form of writing, in which no definite message is aimed at a particular person, was intended neither for posterity nor for future readers. It had only the very specialised purpose of indicating what action ought to be taken. After this action had been completed, it lost its meaning. This was the most ephemeral type of writing, and explains why the marks did not need to be neatly written or explicitly state their purpose. Perception and understanding by the secretary sufficed, and both were guaranteed by the secretary's responsibilities towards the whole.

The marks and annotations were an effective method of organising writing in a standardised way without having to resort to written messages. They did not require an addressee, because the *Referent* could count on the secretaries recognising what needed to be done. Sometimes these annotations were referred to as 'indications', or, after the Latin 'decrees'. They formed part of an internal language which required no prescriptions for its use. The annotations thus represent a type of implicit communication strongly rooted in custom and requiring no formal articulation. Indeed, formalisation could even jeopardise its ability to function smoothly.

Lothar Groß, in his major research on the chancellery in Vienna [Groß (1933)], studied a great variety of minute books and carried out a functional analysis based on the processes of government. In the files he also found examples of annotations made by councillors which he was not able to explain. Referring to similar studies on Prussian records carried out by Martin Haß [Haß (1909)], he suggested that those found in Vienna indicate the first steps towards the creation of action based file volumes.

Haß had explained how, in 18th century Prussia, these marginalia had developed into standardised instruments for organising the handling of each matter. They were usually written in an indirect form and introduced by Latin expressions such as *scribatur*, *referetur*, *detur resolution*, and *notificetur*. They identified tasks in the form of a list without indicating who was responsible for carrying them out, since the responsibility had already been established as part of the organisational structure of the agency. Its existence could be presumed and anticipated. This form of impersonal directive developed into the Principal tool for establishing the internal linkage in the self organised work flow specific for Prussian government in the 19th century, and it led to the specific form of action based file volumes which can be found in the Prussian archives today.

The Prussian files emerged directly from the process of decision making because the documents contained in them had been used to organise the action, and thus were themselves shaped by the business process. Those files facilitate the task of researchers because they demonstrate the processes out of which they emerged in a very direct and lively way. Everything is clear as if happening directly before the eyes

of the user in the reading room. In comparison with other types of records, little effort is needed to find out what happened and why.

In the daily routine of Prussian administration the implementation of such forms, rarely to found in the files of the central administration in Vienna, exerted a major influence and became predominant. The cause leading to the development of this form can be found in the specific nature of Prussian committee based government. It differed in decisive ways from the forms of collegial government common in other countries. However, this difference was never intentional, but derived from other traditions of communication.

2.3.4 Special characteristics of the Prussian form of committee based administration

The most notable differences in the form of administration exemplified by the Imperial government could be observed in Prussia, a relatively recent state rather distant from Vienna and possessing no long tradition of government. As had other German countries, it had adopted the forms of the Imperial as the most important model of state administration, but it modified them in a fundamental way.

These modifications led to changes in the structuring of functions, laying the ground for an integration of writing into oral decision making in a more flexible way. Instead of using writing for votes and memoranda, it was used for the process organisation. It was not the messages which were stabilised and thus offered for repeated reading, but rather the sequentiality of the steps to be undertaken was fixed and so offered for repeated reference.

Here the other aspect of communication happened to be used. The aspect of the self-organisation of the communication process was transferred to a stable medium leaving the message aspect untouched. This rather astonishing development was owed to a political situation in a defeated Prussia after the thirty years' war, where a young and open minded protestant prince, educated in the Netherlands and interested in France, had to re-establish the country, including the government structures.

The forms of deliberation peculiar to the Prussian collegial administration had a decisive influence later on the work in the government of the new German Empire established under the aegis of Prussia in 1871 after its defeat of Austria in the War of 1866. These special Prussian structures introduced writing into the process of oral deliberation in a manner which supported, rather than obstructed, the open flow of communication. Instead of the forms of verbal messages, functions, namely the common organisation of the sequence of operations, were converted to a new medium, making them more effective.

Court councils had existed in Brandenburg, the core territory of the future Prussian state, since the end of the 15th century. A systematic approach to the structuring of government administration began in 1604 with the formal installation of a privy council. This initial measure gradually lost its effectiveness, however, and had to be

renewed in 1651. In the previous century a very informally organised council had functioned, but not in a manner which much resembled that of the *council aulique* in Vienna. Whilst the chancellor read the correspondence to begin the deliberations, there was no fixed procedure for continuing the deliberation or to collect the votes.

These initial structures formed the basis for the further development of administrative processes. It was at this time, during the first half of the 16th century, that a development occurred which had decisive influence on future structures, as has been thoroughly described by Otto Hintze[2]. It led to the distinction between a legal process relying on written material and formalised procedures on the one hand, and oral and flexible administrative decision making on the other. This distinction, implying the different handling of media, was made with a view to procedures, not to organisational structures. The same entity used both, and thus had to recognise the difference between the intended purposes.

On the basis of his historical research Hintze showed that the oral procedures were the embryonic form of later administrative processes, being more efficient than the legal process based on regulations deriving from Roman law. The legal processes were more dependent for their effectiveness upon mutual acceptance of established procedure by the concerned parties. Whilst the application of Roman law ensured the validity of the outcomes, legal suits were very time-consuming. Several waiting periods were stipulated, during which each party had the opportunity to consider their response. In the six weeks following the first hearing the plaintiff had to produce a written copy of the complaint. The defendant, in turn, was granted six weeks to produce a reply. Then both parties had a further six weeks to consider the exchange. Actually bringing the matter to court took at least nine months. In the meantime both parties were invited for conjuration and had to swear not to attempt to hinder due legal process or to make attempts at bribery.

Six documents were produced in this process, normally rather extensive. Minutes had to be taken during the questioning of witnesses. Both parties were allowed to read these minutes, and were subsequently able to present new arguments for their own position. Any evidence which had been gathered had to be revealed to the opposite party during a meeting in council, and both parties were again each given time to reply in a further document.

Only after this step was the case considered complete and ready for a decision. This decision was communicated orally to both parties during a session of the council. The use of writing provided a guarantee of certainty for the parties involved. This is why it tended to be increasingly adopted for legal matters. Its only purpose, however, was to ensure the legality of the process and the acceptance of the decision by both parties concerned. It was not intended to make the procedure efficient.

[2] Otto Hintze was one of a group of editors for the *Acta Borussica* in the beginning of the 20th century. He is the author of many studies of Prussian administrative history, and one of the few historians who adopted a Weberian sociological perspective.

This written legal process was not accepted as a standard, and whenever possible matters were decided through oral deliberation. Conducting legal suits at the court began to be viewed negatively by the population because it was time-consuming, and writing itself became viewed with suspicion. It was also at this time that the negative image of paperwork emerged, an image still alive today, as evidenced by the slogan 'paperless office'. In situations in which writing continually competed with oral forms in the decision making of the court, the disadvantages of its use were even more obvious, and it was never regarded as being genuinely useful.

2.4 'Conceptual orality' of writing

The introduction of written procedures in Prussia occurred rather late compared to France, for example, where the tradition was already 300 years older. Oral procedures had therefore had time to develop and become entrenched. They thus had more time to demonstrate their effectiveness than was the case with the central government's *council aulique*. Written forms were introduced as a result of following the examples of foreign administrations, and through influence exercised by the church. In daily life, however, written communication was foreign and awkward to manage.

The practice of using minute books as agendas for the council meetings and of putting marks and annotations on the papers explaining to the secretaries what a councillor wanted to be done led instead to the establishment of a kind of 'conceptual orality'[3], which in turn influenced the way in which written instruments were designed and implemented. In this context 'conceptual orality' refers to the possibility of achieving the effects of oral communication through other means. The main characteristic of oral communication transferred to paper is that it consists of actions and is articulated by responding actions, or by actions which instigate other actions. In contrast to writing, with this technique the process is supported and can be continued. Writing down verbal messages breaks the flow of communication, because this means they can be read repeatedly. Although it too provokes reaction, this does not lead to a process because the provocation is constantly working, and connecting communications therefore cannot link up to a sequence of premises and consecutive operations.

As in the central government, the trust endowed in oral communication, as evident in the Prussian government did not mean that writing was rejected. Even during the deliberations, and elsewhere within the administrative environment, many forms of writing were used. Eight different registers had to be kept for the Prussian council. In

[3] The term 'conceptual orality' is adopted from Hugh A. Taylor, who used it to describe the effects of electronic communication (Taylor 1993). Conceptual orality means that the specific effects of oral communication also affect how writing is used. Electronic communication possesses a volatility similar to that of oral utterances, where the construction of processes is based on the transitory nature of the messages. In electronic form, however, this volatility is not distinct, as it is in oral communication.

one of them the secretaries copied different types of outgoing documents; for example, privileges or title deeds. In another register the secretaries had to note every debate which had some relevance for the daily matters. And finally, the instructions for the council itself were presented as text, just as in the central government. These instructions described the tasks and organisation of the council, for example, that it was constituted by eight members.

The instruction for the Privy Council stated that the organisation of the meeting was intended to follow well established precedents, meaning the practices of the Imperial government in Vienna. Nevertheless, in actuality there were some significant differences. Whilst, as in Vienna, the chancellor initiated the deliberation, the votes were collected by the head of the treasury. Both were members of the council. In addition, the councillors themselves could suggest topics, and therefore had more influence on the content of the deliberations.

There was no prescribed procedure for tallying the votes, enabling it to occur in a flexible manner. If someone was more familiar with the details of the case he could present his opinion first. The sessions preceded much like conversations in which one contribution sparks another. Personal experience and qualification thus came to acquire more weight in the final decision. Although it was acknowledged that the use of a majority vote to determine the final decision jarred with the nature of this process, and whilst the instructions for the council considered the option of weighing the votes rather than counting them, in the end the latter was chosen as being more certain and easier to manage.

The regulations concerning dissenting votes differ in one remarkable point when compared with the central regulations. In situations in which a councillor proposed a dissenting vote and did not agree with the majority he could put his vote in writing, sign it, and have it brought before the prince. This produced very different effects compared to the method of handling dissenting votes in the Imperial council. Whilst there the final decision as recorded in the minutes was to be signed, thus demonstrating a change of mind, here the vote itself was signed and thus given even more weight. In this way writing enhanced precision, and individuals could stand up for their opinion, attempt to explain it, and hence achieve a proper hearing. This model was able to both accept difference and integrate it, whilst the Imperial tradition attempted to make it invisible, relying on individual self-discipline for the process to function properly.

These fundamental alterations in the central regulations for use in Prussia occurred even though the Prussian instructions nominally referred to the well established order of the Imperial administration. It appears that practice had precedence, although legitimisation was derived from Vienna.

The collaborative effort in reaching an agreement was given higher priority than simply securing a majority vote. The real goal was consensus rather than majority. This led to attaching greater weight to the open discussion prior to the collection of the votes. The phase in which the problem was to be understood was given more time and

space, and the openness of the procedure was acknowledged. The council was thus able to demonstrate its effectiveness. The deliberation could make use of the mechanisms inherent in oral communication, and allow them to shape an autonomous process. Within this structure the individual experiences and qualifications of the members assumed more weight and exerted more influence on the final decision. In addition, as well as in contrast, to the Imperial model this development was supported by the organisational infrastructures, which ensured persistent responsibilities.

Whilst the Imperial government viewed individual responsibility with suspicion and as a potential source of nepotism and corruption to the extent that a councillor had to resign his portfolio if his area of specialisation became public, in Prussia the specialisation of the council members was explicitly supported, being employed as a way of guaranteeing decision quality. With the council instructions of 1651 it even developed into an organisational principle still in use today. With it came a new concept of organisation, and a distinction can now be seen between processes and organisational structures. The administration delivers the infrastructure and the resources enabling the development of processes. The processes, in turn, combine organisational structures into singular and temporary forms, without disturbing the overall permanent structure.

2.4.1 Persistent distribution of anticipated competencies

Frederick William, the Great Elector, reorganised the Privy Council, issuing new instructions in 1651. The description of the decision making process in these instructions reveals a fundamental difference from the regulations for the imperial council. It contained in its second part the first written provisions for a preliminary and persistent distribution of competencies, following the description of the manner of collaboration between the different members, representing their respective competencies. It listed detailed descriptions of the specific areas of responsibility assigned to the members, who were mentioned by name.

Defining these competencies, in fact, was the main goal of the instructions of 1651. 20 positions are listed, all with different tasks, and then these are assigned to 10 named individuals. The description of the methods of collaboration simply followed from this division.

This first description of distributed competencies in the guidelines for the Privy Council, however, had an unintended yet useful side effect. By describing each area of responsibilities in detail, the listing of these areas as components effectively provides an overall definition of the areas of decisions making of the council itself. This organisational method implied, together with the definition given in the regulation for each segment, the clear distinction of one competency from the next one by way of exclusion, because all together represent the whole on the next higher level.

This is an interesting way of designing a scheme of an organisation that is open for new and unanticipated matters. Since the guiding principle is to divide the general

competency of the council into its constitutive parts, every new case will, *a priori,* belong to one of these parts. Every new matter, once accepted as falling under the general competency of the council, will therefore be integrated into one of its specific areas of competency, and at the same time, through this integration, acquire its meaning through the context in which it has been placed.

This method of structuring requires the forms of collaboration described in the other paragraphs of the instruction, since without the collaborative tools the effective division of competency into discrete segments would have inhibited communication across segments. The work flow of future cases was thoroughly described. It showed how processes could be set up linking the differentiated areas of responsibility to the whole, and thus counteracting the centrifugal forces of specialisation. The work flow started with the Prince opening the mail himself and then distributing it to the councillors.

By assigning it to particular councillors he determined how the case was to be understood within the context of the administration, and which aspect of the matter was most important from this point of view. If someone received a letter whose content extended beyond the area of his competence he first had to note his opinion, and then pass it onwards to be handled in the other areas of competency.

For each case the *Referent* had the most important function. He explained the matter during the deliberation, and he also had the first vote, since he was the most knowledgeable about the matter. Then he had to collect the other votes and determine the majority opinion. The decision was then to be presented to the Prince, and if the Prince accepted the decision, then the *Referent* then had to indicate to the secretaries how the outgoing reply was to be drafted. He then had to verify that the draft was accurate, and certify it with his special mark. With this mark the final copy of the outgoing letter could be prepared.

The *Referent* was responsible for ensuring that everything was done properly and that nothing had been forgotten. As he was the person who was most familiar with the matter, he was also the one who had to manage the process which produced the answer. In addition to the competence designated by specific areas of work, a procedural competence emerged as a natural consequence. The person who knew the problem best was also the one who was in the best position to determine how it should be addressed.

The combination of material competence with the responsibility for building the process was new. The expert was not only asked to say what had to be done, but he was also asked to find out how the answer should be jointly worked out. When the *Referenten* noted on the letters their marks and disposals this was the first step in re-creating the process building capacity of oral deliberations in written notes, and it prepared the way for the dissolution of committee based government (although this was still a long way from actually occurring).

Whilst it was not easy to sustain, the principle of majority had nevertheless been replaced by the principle of individual responsibility, which included the establishment

of decentralised, rather than hierarchical, structures. Individual responsibility was distributed to different centres which did the work and which functioned without any superior authority giving orders. By organising the handling of the matters, they thus provided the potential for working out hitherto unseen and innovative solutions in collaborative structures.

All this occurred without the use of internal verbal messages. The only text drafted was the reply to be formally written out in the outgoing letter and communicated to the outside. All other writing served simply to modify this draft, or to direct the flow of operations required for transforming it into the outgoing reply. Verbal texts were only used for external communication. Internal communication contributed to its preparation and was based on the perception of abbreviations, marks, and marginalia, embedded in or transmitting by themselves internally understandable expressions of intent. This was the first consequent distribution of organisational tasks within the structure of the actual decision making. Whilst the assignment of competencies provided a stable background structure, ever new and transient structures for the daily matters at hand were allowed to emerge.

An important difference from the situation in Vienna supported the obvious departure from the old forms of oral decision making owing to the rather late development of committee based decision making in Prussia. Members of the council were educated lawyers, who often had received their education at one of the newly established modern universities. Professional qualification instead of experience and inherited honour thus became an important factor in effective decision making, and the administrative structures adapted accordingly.

Of the new elements introduced in the committee based decision making of the Prussian Privy Council, the Principal ones were:

(1) the distribution of tasks prior to the handling of a matter, so that a working structure was in place to guide the perception and solution of new problems;

(2) the merging of procedural responsibility with intellectual competence, which placed each matter in the hands of one councillor who then had to both organise the process and determine the final solution;

(3) the potential for integrating other competencies or procedural functions into the decision making process; and

(4) the use of written notes to organise individual processes through combination of distributed tasks. These notes, which did not take the form of explicit messages, eventually became more elaborate, and can be viewed as characteristic of bureaucratic decision making as it evolved to its state of near perfection in Prussia by the end of the 19th century.

In the 17th century, however, these working methods were restricted to the government in Berlin, where the Prince was able to exert his direct influence. In spite of the use of writing, the structure of the oral deliberation as well as the differentiation of competencies clearly distinguished it from the legal process. Although not fully

developed, it nevertheless provided the opportunity to gain experience in methods of administration in which the professional qualifications of the personnel were utilised, even if many details still remained to be worked out. Sufficient confidence in formal structures was still lacking for plenary sessions and oral deliberations to be replaced. Thus such factors as the use of majority vote, the drive to establish consensus, and the pressure to anticipate the desired outcome continued to exert influence on procedures during the centuries to come.

The installation of collegial boards did not happen simply because of the example of the central powers. They were also used for organisation building because the regular meetings and the presence of all persons at one place ensured continuity, something less certain in monocratic agencies. A closer examination of cases from the 18th century in which boards were installed at the top level of an agency reveals how this form was used to provide stability in the organisation, as well as regularity in its operations. Here the goal was to provide continuity and exert control over the head of the agency without integrating him into a hierarchical structure. Hence this example demonstrates how the construction of organisational dependencies and networks can serve to control work processes without directly interfering with them.

2.4.2 The use of functions of oral deliberations for purposes other than decision making

During the 18th century committee based structures were used to provide continuity in various types of administration. The best example is that of the former office of the military commissioner of Magdeburg. In this environment oral communication served as a guiding principle, but since its role was reduced to the functions of integration and facilitation of regular meetings it could not initiate self-organised decision making processes.

These offices emerged from the army supply stations used in the wars of the previous century, and were also experienced in providing for civil affairs within their jurisdiction. Later they developed into regulatory agencies for the regional governments. In France these agencies, the intendants, were the predecessors of the later prefects. Originally their jurisdiction was of a temporary nature. The commission expired when the task had been accomplished.

Shortly before its dissolution and integration into the General Directorate in 1722 the office of the General War Commissioner as the central war administration was re-organised, the regional offices being provided with a collegial structure. Traditionally the war commissions were monocratic institutions with a hierarchical structure. In 1712 the head of the agency, the General War Commissioner, created a new board of three councillors and then appointed a director for the board.

The four men received tasks quite different from those of the privy council. They were required to keep the minutes or, as it was formulated in the instructions, “to conduct the pen” during the board meetings, and thus they acted as secretaries. In

addition, they were required to prepare the matters themselves as well as submit reports. One of them was appointed registrar and was responsible for maintaining the files. These ordinary councillors were not members of the board and did not participate in the deliberations. However, this was not much of a change for them, since in the former monocratic structure they had just as little influence in the decision making.

Prior to the re-structuring of the war commissions the use of writing in the decision making processes had been the norm. Even before receiving their new tasks, the ordinary employees had been responsible for the drafts. The drafts, however, had not been subject to discussions in a meeting. Given their personal qualifications, they had been charged with formulating drafts in accordance with the preliminary decisions of the commissioner, a task usually requiring no alterations.

The function of drafting, which in other forms of committee based decision making was assigned to secretaries, was here assigned to the professionally qualified councillors. In contrast to the oral deliberation, it was not viewed as something dependent upon special skills in writing and composing, but rather as part of the development of the solution within the general lines established by the head of the board.

By introducing the form of a committee at the top of the agency, the chief purpose of the new structure was to integrate the commissioner himself into the regular organisational functions. He was no longer allowed to answer anything either privately or without consent from the board. He also had to attend the board meetings, which were held regularly twice a week. The drafts drawn up by the ordinary councillors were supposed to be signed in the margin by the board director.

After revision by the commissioner the fair copies could be made and dispatched. There was no provision in the instructions for reading the draft out aloud in the plenary session. The conversion of written texts to oral form was not necessary, as it was in the committees with their long oral tradition, because writing was the customary working medium and was used with confidence.

This form of committee based government ensured the continuity of the work and prevented arbitrary decisions. It controlled the head of the agency being integrated into the organisational structure. This was the main purpose in establishing it. Further, use of the same room for each meeting and reliance upon a fixed schedule for the meetings created a framework which helped to ensure the regularity of the day to day work. This kind of stable environment enabled work to be done even when the head of the agency was absent. It also encouraged increased awareness for new problems which needed to be dealt with, and worked against putting off resolutions. Finally, this regularity ensured that the resources were in constant use. None of these aspects of committee based administration required specific forms of decision making. The board made decisions not on details, but rather on general directions. Through the signature on the draft, and the revision by the commissioner, it was ensured that the decision had been made with full competence.

The quality of the decision, in turn, was provided for by the professional qualifications of the councillors who drafted it. The continuity of the process was guaranteed by the scheduling of regular meetings, since the fixed date set a term of preparation for the members and a deadline for reports on activities. It also encouraged them to have an excuse ready if they were not able to attend the meeting.

This example of the introduction of collegiality into the type of monocratic organisation such as the war commissions indicates how the effects of such an introduction can be purposefully exploited for several organisational aims. The same is true today in cases in which projects or teams are set up. Often they are needed to create continuity and to set deadlines for the preparation of papers. Just for one or two of the advantages of the collegial form teams and group meetings are intended to be used, but other aspects come into play as well, and special instruments are required to deal with eventually unwanted effects such as long debates about proposed solutions.

In the present case collegiality was introduced as a stable organisational form. The board was a permanent institution. There was no distinction made between decision making and organisational structure, and hence collegiality did not initiate self-organised processes during the decision making. When adopted by the central administration in Berlin for the decentralised offices of the commissioners, it was viewed simply as a means of controlling the head of the agency.

Later the ministries in Berlin attempted to do the same thing with the larger and more important provincial governments. In this case as well, collegiality was supposed to prevent the presidents of the governments from making arbitrary decisions, by integrating them into the processes required to ensure the competency of the board, whose members were still bound by majority vote. In this situation, however, it was the special traditions of collegiality, combined with the predefined competencies within the agencies, rather than the monocratic past of the commissions, which made it possible to work with two different structures, namely, the organisational background with its divided competencies on the one hand, and the constantly changing temporary re-combination for specific tasks on the other.

2.4.3 Characteristics of collegial decision making

Collegial decision making has the following characteristics: (1) an openness is provided in which innovative solutions can be proposed for problems under discussion; (2) through the explicit determination of which members are allowed to attend, a range of opinions can be guaranteed; (3) the resulting exclusion of non-members facilitates a free exchange amongst the members by ensuring that their deliberations are private.

The chief characteristic of committee based decision making, however, is its provision of an autonomous temporal framework for the unfolding of the initial problem with all its aspects and the following open discussion of proposals for its solution. During deliberation every contribution tends to provoke a reaction, which in

turn provokes another reaction, a process which continues until a reaction is no longer provoked, indicating that consensus has been reached.

During the process, which starts as soon as the group agrees to accept an item on the agenda, reactions to contributions are themselves contributions. The first contribution presents the problem, and the process ends when everyone decides that there is nothing more to be said about the matter, thus leading to the next deliberation.

This kind of process requires time. The temporality of the process consists precisely in the progression, step by step, from the initial presentation of the problem to its agreed solution. While the problem hovers in the background, with each contribution its counterpart, the solution, gradually emerges. In this manner committee based decision making provides the potential for a collaborative use of time. This is the main reason why it is more effective than comparable monocratic forms, which lack such tools.

The decision making process in committee work follows a certain pattern, which persists throughout different circumstances. Four stages in the process can be discerned, and each stage can be broken down into smaller units and reiterations. The first stage is the initiation of the deliberation. This occurs by proposing a new matter through reading the relevant documents or providing a summary of them. The proposal is oral; it cannot be made in writing. The individual participants first have to acknowledge something as a proposal, then it can be expressed and the deliberation can begin. It is important that the communication in this phase does not react to anything other than oral utterances. Everything to be dealt with must be expressed in this form.

The second phase is characterised by questions and supplementary statements. The purpose at this point is to understand the problem better, and information about it is collected and exchanged. When enough information is gathered for an adequate understanding of the issue, the third phase is entered. Here suggestions for a solution are exchanged. Proposals presented from different points of view are tested, rejected, reformulated or adopted.

The fourth and final phase involves the selection and approval of one solution as the official one. Normally the consensus for this conclusion is indicated simply by silence, rather than by a vote. When everyone is in agreement, nothing more remains to be said. However, this silence cannot be communicated directly, and therefore some method is required to indicate that consensus has been established. Collecting votes serves to express the content of the decision, but it occurs in a phase in which it is still just a proposal. Thus minutes are used to note the result.

Written minutes have various functions within an oral deliberation. They help to remember what appears noteworthy. Through the stability of writing they also stop the communication process. They are required to ensure that the deliberation is effective externally, since there are no other channels of communication from the board to the outside. Such communication of the decision to the outside world, be it oral or written, can only be effected by someone who has observed the deliberation and has taken

notes on what has been seen and heard. These notes can then serve as the basis for a report concerning the board's decision. The draft of such a report can be checked by the board only if it is read aloud, that is, when it is represented in oral form and hence heard by everybody simultaneously, stimulating reactions and further deliberation regarding its suitability as a surrogate for the original decision.

The minutes result from observation of the proceedings from a perspective external to the board. This is why the secretary who writes the minutes is excluded from board membership. In committees junior colleagues from other departments were often charged with keeping minutes.

This procedure marks a functional differentiation between participating in the deliberation and merely observing it. Both are kept distinct. The person keeping the minutes must remain neutral to the various views and purposes guiding the separate contributions. By not being involved the individual viewpoints can be perceived, and this awareness then applied in providing an impartial description of the whole without being distracted by personal valuations of the respective authors.

Oral decision making is much better suited to solving complex problems than comparable techniques used in monocratic forms, but it does have its own drawbacks. The chief disadvantage is that it engages the whole person, and hence introduces aspects into the deliberation which have less to do with the matter at hand than with the person presenting. The reason for this is that all of the participants have to be assembled in the same place in order to synchronise the efforts needed to complete the process.

Control over this process depends not merely on the exchange of verbal messages, but also on the use of visual signs. Participants must be able to see each other in order to understand what is being said. As experiences with video conferencing demonstrate, a time lag of even one second will disturb the smooth flow of communication. Visibility of gestures and facial expressions is essential to the understanding of what is being said: the dynamic of the process is maintained by these visible elements. The participants are thus completely engaged. Because of this, there is the potential for personal interests to prevail. In addition, the participants are inhibited from working on several matters at once. Constant attention must also be paid to the visual aspects. Indeed, arguments can arise when difficulties with the non-verbal communication occur.

In Prussia experience with this form of decision making began in the Brandenburg Privy Council, and exerted a strong influence on further developments. The organisational aspects of writing were increasingly integrated in the day to day routines without, however, replacing oral communication. At the same time they effectively discouraged the internal exchange of verbalised written messages.

In the 18th century a new form emerged which integrated collegiality and the use of writing to an even greater extent, and by the end of that century the main characteristics of the classic Prussian style had emerged. The organisational background consisted of a network of differentiations, of which two Principal aspects

can be discerned, one being the material differentiation in regard to the professional qualifications of the members, as described in the instructions for the privy council of 1654.

As a second aspect, and distinct from the first, a functional differentiation had emerged, providing the basis for guiding decision making processes efficiently without resorting to meetings. This differentiation was only relevant to the shaping of the processes. It was based on the traditional distinction between council and chancellery, but gave this distinction a new meaning. From the control of records and writing emerged a control of processes through the use of written notes. The registry took over the role of the chancellery, which itself was reduced to a kind of intermediary with the outside world, managing the production and preservation of correspondence. The registry, in contrast, was visible only to the administration.

The main instruments for the construction of operational relations within this system were marks, notes, and especially short task lists. There was no provision for these in the instructions; they were simply applied in the daily routines. The organisational structure, with its distributed competencies both in regard to the content of the problems as well as to the division of labour during the solution process, provided the necessary background.

The importance of this new development is shown by the consecutive instructions for the central government issued during the 18th century. Their comparison identifies some of the main elements of modern German administrative practice, and clarifies their origins as well as the context and intentions behind their creation. Towards the end of the century, regulations issued with regard to the competencies and working methods of the registries demonstrated their functional significance. Only few similar texts which later followed describe the structuring and relationships in such a clear manner.

The drafting of two new instructions for the provincial governments in Prussia in the beginning of the 19th century marked the beginning of a decidedly modern direction in governmental techniques. The traditions of the collegial past still resonate in these two texts. However, new methods of working without relying on boards are implemented. But even if the boards tended to be reduced, their form of decision making as a process integrating different competencies was still used and even reinforced.

So this was the time when a modern government style still depending on processes, and even transforming them to another medium of communication, namely paper, emerged. The germ of the later German government was set. The importance of the shift can hardly be overestimated, since it showed an alternative to stopping processes by the stability of written texts. Therefore it is worthwhile to have a closer look at these developments. These two instructions were formulated over a period of ten years. The differences between them reflect the changes which occurred after the defeat of Prussia in the Napoleonic wars. Because the monocratic structures of the French government were perceived to be more effective, a public debate regarding the

advantages of introducing similar structures began among the presidents of the provincial governments. However, the final dissolution of the boards only came about as the result of a movement which lasted the entire century. Collegial elements were still applied in the first decade of the 20th century, as evidenced, for example, by the use of co-Principals in the ministries.

The instructions issued at the beginning of the 19th century were adhered to in the day to day work for the next 100 years. The provincial governments developed their own techniques within this framework, which remained relatively stable until the beginning of the 20th century. At that time, with the expansion of the welfare state, the need for efficiency became greater, and an attempt was made to revert to more monocratic forms of organisation.

The idea of introducing monocratic structures for better control and lean working methods characterised a movement called 'the office reform' during the Weimar Republic. The effects of the office reform, which tried to introduce some practices from the economic sphere and from American government, on the process building capacity of intra-organisational communication will be the subject of the following chapter, because they were directly inherited by the German Government of today. First, however, the practical examples of the 18th century development can explain the reasons and methods of functional differentiation between different competencies inside the decision making processes, which are the function of problem solving, of logistics, and of steering and control as well as the differentiation of material competencies. By the end of this century a complex network of organisational inter-relations had emerged which had a high capacity to reflect complex problems brought to the administration from the outside.

2.5 Differentiation of functional competencies

The differentiation of the various internal functions began with the original separation of the council, responsible for oral decision making, from the chancellery which handled the writing. This distinction later shifted when it no longer referenced competencies for oral or written communication, but rather the mode of internal co-operation.

A new division of labour emerged within the committee based government of the 18th century, based on three distinct tasks associated with: (1) the president or chair of the council, who prepared and guided the work during the sessions; (2) the councillors, who dealt with the content of the matters and were responsible both for presenting them in the meeting and for determining their resolution; and finally, (3) the administrative infrastructure, whose centre was occupied by the registry which organised the flow of work.

This division of labour was quite remarkable for its time. It did not support hierarchical subordination: this system made no provision for orders given and obeyed. It came into action only during the decision making process, and did not affect

the other activities of the administration. In this way an internal structure had been created in which self-organisation could occur without disturbing the organisational coherence. The following sections trace the decisive stages in the development of the decision making structures within the General Directorate, which was an office of the central government possessing subordinate regional agencies.

2.5.1 Contradictions between process oriented and monocratic tendencies

By the time the regulation which installed the General Directorate, the Principal government agency of Prussia, was drafted in 1722, the division of material competencies which had originated in 1654 (as shown above) was already an accepted tradition. The organisation of the Directorate provided for a President or the King himself, five Vice-Presidents or Ministers, and 14 additional councillors. Each minister was responsible only for his own department. Nine secretaries were specifically assigned to the chancellery, and a number of copyists were appointed to produce outgoing letters and other texts.

The work of the secretaries was presented in a separate regulation. They were no longer described as members of the chancellery, but rather as qualified clerks. They were each assigned to specific departments, but were supposed to help each other out if necessary. They took turns in keeping the minutes during the meetings of the directorate; they had to record everything that was dictated to them and make notes of each matter deliberated, including the reasons for the decision. The minutes, which had to be signed by the five ministers, served as a framework for the drafts that were also prepared by the secretaries; the ministers likewise signed these drafts before the fair copies were drawn up in the chancellery. Finally, the secretaries sent the fair copies to all five ministers for their co-signature. If they were unable to finish everything on the same day, the councillors were supposed to assist them.

The work began when the incoming letters were delivered. These went directly to the ministers who, after opening them, gave them to one of the councillors for preparation. This councillor then had to present the matter in the plenary session, in which the departments deliberated each matter separately. Following the decision the councillor had to create a task list relating to the further treatment of the matter, even though the minutes also furnished the secretaries with guidance for their work. There was no way of ensuring that the task lists were followed.

The councillors prepared the deliberations, but their influence was diminished after the decision was taken, since then responsibility lay with the secretaries. The instruction for the Directorate thus reduced the influence accruing to the professional qualifications of the councillors, whilst the secretaries acquired more power through their mastery of formal issues.

The next regulation for the Directorate, drafted in 1748 by Frederick the Great, altered the business processes even more in favour of the secretaries. The formal

procedures were reinforced, and the administrative structure became more monocratic. The ministers had to ensure that the councillors actually presented the matters they had received for preparation. They were not allowed to deal with matters outside the meetings.

A new sessions schedule was drawn up and penalties were imposed for absence. Thus if a councillor missed an entire session without explicit leave, half of his annual salary was retained. Such regulations are an obvious indication of disciplinary problems. Other instructions pertaining to personal conduct during the deliberations likewise indicate symptoms of disfunctionality. For example, the members were enjoined to put aside personal issues and to not waste time over unnecessary or personal quibbles. A time limit was set for the deliberations: no discussion of a single matter should last longer than six minutes. If the session could not arrive at a decision within this time limit, the matter was to be brought before the King. During the session all extraneous tasks such as signing or revising documents were forbidden.

These structures indicate that a number of unwanted habits had become entrenched, reducing the efficiency of the meetings. It had become difficult to maintain the flow of deliberation, and to identify its end, as matters became ever more complex. Some members simply dropped out of the deliberation as their more knowledgeable colleagues presented their views. It had also become difficult to distinguish the material interest of the case from the personal interest of the person presenting it, owing to the nature of oral discussion.

Total personal involvement, evidenced in gestures and facial expressions, made it hard to focus on the matter at hand. Open deliberations require an atmosphere of trust, which make them very vulnerable. Whilst the instructions tried to counteract the negative aspects of oral discussion by enforcing personal discipline, they simultaneously acknowledged that these aspects existed. Hence their effectiveness depended, in the end, on personal effort.

The strength of the regulation itself, however, relied strongly on the advantages of orality. It was sent to the Directorate along with an order to be read aloud in the presence of all of the councillors. The secretaries and other assistants were excluded. The councillors were enjoined to keep the contents of the regulation secret. Thus publication of the regulation occurred orally, which guaranteed that everyone who was present knew about it and that the number of persons attending, hearing, and thus knowing it was obvious.

Oral communication had a binding effect on those who were present. Members who joined the council later had to swear on the regulation. Its oral presentation had no effect on the structuring of the process, for there was no opportunity to respond to the reading. Its function rather was to create the situation of a closed meeting, setting the boundaries for who could legitimately attend, and who could not. Exclusion of the non-members provided an internal cohesion. All who were present had heard the regulation. No one could claim ignorance. This same procedure was also applied at the lower levels of the administration. Oral presentation was probably the reason why the

texts of these regulations did not survive in the archives. After being presented they were sealed and remained separated from the files. Thus less attention was paid to them, and they physically deteriorated when they were no longer used.

The fact that the regulation was written down provided for its use as a record, and permitted re-reading. This fact was not, however, a condition for its validity, which was secured by being listened to. Apparently this was regarded as a more certain process. It was not the document that was supposed to be remembered, but rather its content. Only those who had attended its reading could assume the responsibilities described by the text, and this was the only way it became effective. This form of publication indicates an unbroken confidence in oral communication as well as an understanding of the function of orality in keeping memory.

In 1786 a final re-organisation of the Directorate took place. This time a new regulation was drafted based on proposals submitted by the members themselves. Since they were the ones who were most familiar with the process and its specific problems, their suggestions had been solicited. As a result the business processes were thoroughly re-organised, and the councillors regained their influence. The structure of the text of the regulation itself was fundamentally altered. The section describing the distribution of competencies was moved down to the second half of the text. The first part of the regulation was taken up with a detailed explanation of the processes. For the first time these were treated as a whole, beginning from the point where the incoming letters were received, to the final step when the fair copy was dispatched and the draft and task list integrated into the files.

In its redesigned form the process now began when a minister, who had to decide whether he accepted them as pertaining to his area of responsibility, opened the letters. This examination was referred to as the presentation, even if nothing was being presented to an audience at this stage. Its use recalled the situation when all the members were assembled in the meeting room, and the president then opened the letters and presented them to the board before assigning them to one of the present members. Now, if the minister accepted the matter he wrote the letters ‘pr’ (for *praesentatum*) and the date at the top of the correspondence, and then assigned it to one of the councillors by jotting down the councillor’s name or simply his initials besides the *praesentatum*. All this occurred without other people having to gather, and it was done in writing. No separate messages were drafted. Instead, the letter was simply marked up. This mark had the same effect as the direct handing over of the letter during the meeting to a councillor without the necessity of both being together at the same place.

This marking contained a lot of information for everyone who saw it. It indicated that the responsible minister had opened the letter and had knowledge of its content. It also showed that he had accepted it as belonging to his department, and that he himself had assigned it to someone to work on. Since the marks were not messages addressed to any particular person or persons, anyone could use this information for their own particular purposes. This was also the case for the registry which, whilst never directly involved, used the marks to organise the logistics for the following process.

The registry was the next station. Here all the necessary details about the new matter were entered into the journal, which had the form of a large book with the pages laid out in columns. The details of each incoming letter were entered on one line which had a running number in the first column. This number was then taken from the journal and written on the letter itself, near to where the mark for presentation and the initials of the councillor supposed to work on it had been noted. The subsequent columns in the journal were intended for notes about the date and the councillor responsible. Then the registry took any existing files on the same matter from the repository, and attached them to the incoming letter. This aggregate was then brought to the designated councillor.

This councillor then prepared a report to the committee and presented it at the next session. In his report he explained what the problem was and suggested a solution. By making his report he initiated a common deliberation which ended in a manner reminiscent of the first instructions in Brandenburg by collecting the votes and formulating a resolution. After the meeting he then drafted a list of tasks to be accomplished in bringing the resolution to its intended effect.

This list contained the text of the reply to be sent out, perhaps somewhat abbreviated. The task list also indicated how the answer was to be drafted and what additional matters had to be taken care of, especially if any delays were to be anticipated. After the list was written, the papers were sent to the secretary who was responsible for expediting the matter by creating the finished draft of the outgoing reply.

Through this regulation the business process was provided with a clear structure. The first three steps combined the opening of the letter and the examination of its content with the process of presentation, and with subsequent assignment by the head of the department. Together, these steps regularly constituted the input for the beginning of a new process. The next three steps involved the report of the referee in the meeting, the common deliberation, and the resolution. These steps thus combined the treatment of the content of the case with the actual decision making.

The last three steps involved the drafting of the task list including the text for the outgoing reply, the signing of the final draft written by the secretary based on the task list, and the revision of the draft and its transfer to the registry at the end. These final three steps marked the completion of the process. The actual production of the outgoing letter was not part of the decision making, but simply resulted from it; here the message was created in which the decision was communicated to the outside.

The three groups of steps each signified a specific function for the business process, the first consisting of opening and assigning the new matter provided its conditions of initiating, the second built up the solution production, and the third established the framework of logistics for all physical handling of paper and paper based texts or notes and task lists. This functional framework, organised as a division of labour or just as definitions of competencies, became a constitutive element for later textually and graphically based production processes.

Whilst the formulation of the structure of the administrative decision making process was presented here with all necessary details, it was not described as a work flow or a repeatable sequence of predictable steps, especially concerning the middle part of the three phases, the actual production of the decision. It is rather, defined as a series of consecutive stations each with particular tasks. For each station special tools are defined contributing to the handling of the matter. It was not simply a series of actions, but rather a layering of competencies which shaped the determination of the matter as a whole. For this to function successfully it was essential that each matter be treated as an integral decision making process from start to finish. Each step was necessary, not because it was prescribed in a written procedure or model, but because it was expected to happen by the steps preceding, and required by the steps following.

Here the focus remained on the problem, not on the papers or writings which were simply the logical material products of the process. The operations were carried out with a view to the content of the matter, and marks and notes were used to facilitate the process. This approach had been carried over from the collegial tradition, in which each problem was discrete, and not to be confused with others. Resolving the problem consisted of a series of consecutive operations leading to a decision. By integrating the traditional approach into the new written procedure, attention was likewise focused on the entire matter and on the tasks required for its resolution.

The new tools were more important than the work flow, since they determined how the process was structured. The decision making was intended to emanate from the deliberation of the persons responsible and then be transposed from oral to written form. The definition of the different steps, along with the marks used in them to convey information about the process, could then be used for the subsequent steps. The administration was prepared to replace both the exchange of verbal messages for the internal communication in oral debates and also the visual information regarding the participants' behaviour, at least as far as it was needed in order to further the process.

At the end of the 18th century this business process was still part of an orally based system. However, it had begun to influence the structure of the process without affecting its content, in such a way that it could later be easily transformed into a means of internal communication, avoiding the exchange of verbal messages and using marks for joint co-ordination. By this time, the power of the committee had already been reduced. The ministers were allowed to make an immediate decision, without waiting for the next session if the matter was particularly urgent. Similarly, matters of a more routine and less important nature could be handled without submitting them to the plenary committee. In the years that followed, the departments were allowed to manage those affairs lying completely within their domain of competence, and again ten years later they were able to make decisions without a departmental plenary session.

The three stages of the development of the General Directorate show how much the tradition of oral communication both influenced contemporary work methods and led to a merging of techniques. The first regulation adhered to the traditional situation

and developed the processes through the effective combination of previously separate competencies. The regulation from the middle of the century reflected increasing problems experienced when relying on oral speech as the Principal medium, and attempted to resolve these problems by reinforcing hierarchical structures based on the personal sense of duty. Furthermore, it reduced the influence of the councillors in favour of the secretaries.

Whilst this provided for better control from above, it simultaneously reduced the effects which personal qualification and experience had on the production of decisions. Finally, the last regulation defined the business process as an integral whole consisting of several functionally distinct steps. The councillors received the authority to control the process of decision making, the head of the office distributed the various incoming matters, and the registry organised the production processes using the marks on the documents and the task lists of the referees.

This structure made it possible to combine the advantages of committees on the one hand, and of distributed individual decision making on the other. It established individual responsibility for the final result, and joined this with the responsibility for applying the most effective form of process. Such structuring, however, required a more complex organisational infrastructure.

The decision making process now depended largely on an effective service centre for internal logistics, a function provided by the registry office. They were defined at the end of the 18th century in a very concise way, and the main functions for providing logistic support for self- organised decision making processes were formulated here.

2.5.2 Functional responsibilities of the registry office

Complementing the final regulation of 1786 came a set of instructions for the registry offices in the regional administrations, issued in 1788. This represented a restructuring of the competencies of the registries, since these had undergone the most dramatic changes in their functions since the introduction of differentiation into the decision making process, in contrast to the other sections of the administration, in which the changes in the daily routines were not so evident.

In the central government tradition the registries had been situated within the chancelleries. They registered outgoing correspondence either by copying of the text, or by noting the particulars concerning addressee, content and date in large volumes. Access was restricted to authorised personnel. According to the former instructions, outgoing correspondence had to be registered within four weeks. Nothing really depended on its functioning, and work in this old form of registry must not have been very attractive. In comparison the role of the new Prussian registry was completely reversed. Now the registry became the service unit that guaranteed a successful communication network amongst all the members of the administration. The keeping of records, a central task as in former times, now acquired a new meaning. It was no longer a core function in itself, but became a tool for the now more important logistic

purposes of the registry, namely, supporting the decision making process. Files were essential as means in order to fulfil this purpose.

The central service of the record keeping to the rest of the agency was made evident by the requirement that it be able to show immediately and definitively whether a requested document was in the files or not. In the first case it was to be delivered without delay. In the second case time was not to be wasted in searching for it. A negative answer was regarded as being just as useful as a positive one. This requirement was something new. It required special tools and was based on a new structure of the records.

A prerequisite was the conception of each new matter as an integral unit, represented by an integral volume or part thereof. The processes were focused on these units, and attention was devoted to the operations, rather than to the handling of papers and files. This was the basis for the development of an entire system for the management of co-operative action through use of a new form of file, the 'action file', a name suggested in a Canadian thesis [Miller (1997), p. 20]. These action files grouped all records emerging from one case together, and was used to plan the subsequent operations with notes and remarks referring to the existing file.

Apart from the instructions for the registries in the regional administrations, no instruction for the registry of the administration in Berlin has survived. Perhaps one had not been issued, because there were no major problems to deal with. Be that as it may, the instructions for the registries of the subordinated agencies on the provincial level reveal all the details of the final form of the registry as it was just before the old administrative system collapsed with the end of the old German Empire and the defeat of Prussia by France in the first years of the 19th century.

The instructions of 1788 were intended to address the unsatisfactory state of the registries at the middle level of government. The tasks of the registrars were described as follows: (1) installation of the registry; (2) filing records; (3) maintaining the records; (4) providing instruments for file retrieval; and (5) providing access to the records when required. A central idea of the instructions was that the body of records in every registry should have its own structure. To determine this the registrar was advised to first study the main idea or purpose of the registry, since whatever arrangement was devised had to suit this purpose. Alphabetical or chronological arrangement was explicitly forbidden; instead, the files were to be arranged according to the nature of the matters they concerned. The principal strategy was to envisage the registry as a whole, and its different parts as subdivisions of this whole. In addition, two registries were not to be mixed up in cases in which the registrar was responsible for more than one, but the central idea for each was to be identified and the registry structured accordingly.

When filing papers after they had been worked on the registrar was instructed to check whether all of the tasks in the task list had been completed. Incomplete matters were not to be filed but sent back to the Principal who was responsible. Each file was supposed to contain only one matter, and it was to remain distinct. The individual

papers within it were to be sewn together to form a volume which at the start had received a title indicating its purpose.

The instruction from 1788 defined the registry as an organisational unit with the specific functional competencies required for the procedural infrastructure. Hence whilst it was clearly separated from the decision making process, just as the former chancellery had been kept distinct from the council, it both supported this process and managed it. The text of the instructions described the tasks of the registry as they appeared in its transitional stage between collegial forms and modern collaborative work.

The principal elements characterising the registry in the 19th century were identified here for the first time. These included the responsibility for handling the paperwork according to the actual matters being dealt with, the provision of files when needed, and the correct filing of new records. Checking task lists for completeness before filing records represented a further aspect of integration into the process management.

The new responsibility of handling the paperwork arose from the requirement of developing a management scheme for submission to the board for approval and implementation. This task was assigned to the registry in order to provide it with a comprehensive control over all the files, as well to enable the analysis of their main purpose. This introduced a new functional differentiation alongside the organisational functions with their distributed competencies.

The spontaneous and flexible structures of the decision making processes had represented a layer over the stable organisational framework. Now a third structure was added, namely the management of the body of the paperwork reflecting the tasks actually carried out. These different layers related to different perspectives of the same administration representing the three functionally distinct but mutually interdependent pillars of the administration. First was the decision making, with its spontaneous and transient processes. These functioned together with the registry, which provided the connection both to past activities through the files, as well as to future actions through its ability to control their progression. Finally, there was the structure of the administration as a background and resource for the other two layers, a task which fell to the management level of the organisation. Such extensive functional differentiation provided a wide range of options, as well as flexibility for the handling of the problems, and thus enhanced the effectiveness of the organisation. It allowed complex recombination of the structural parts in any new situation.

These instructions presented all of the elements that were required later in the administrative reforms which followed the defeat by France, elements which had matured within the framework of the old collegial system. The new functions of the registry were the final step in enabling the replacement of the committee based government by a form of administration using text based decision making processes.

Writing finally dominated over oral deliberation as the principal medium of communication, however in an unconsciously generated and very different way

compared to the central powers. The Principal, when composing the task list on the documents, could reasonably expect that the registry would then perceive the indicated operations in the course of distributing the files to the persons identified as specifically responsible for them and did not need to address anybody personally with verbalised messages.

With the new instructions chancellery and registry became really independent from each other. Their assigned responsibilities lay outside the actual decision making. The chancellery was the centre of competence for the production of outgoing correspondence. It was managed by a chief inspector who first recorded all of the incoming tasks in a special register, and then assigned them to the clerks. After the letter had been written the clerks would make their special mark on the draft, which eventually was filed after the dispatch of the letter.

Whilst the introduction of this special register for tasks separated the chancellery even more from the rest of the agency, it nevertheless permitted it to organise its work on its own terms. With regard to the other sections it was only important that it could react to their needs and that its output was relevant for everyone in the administration. The same thing happened with the registry. It was separated from the chancellery, where it had originally been located, and provided with its own competencies. Of central importance was the responsibility for ensuring that all matters were completed before being filed. It was only when all of the tasks identified on the task lists had been accomplished, and after the chancellery had confirmed that the response had been dispatched, that the registry was allowed to file the documents in accordance with a task list created by the Principal.

From its origins as the part of the chancellery responsible for keeping the records and providing access to them, the nature of the registry had completely changed. The control of writing, which did not have the same inherent capacity for restricting access to the message as oral communication did, as well as the organisational measures necessary to ensure confidentiality between sessions, were no longer as vital as before. Formerly the secretary in charge of the registry had often been a lawyer, and identified expert witnesses for lawsuits on the basis of the records. The new registrars required different qualifications. They had to be familiar with the different ways in which files could be composed, as well as the effects of this on daily work. They required instruments in order to interpret the task lists correctly. It helped to know how the administrative tasks were organised and to be able to reflect this in the structure of the file system.

Registrars increasingly needed professional competencies. However, they did not obtain the chance to formalise these skills as a body of professional knowledge. The most qualified registrars were those with many years of experience. There were no professional requirements for their appointment. Indeed, from the beginning of the 19th century onwards the fear of losing control over them led to forbidding their over-specialisation. As early as 1825 the King ordered that registrars should be interchangeable with secretaries, and since the office reform movement of the early 20th century efforts were made to abolish this function completely. Therefore

registrars did not have the possibility of professionalisation as many other professions did during that time. In spite of the high esteem they had attained in the ministries, there was also a feeling of dependence on their work, uncomfortable especially for the higher ranks.

The competencies of the registrars and their quiet and responsible work were the main pillars of the extremely effective administration in Prussia. However, this form of work was part of a system of self-organisation which for its mere functioning needed opacity towards the outside during its work, whilst providing high transparency after it was finished through the help of records that emerged unintentionally from the internal communication. This opacity gave the impression of uncontrollability and made it suspect.

After the defeat of the Prussian army in the Napoleonic wars and the consequent nearly complete dissolution of the government, the reorganisation of the administration began with a public debate on which form of government would be most effective. This debate was stimulated by the actual presence of an efficient and modern French administration on German soil in the little Kingdom of Westphalia. Warnings were voiced, however, that such a system could not avoid unilateral decision making and hence prevent despotism, and that this could be the price for the unfailing rapidity in its functioning. The committee based system required a large personnel, it was characterised by a lot of repetition in parallel operations, and it tended to downplay individual capabilities. On the other hand, however, it seemed to ensure the quality of the decisions through the principle of multiple perspectives.

Following the recovery and the subsequent restructuring of the administration the provincial level of government acquired greater power. The different agencies which had previously existed at this level were integrated into one body whose jurisdiction comprised the entire region. At the same time appeals which previously had been addressed to the central administration were now to be handled by the normal courts. This was the beginning of a separate system for litigation in the area of government administration. By the end of the century special courts for the handling of administrative lawsuits had been established. With this development came the final separation of administration and law, a process which had begun in the 16th century, when the two procedures began to be differentiated.

In 1808 new provincial governments were installed, receiving new regulations for the management of their internal business procedures and the distribution of competencies. Whilst these initial regulations were still very much based on the regulations of the previous century, the importance of the plenary sessions was reduced.

Less than ten years later revised regulations were issued, which then formed the basis for the government's work almost up to the end of the century. Some important changes were introduced greatly facilitating the implementation of individually guided processes within the stable framework provided by the formal distribution of competencies. Only at the end of the century did the central authorities realise that

they had lost control over what was going on in the regional governments. Whilst they tried to reverse the trend there was little to be done, since traditions for the carrying out of everyday work had been established. The business processes as such had not been subject to further regulation by the central government since the instructions of 1817, and the central ministries could no longer interpret them when they wanted to change them.

2.5.3 Compensation for the vanishing unity of the debate

The central ministries responsible for the provincial governments had drafted the two consecutive regulations of 1808 and 1817. They sought to organise the work of these administrations in the same way as had occurred with the former *Generaldirektorium*. With them a precedent for undisturbed development was provided, supplemented by the additional regulations for those business processes which were drawn up by the local agencies themselves whenever specific problems arose.

These regional regulations differed very little from those of the central administration; however, they always described the functioning of the registry in greater detail, as well as how new matters were to be integrated into the work processes, in comparison with the central regulations from the beginning of the century.

The two regulations also document the gradual loss of significance of the plenary meeting, even if they still exhibit trust in the device of reinforcing collaboration through oral deliberation. The first set of regulations, however, indicates that greater trust was placed in collaboration outside the plenary session, as well as in the use of new forms, whilst the second set reveals a clear tendency to replace the process-building abilities of collaboration with a more formal hierarchy, including embedded monocratic structures.

As the texts of the regulations make clear, however, the disfunctionality of the plenary deliberations had become more and more obvious as the complexity of the matters increased. The members were no longer able to follow all of the debates with the same degree of attention, or to contribute equally to each solution.

The function of the structure was reduced to simply ensuring that everyone knew what was being dealt with, and was able to contribute to the deliberation if desired. In the plenary session involvement could not be avoided. In such a situation, when two differing opinions were voiced some compromise had to be reached. The collegial form was viewed as a means of ensuring the unity of the processes, the predominance of liberal attitudes, as well as impartiality along with the integration of diverging opinions.

However, it is also clear that developments in other directions were already manifesting themselves. Technical specialists were introduced in some areas of the administration. They were able to make decisions on their own without participating in

the plenary session, their resolutions being integrated by the councillors into the decision making process. In such cases responsibility resided only in that part of the final decision which affected their own particular area of expertise. The use of such specialists arose for matters in the areas of health care, education, and religion. Their involvement in the work of the agencies represented yet another step towards the final dissolution of the plenary meetings as centres of decision making, and their replacement by forms of shared responsibility.

In the regulations of 1808 the focus was still on the distribution of competencies and methods for their co-ordination. In 1817 the processes were less important and appeared to be viewed as something necessary but of no real interest: they were self-evident to the point of banality, and therefore not worth further attention. The material decision and the actual matters were the principal focus of attention. The processes subsequently became less and less visible as the entire structure of the agency became oriented towards the decision. As the processes withdrew from the foreground monocratic hierarchical elements again began to assert themselves over the collaborative structures. All of these developments tended to replace the functional differentiation with forms that appeared to be more manageable and more susceptible to control. From then on it seemed that management regarded the introduction of monocratic elements as the only remedy for uncontrolled self-organisation.

The regulations provided a framework for it by describing competencies and functions. Their chief purpose was to distribute the material competencies within all regional agencies in a uniform manner, and to both define and restrict the competencies of the plenary sessions.

It was imperative to reduce the number of plenary meetings because they were very time consuming. Here two alternatives presented themselves. Either the task list could be used to provide for a sharing of responsibilities, or a co-Principal could be employed to control the work of the Principal by preparing the same matter. These alternatives had opposite effects. Whilst the first attributed responsibility for the structuring of the process to the Principal, and hence supported elements of self-organisation, the second conserved elements of collegial administration through a duplication of the decision between at least two persons. This second form produced the same results as the plenary session, but at a much lower cost.

Neither of the two regulations adopted this alternative, nor made any commitment to the direction of further development. Yet the difference between them is based on a slight shift in this direction. Both texts reflect a rather marked suspicion of the ordinary individual members of the administration, and a desire to control the content of their work from a higher level. Thus there is a strong reluctance to allow forms of self-organisation to develop freely, and to provide space for the officials to utilise their productive capacities.

Different traditions are in conflict with one another, given the era. Only some decades after the French Revolution, it is not surprising that trust in the ability of ordinary members of the organisation had not yet developed to the extent which would

permit self-organisation to fully dominate the structuring of the processes. Nonetheless, the suspicion evident in these texts actually became stronger as the century progressed. The subsequent so called office reform one hundred years later, whilst calling for less control and greater productivity, really served to reinforce monocratic elements.

Whilst the main thrust of the regulations of 1808 and 1817 was thus to reduce the number of meetings of the directing board, that conflicted with the desire to increase control within the agency, including the President. Therefore an additional instruction was issued in December 1808 regarding the improved organisation of the provincial governments, in which in a second and smaller board was added to the existing ones, the so called *Praesidium*. Its members comprised the directors of the departments, as well as a few other councillors, and its tasks included opening and distributing the incoming mail each morning.

The *Praesidium* integrated the president, who formerly had unrestricted competency for distributing new matters to the board. Furthermore, and in spite of individually assigned competencies, each department also held its own plenary meeting, in which everything had to be handled in a collegial manner, which meant that decisions were reached by consensus or majority.

The instructions contained a list describing the competencies of each organisational unit. Unlike the instruction to the Privy Council of 1651, in which a similar list had served both to draw attention to the range of matters requiring attention and to structure the work process, this list was aimed at reducing the number of decisions made by the agencies, and enables the Presidium to distribute the post. However, it proved unworkable. Above all, the incoming matters had to be examined before they could be directed to the proper agency, which was a time-consuming task in itself. To alleviate this the specifications were made more precise, which meant that the list grew, making it even more difficult to apply. Finally, the list became so detailed that in later instructions it was omitted completely.

The desire also to reduce the work load of the plenary council led to the realisation, for the first time, that the lists of tasks could be used by the Principals to plan further steps. In both regulations passing but significant references can be found to the competence for planning the processes, and an initial attempt was made to articulate their implicit functioning. The fear of losing the effectiveness of this planning can be discerned in the reading of the texts. Thus in the second formulation the effort to make it disappear again into the sphere of non-articulated self-evidence is clear. Since then no further effort was made to address the use of the task lists.

2.5.4 Installation and revocation of the task list as an organising instrument

The task list was long known as an instrument used in daily work for organising operations pertaining to different aspects of the decision process. Whilst never

explicitly mentioned in previous regulations, its use is evident when contemporary files are examined. The instructions from 1808 were the first to make explicit the competence for drafting task lists. 10 years later, however, this move was significantly withdrawn.

The first instructions addressed the functions, not the form: "Everything which serves merely the introduction, preparation, progress and execution of the matter, everything, which relates to the formal business process, including inquiries and requests for information, in short all internal disposals, may be carried out directly and without reporting by the departmental councillors, insofar as they have no special concerns." Thus the competence with its far reaching implications of the responsible councillor for creating processes was described and unconsciously reinforced. At the same time, this sentence also structures each process into four stages which had previously been simply taken for granted because of the tradition of oral deliberation. The process was described as consisting: (1) of an opening; (2) the analysis of the problem; (3) the suggestion and formulation of possible solutions; and (4) the determination of the decision. The regulation granted the councillors the freedom to construct the process on their own within this framework, using the internal disposals to organise it. Thus the person who was responsible for providing the material solution was also explicitly permitted to define the process of accomplishing this task.

The regulation defined the functional competence for the structuring of the process not as being subordinate to higher authority, but as inseparably combined with the solution of the problem itself. The Principal, knowing the problem best (this being the reason for being assigned to the matter) and having studied it, was supposed not only to know what the solution should be, but also how to reach and improve it.

These regulations demonstrate how deliberation through committee could be replaced by individual decision making. During the deliberation the process of problem solving was shaped through the non-verbal communication of the participants, along with the finding of the material solution. The tradition of viewing the work in terms of single matters handled in developing processes made it seem very normal to combine both competencies when the plenary session was replaced by individual decision making. This did not last long, however.

In the second set of instructions the process-constructing capacity was reduced and the introduction of hierarchical forms facilitated. The new regulations regarded the control of the process as a simple technique, hence as something that should work without formal direction. The instruction was now: "The Principals are obliged, insofar as they have no special concerns, to draft and carry out every disposition which simply serves an introductory or preparatory purpose, as well as all things which have their set procedure, their standard, and form." The process was no longer structured by the *Referent*, who instead was referred to ordered and standardised procedures. However, it was not indicated where to find these, they were simply supposed to do so without further ado. The combination of material and procedural responsibility tended to become fragmented. The unity of the problem solving and its character as a process

was still acknowledged and required, but the autonomy of the structuring of the process was regarded with suspicion. The conflict between decentralised decision making and the hierarchical structuring and control of the process had become apparent in the disintegration of the committee based decision making. Hierarchical control acquired priority.

This reduction of the process-building competence was not, however, the result of any conscious effort. Even in 1808 the competence of process planning had been rather haphazardly defined, although this was not intended to reflect on the normal way of working. The original intention was, rather, to relieve the board of routine matters so that it could focus on more important tasks and thus convene with less frequency. Everything brought to it should be ready for the final decision, and as much as possible was supposed to be taken care of without its direct involvement. Therefore distributed individual competence for structuring and planning solution finding processes was at first made explicit, only to be later hidden behind monocratic practices.

2.5.5 Installation of co-Principals

The use of a co-Principal was instituted as another means of replacing the plenary session through delegation of certain functions. Whilst co-Principals had existed since the full development of the collegial structure, they had not previously played an important role in the Prussian government. Like the process-building competence of the Principal, this new position adopted an effect produced by debates and transformed it into a structure based on the contributions of individuals.

The appointment of co-Principals was supposed to guarantee an internal control comparable to that exercised jointly by the board members during their deliberations. Its functional principle was control through duplication and redundancy, as in the traditional oral structures. It relied on the technique of control through multiple perspectives, without recourse to the collegial structure.

Both regulations from the central government specified that a co-Principal be nominated to work with each Principal. He was to co-sign all of the task lists for the outgoing correspondence before they were finished and filed. The Principal himself had no influence on the appointment of the co-Principal. The Presidium could assign them to individual matters, but the Principal himself had no influence in this choice. He could not choose his co-Principal, nor could he name him when assigning specific maters in the task list. The co-Principals were assigned for general tasks and they were part of the organisational structure. So they were part of the stable layer and could not exercise any function for flexible process building.

The regulations described their functions in detail. They were to examine each matter assigned to them, and then present their opinion, however, the sequence in which this occurred differed from that in the older committee based administration. Now the co-Principal was the first to see the incoming letters, and had to formulate a

preliminary vote. This was added to the papers, and the Principal, the official who ”conducted the pen”, received the notes with the papers they refereed to.

The preliminary vote had to be taken into consideration when the Principal arrived at his own decision. In contrast to the shared responsibilities, which the Principal exercised in organising the task lists, this procedure produced duplicated responsibilities. The co-Principal repeated the entire decision-process. For each matter the co-Principals examined the papers twice. Once at the beginning before they were transferred to the Principal, and again at the end when the final task list had been drawn up. They had the right to have a final look and to sign their approval. They were not allowed to change the drafts without the consent of the Principal. However, if their preliminary vote had not been respected they could appeal to the plenary session. The institution of co-Principals ensured that the oral form of consensus still had value. If writing produced polarising results oral deliberation was the final resort. The co-signature functioned to confirm a consensus previously worked out through oral deliberation.

However, because the co-Principal was able to check on the Principal and prevent him from making arbitrary decisions the responsibility for the final decision was duplicated, and hence removed. The procedure reduced the impact of individual qualifications in the same way as the deliberations of the former committee, reinforcing the requirement that each decision be persuasive.

Even if the external organisational structure of committee based government had been abolished to a large extent, the institution of co-Principals preserved its internal methods of control, transposing them into a structure intended for individual responsibility. The appointment of co-Principals with their preliminary votes and final co-signatures obviously worked against the aim of producing less paper, which was the reason behind the preference given to oral consensus.

The non-collegial form, different from this, of producing really shared and not doubled responsibilities was apparent in the proposal to integrate the administration’s legal counsel into decision making processes. The Principal, via the task list, could direct the matter to the lawyer, nominated as a specialist, to become involved in all matters potentially entailing legal action. The lawyers were permitted to alter drafts as well as make suggestions about how possible legal problems could be avoided. According to the regulations they had a restricted responsibility for phrasing text in a manner suited to diminishing the likelihood of litigation. Their area of influence was kept clearly distinct from that of the Principals, resulting in separate contributions to the one matter. This method of integrating legal expertise into the problem-solving process was also applied in regard to the technical councillors for health, education, and for crown lands. Use of the task list made the draft of the outgoing correspondence available for amendment by other specialists and opened up new opportunities for planning the process. Within it the drafted text served as the focus for the joint efforts, not as some internal directive. The task list instead replaced the use of verbal instructions.

The regular use of this form of co-operative work in the daily routines created a tradition which was expressed neither in writing nor in explicit rules. It was simply done, and the records in today's archives show to what large extent it was used as a normal instrument in the daily co-ordination of shared responsibilities within the Prussian administration. Indeed, it was the basis for its undisputed efficiency.

The two elements of administrative structure created by the regulations of 1808 and 1817, i.e. the task list and the co-Principals, contradicted each other. Their main intention was to replace the plenary deliberations with their lack of complexity and mistrust of individual competencies and innovation. Both tried, in different ways, to exploit the advantages of the volatility of oral communication in more complex environments.

However, devices such as the use of co-Principals betrayed an inherent mistrust of individuals and a persistent desire to control them through duplication of effort. The ensuing redundancy did not add anything new to the decision making, but rather forced it to invest additional resources in creating consensus. Such duplication consumed time and resources without tangible results.

Redundancy provided security only for the upper management, and was otherwise a waste of staff. The statements of the co-Principals functioned just as written messages exchanged in the deliberation. Because of the inherent fixedness of the input their utterances lacked the potential for process building. Their different statements were presented in parallel just as written votes in a collegial board meeting, and then simply compared to each other in order to find common areas of agreement.

Meanwhile, the process-building function was taken over by the internal disposal or task list, which developed into the one instrument for structuring the processes. It enabled the planning of further steps to be done by the responsible personnel. It reinforced the capacity for individual decision making and even facilitated the integration of very specialised individual competencies. Finally, it became a crucial tool for associating different aspects of solution finding with the handling of complex problems.

The task list served to keep the process together, while the institution of co-Principals had the opposite effect. For this reason the procedure had to be precisely regulated, and this regulation had to be applied stringently in each matter. Since the initiation of the decision making could no longer stem from the matter itself, as accepted by the person who was best acquainted with it, namely, the Principal, an external authority was required which could only be found in the upper hierarchical levels, the plenary sessions having been reduced. Thus a distinct trend can be discerned towards reinforcing monocracy as the only perceived alternative to collegial forms, whilst self-organisation, being mistrusted by management, was consequently ignored and neglected.

2.5.6 Replacement of board control by hierarchy

The increasing decline of the influence of plenary meetings and their substitution by distributed individual decision making was necessary in order to handle more complex matters. This was regarded as a more rational approach, requiring less time and personnel, and it promised to improve the quality of the decisions. However, as the control over the processes and the responsibility for making decisions devolved to the lower ranks a feeling of insecurity began to spread amongst upper echelons. The control over individuals had slipped away.

This can be seen through the study of just one phenomenon, the use of a difference between internal and external signatures. It is interesting in this context to examine whether any distinction was made between its internal and external use. Whilst in monocratic structures it makes no sense to make such a distinction, because the person who represents the organisation to the outside is the one who makes the decision, the presence of the difference indicates that an acknowledgement of difference between internal and external functions exists, something which is typical of decision making processes using distributed competencies.

The difference between internal and external signatures results from the exclusive nature of the decision making process, making it necessary to have a dedicated intermediary for communicating the results to the outside. That is, this distinction is owed to the difference between the internal open deliberation, which through its inclusion of participating members simultaneously excludes the non-participants, and the subsequent production of the outgoing correspondence. After the decision has been made and the process concluded, the resulting decision has to be reformulated in a manner optimally intelligible to the recipient, in order for it to be most effective. This reformulation, however, is not part of the decision making itself.

This separation is reflected in the written decision making process executed by an individual Principal through the use of task lists. The task list for the outgoing correspondence marks the end of the decision making process, an end which serves in turn to initiate the beginning of the creation of the outgoing message by indicating to the secretaries what the content and the form of the letter should be.

The task list itself is concluded by the signature of the person chiefly responsible for its execution. This signature shows that the internal decision making process has come to an end. To achieve its purpose, which is purely internal, the abbreviation of the name is sufficient, as long as it is distinguishable from other such signatures. The external signature, on the other hand, placed on the dispatched letter produced by the secretaries informs the recipient that the letter represents the will of the organisation. It thus has quite a different meaning compared to the signature, for example, on a cheque, since it is not a certification of authenticity, but only a demonstration of who is able to speak for the organisation regarding the matter in question.

The distinction between these two types of signature reveals the two different functions of 1) closing the internal process, and 2) representing the agency to the

outside in regard to the matter. It thus provides the potential for different uses for special purposes. For example, it might be useful for the head of the organisation to sign the final task list with the draft, whilst the Principal signs the outgoing letter. Then, in the case the decision is questioned, the ensuing reply may receive more weight on account of the president's signature.

On the other hand, the head can leave the task list signature for the Principal, while he himself signs the outgoing correspondence, a method used when the letter is going to the ministry, where correspondence requires the personal signature of the president. By separating internal and external signatures both are allowed to lead to different results. The person who signs the internal draft assumes responsibility for the content as well as for the form of the process which produced it, whilst the person who signs the outgoing letter acts as a representative of the agency.

Use of the internal signature by upper level management had its origins in the revision, for which the president or the directors of the departments were responsible. The revision process was part of the collegial system and consisted in the approval of the draft after establishing that its contents corresponded with the decision made by the board. It was mentioned in the two regulations at the beginning of the 19th century.

Within the context of the board based decision making process, the revision signature did not represent distributed responsibility either for the content or for the process. When a board had deliberated and a resolution had been determined, the final draft could be submitted to the president for revision. However, the president, who was also a member of the board, was subject to its decisions and was not, as an individual, able to change them. When he read the draft he could only determine whether the text corresponded to the resolution. Thus he could only influence the production of the outgoing message, not the decision behind it.

Some years later the president became more independent and was no longer a member of the committee. With this change, the revision of the drafts acquired a different meaning even if the form did not change. Now he examined the decision itself, that is, the content and not just the form of the message. If he changed the wording of the draft which had been integrated into the task list for the chancellery he thereby influenced the content of the decision. Indeed, simply the ability to alter it represented power over the content, whatever he chose to do. Even if he did not change anything and simply signed it, that was still a decision since it indicated his approval. Thus a hierarchy was introduced and the president received new power without any formal change in the organisational structure. The drafts were still submitted to him and this operation was still called the revision. However, it was now a revision of the decision, whereas before it had been the revision of the representation of the decision in the outgoing document.

The same thing resulted if the president signed the task list for the outgoing correspondence. By his signature he himself brought the process to an end. The signature of the person who had planned the processes and drafted the resolution indicated the actual responsibility and his decision to end the matter. The signature of

the head of the agency showed the responsibility for both the content and the process, and thus for aspects, which he himself had neither planned nor carried out.

The internal and the external signatures acquired different meanings because of their differing functions. Whilst this enabled them to be variously applied, that seldom occurred. However, this distinction is still useful if the decision making process is organised as a unit articulated by connected operations resulting from self-organisation, and terminated by an internal signature.

2.6 Committee based decision making and modern bureaucratic techniques

The long tradition of committee based government has left its traces on German administrative techniques. The main concept inherited was that of the unity of the decision making process, beginning with the incoming letters and ending with the dispatched replies. The outgoing correspondence was conceived as the answer to the incoming correspondence, and as its result. Hence registers and journals were used to control processes, not papers.

The particulars entered in the journals were not about the incoming correspondence, but rather about the matters they contained. The record in the registers became more complete with each step taken by the agency, up to the point at which the answer was dispatched and the papers filed. Then this record in the journal, which had been produced by, and in the course of, the handling of one matter, was closed by indicating in the last column the number of the file which contained the papers. As was the case with the minute books of the boards in the 17th century, in which the left hand column was used to indicate the matter to be deliberated during the session, the resolution being noted in the right-hand column, then all of the operations leading to the decision were organised with the help of the entries in the journal documenting the intended actions and achievements during its progression.

At the beginning of the 20th century some German archivists complained about the loss of information in such files [Rohr (1958), p. 78]. They missed the wealth of facts included in former reports from inspectorates or legations and from subordinate agencies to the central powers. In its place, however, they received a new kind of record, demonstrating how information was collected, for which purposes it was needed, and what it meant. However, the new forms of action files required new techniques for the preparation of access by the public. This was the context first for the formulation of the principle of provenance in the late 19th century, and for new debates about appraisal and the definition of criteria for permanent preservation in the 1930s, leading to the publication of many interesting articles on appraisal. The recognizing of the new structures of records generated by decision making processes supported the new trend towards greater professionalisation of the archival work.

The archival interest for the new forms of files, joined together by records

generating processes led to new observations. The unity of the decision making processes reveals a specific phenomenon, driving it forward. It is the sustainable carry over from the old administrative practices, namely, the difference between expectations and reactions, observable in oral deliberations. In the paper context it is made concrete by the task lists and the corresponding marks added to it whenever one of the steps was done, thus opening the field for the next one. Written task lists express expectations. Upon completion of the first operation the mark noting its achievement, signed and dated by the person who did it, opens the way for the next operation, again composed of expectation and reaction. The sequences of the two marks, the expecting one and the confirming one, might work as an inventory of the respective activities. Such an interactive way of communication demonstrates an operational method using evidence that any one particular operation was done in order for the next one to occur. It thus does not only integrate the results of preceding operations but even its mere happening into subsequent actions.

The internal disposals and the task lists, along with the marks and notes, indicating that the desired actions had been done, thus effectively reveal the operations. Further, because they are fixed in time they can be compared, and thus series of actions emerge making evident what occurred before and after one operation.

The expectations, and the corresponding inventories of their fulfilment, are only directed towards actions and not towards texts. Because actions vanish, the expectations themselves are ephemeral in character and are only important during the operation. Thus their function endows them with a volatile nature not dissimilar to that of oral utterances, which likewise vanish. What is important at the moment prior to its accomplishment becomes neglected after its purpose has been fulfilled. Nevertheless, these written permanent signs, whilst losing their meaning completely after the operation controlled by them has been completed, are able to function as constitutive elements of processes because they demonstrate what had been expected and what was done. Their physical appearance is conserved whilst their function is vanishing. They thus work in a way similar to transient oral utterances, and through their functional disappearance prepare the ground for consecutive actions and reactions.

This difference between expectations and their corresponding achievements typifies administrations which rely on written decision making processes. It is the one essential difference affecting everything. Organisational documents such as the regulations express expectations, but they do not describe actual proceedings. The procedures actually used are apparent in the records, where they can be compared with the regulations. Every distribution of competencies is only an expression of expectations of how concrete matters in a particular area will be handled. To verify its impact it has to be compared with the actual activities.

Both ideas, the unity of decision making as a process and the differentiation between intention and achievement within the process, are inherent in autonomous self-organisation. Already in the early stages of the central council in Vienna the self-organisational nature of the deliberations was seen as useful for obtaining new insights and at the same time hindering control. However, it was just this form of organisation

which provided the openness needed to understand problems in all of their complexity. The President, in the meantime, had to control the deliberation through the rigid procedure for collecting votes. In the Prussian version of the committee based government self-organisation was allowed to develop more fully at the intermediate level, because the boards exercised some control over the President through his integration into the decision making.

In this situation the use of written instruments, representing the same unity of process and process-building as the oral debate, was allowed to develop, but only to the extent that it did not draw too much attention to itself. The power thus bestowed on each Principal who was assigned to the handling of a matter was hardly controllable. He was in charge of managing a single temporary process until its closure, something which he alone could determine. He organised it on the dual basis of his competency to deal with the matter and his competency to determine the best manner of bringing about its resolution.

2.7 Classical collaborative decision making processes

In the decentralised provincial governments self-organised forms of work had had the opportunity of developing quite undisturbed until the end of the 19th century. They finally showed a form near to the ideal type of collaborative processes converted from oral to written co-ordination. Collegiality had been introduced here initially as a means of controlling the presidents by subordinating them to majority decisions.

It had survived the instruction of 1825 that set the president apart from the board and made him the head of the agency. The boards still took the major decisions and, combined with the written collaboration, its working methods had the time to mature as a means for self-organised processes.

Thinking in terms of processes and self-organisation had proven to be effective and it had rooted itself deep into the traditions that were handed down from one generation to the next. Because they were useful and did not present major problems these methods were undisputed and unarticulated. They just worked as daily practice without fuss. They had the chance to form a tradition to such an extent that the natural habit of using internal disposals and task lists are still to be observed today. Their character of implicit know how helped preserve forms of co-operative decision making and enabled them to survive for a long time.

A close look into the practice of the decentralised government is facilitated by the ministries of interior and of finances, intending to modernise the working methods of the governments, by the end of the century having ordered them to apply a set of rules and to transmit their proper guidelines to Berlin. The governments replied with lengthy submissions containing their internal guidelines for business processes, most of which were already several decades old, and with few exceptions did not incorporate the list of 10 points presented in the circular.

These submissions remain important sources for understanding the processes of the time. Not only do they enable the reconstruction of the main elements as they had come to be formed in the day-to-day work, elements which had their origin in the regulations issued in the beginning of the century, but they also facilitate the study of the problems which had risen.

The decentralised guidelines submitted to the ministry of finance in 1896 had mainly been drafted by the regional governments following the regulation of 1817. They had developed undisturbed during nearly a century. The guidelines reflected the actual practice and its problems, indicating where regulations were felt necessary. Therefore they are a set of sources which reveal the typical elements of the process and allow a model of collaborative decision making processes based on writing to be drafted.

The guidelines of the decentralised regional governments were able to mature in a stable environment. Having been drawn up by the heads of these governments, and containing those elements perceived to be essential or problematic, they were intended for internal use, not for public consumption. With this in mind the guidelines had to provide for a mutual agreement regarding expressions of purpose and fulfilment by staff. Thus they described the communication tools which were supposed to be employed. However, when they were collected for study by the central government they were read out of context. When the records of the ministry of finances are looked at today, it is apparent that the central government did not understand these guidelines. They were received and filed, but never referred to. Instead, new circulars were issued which neither mentioned the submitted guidelines, nor fitted in with the regional forms of communicating process descriptions. However, just these decentralised regulations allow the reconstruction of the model of the written collaborative decision making process as it was used in the provincial governments by the end of the 19th century.

2.7.1 Elements of typical business processes

The typical business process is conceived around these three steps: 1) the preparation of the incoming matter; 2) the central decision making process; and 3) the creation of the outgoing reply. All of the more than 20 regional governments described these three parts as the main elements of their business process with little variation. Whilst their guidelines contained more practical details than the central regulations, they too provided directives on how things were supposed to be accomplished, rather than descriptions of what actually occurred.

2.7.1.1 The incoming matter

The typical business process began with the preparation of the incoming matter. This consisted of the following steps: 1) opening the incoming correspondence; 2) the presentation; 3) the assignment to a responsible official; and 4) the entry in the journal. The letter was opened to determine whether the agency was really the proper

addressee, or whether the letter should be forwarded to another agency. This was a task reserved for upper level personnel, normally the Presidium. They were thus able to exclude inappropriate matters from the process.

In the collegial tradition, where the board first determined the items on the agenda, the acceptance of the matter was the first step. However, in distinction from the plenary meeting, the Presidium also had to determine the importance and urgency of the matter. The decision to accept it indicated to the other members that the handling of the matter was regarded as falling within the agency's jurisdiction.

The next step was the presentation. Here the acceptance of the matter was confirmed, this being indicated by noting on the letter the date it had been received, sometimes preceded by the abbreviation 'pr' for 'presented'. This date, whether hand written or stamped (as was the later practice), had several important functions. First, it proved that a competent authority had inspected the letter. Next, it indicated the point of time when the matter had entered the work process. Finally, it provided a temporal reference point to the outside world whilst the process was progressing and developed its own internal schedule.

Next, the dated letter was sent to the president, who then assigned it to an official to work out the solution. At this point he could also add other marks, for example a cross at the top of the letter or near the date stamp, indicating that he wanted to sign the final draft himself. Usually the process of assignment was divided into two or more steps. First, the letters were sorted in the mail room according to departments, and then the head of each department assigned them to their Principals. Then the president received all the letters after they had been sorted, and added a mark, sometimes just a simple line in the colour reserved especially for his position, indicating that he had seen them.

The following step was to enter information about the letter into the journal. Just as did the minute books of the former collegial boards, the journal entries represented an agenda of open matters. On the same line across the journal page, the successive steps in the handling of the matter were entered as the process progressed in order of occurrence until the final entry, which showed the date of the signature under the draft for the outgoing letter, the subsequent filing disposition, and the corresponding file number.

The regional guidelines provided much more extensive instructions for the keeping of journals than the model guidelines from the beginning of the century drafted by the central government. Whilst this indicates that their use involved considerable problems, it also proves that they were regarded as important tools. However, it evidently was not easy to ensure that they functioned properly.

Every page of the journal had 10 lines, all of which were consecutively numbered, usually for a period of one year. The number of its journal entry, which was written besides the date stamp and thus served as a definite addressable identification, identified the incoming letter. This identity was maintained throughout the entire process which the letter had initiated and thus became the identification of a matter,

not only of a letter. Registering matters in this way reveals the legacy of collegial work. Letters and other papers were perceived from the beginning as surrogates for the action producing them. The lines in the journal recorded the processes and the single actions of which each consisted by registering the according papers.

In the older imperial government in Vienna, or in monocratic régimes, the registers actually had a similar form, yet different functions. Separate registers were kept for incoming and outgoing correspondence, and different numbers and identifications were used for both sorts of papers. The Prussian journal, on the other hand, was able to identify processes by uniting the papers which they produced to form a whole.

The identity of the process was created through its representation in paper form with the help of the identification number without any reference to its content. By identifying a single process the journal provides an address for the task lists used by the Principal within the process, and other papers or documents can be attached to the case simply by assigning the journal number to them as a reference point.

Given these four elements: (1) the opening of the letter; (2) the date of its acceptance; (3) the assignment; and (4) the journal number, an incoming matter was constituted as the start of the subsequent process, and actual work on its content could begin. The entire procedure of establishing the incoming matter functioned as a gateway to the collaborative work process, receptive to initiatives from the administrative environment. Opportunity for intervention in different forms was thus facilitated and enabled operational information about the new matter to be generated. The purpose of these elements can thus be seen as setting the stage for a precise and clear answer, at the same time enabling the process for the production of this answer to be controlled and directed to its appropriate end.

2.7.1.2 The actual decision making

The Principal to whom the matter was assigned was responsible for the timely, thorough, and adequate delivery of the solution. His office, staffed by secretaries who were not concentrated in the chancellery, provided support for doing this. The secretaries' task was to expand the Principal's notes for the outgoing reply into a draft, including any calculations if required. They were thus referred to as *Expedienten*.

Within the office the papers going back and forth between the Principal and his secretaries or clerks were not tracked in a register. The office was viewed as the fundamental production unit. Personnel there were not expected to specialise and were supposed to be available for every task assigned to them by the Principal. This included drafting the outgoing correspondence as well as keeping the journals and maintaining the registry. For the actual work on the matters and the preparation of their resolutions, the Principal had two tools at his disposal. One was a special form of memorandum for gathering information and attaching it to the corresponding matter. The other was the disposal and the task list for planning the development of the process.

The guidelines only mention one form of the disposal, which was used to plan for the outgoing correspondence and contained the formulation of the decision. In fact, the term for the disposal now became applied to the draft itself, which was just inserted as point one or two of the task list. This signifies a shift in the meaning of the term. Whilst previously denoting an internal instrument for closing the decision making, it now became a preliminary version of the text. Subsequently, because the term 'task list' or 'disposition' was usually used to describe the text of the outgoing letter, the planning activity that it previously designated slipped again, as a form of implicit knowledge, into the blind spot of functional differentiation between solution finding and managing its external form as a process.

Based on the disposal for the outgoing reply the chancellery then produced the letter and sent it back for signature, normally to the head of the division. Activities such as writing, proof reading, and mailing were noted on the internal disposition, including the text for the reply. Thus the draft, together with all those notes about expected and accomplished activities was what was left behind. It then became integrated into the files of the agency for reference and as a demonstration both of what had been communicated to the outside as well as how it had been handled,

2.7.1.3 The production of the outgoing letter

Most of the guidelines required that the signature of the head of the department be added to that of the responsible Principal. Eventually co-Principals from other departments also had to sign. In some cases the so called 'super-revision' by the president had to occur before the process of actually producing the outgoing correspondence could begin. The registry with its journal, or in some cases the chancellery itself, was the place where the completeness of all necessary signatures was checked.

These guidelines still viewed the internal signature as being much more important than the signature on the outgoing letter. The competence for the internal signature was linked to the final decisive instance, which was reserved for the upper management. Since the relevance of the internal signature was known and reserved to the upper levels of the hierarchy, the problem to be solved by the Principal's work itself became integrated into the hierarchical structure. The upper levels were involved in each case by signing the final draft. That led to the unwanted effect that they were integrated into the subject, could not see it any more from the outside as a form, and therefore lost the ability to perceive the overall picture.

2.7.2 Problems

For the first time, these decentralised internal guidelines made it clear how the agencies' internal communication was supposed to function. Very detailed descriptions, or efforts to cover several alternatives, normally indicate unresolved

problems. Here the problems were: 1) the procedure of assignment of new tasks to single Principals; 2) the use of the journals and the amount of entries needed; 3) the function of the co-Principals and when they had to be involved; and 4) the potential conflicts which could arise in the sequence of contributions specified in a task list, as well as their relationship to the hierarchical ranking within the organisation.

2.7.2.1 Assignment Procedure

Assigning the incoming new tasks to the personnel was an operation which had an important impact on the work load for the single Principals, but was so demanding, on account of the sheer quantity of incoming letters, that the higher ranks tried to rid themselves of it. Eventually it was shifted from the highest to the lowest levels of the hierarchy. Earlier, in the collegial administration, the letters were opened during the meetings and then distributed to the members. After the practice of having the Principals prepare the matters had become established, the president or chancellor would jot down the names of the responsible persons on the letter prior to the meeting.

The distribution of tasks by the head of the agency demonstrates that it was regarded as a competence belonging to the management, which is to say as an organisational function, since through it the resources for each matter were assigned. As the amount of incoming correspondence increased, it eventually became impossible for the president to assign all the letters personally. Various attempts were made to establish formal criteria for identifying the assignation in order to relieve him of the task of unnecessary reading. Some guidelines indicated that the distinction should be drawn according to the importance of the matters, in which case the registry determined the degree of importance and sorted the mail accordingly. In the end, the task of assignment became delegated to the mail room.

Another problem arose in regard to letters relating to the handling of a previous matter. It could happen that the directors, if they were unaware of the existence of previous correspondence, unwittingly assigned such letters to someone who had never worked on the matter. Because such an assignment had the weight of a management decision, the registry had a difficult time determining whether to correct the assignment, or to act in accordance with it. No real solution was ever found for this problem, which eventually disappeared along with the complete delegation of the assignment to the mailing room of the registry.

The changes which occurred in the course of this organisational shift had far reaching implications. The assignment through the head of the agency or of a department was associated with the responsibility for the entire administration, including its proper functioning and personnel resources. The assignment is a decision which concerns above all the distribution of resources. Placing this responsibility at the management level had different consequences for the Principal's work from when the matter came to him as a result of the sorting done in the mail room. In the former situation a responsible decision concerning his person had been made, whilst in the latter, his involvement resulted from the simple application of routine procedures.

The change could affect personal motivation. In addition, the delegation to the mail room of the task of distributing incoming letters also deprived management of the ability to control processes before they began. By integrating the matter into a specific area of competence an initial interpretation had been carried out, and by assigning it to an individual official the task was defined as belonging in that area of competence.

2.7.2.2 The journals

Another problem involved the efficient use of the journals. The journal could be used to check the entire process, because it provided a quick overview. In contrast, the use of task lists and marks indicating the various stages of completion allowed several parallel processes to be checked. Such tools served to increase the number of matters which could be simultaneously worked on. This, in turn, enabled the division of external problems into separate internal processes, resulting in individual contributions which became, at the end, united in the reply. The journals were not really suited for following these kinds of inter related processes. Their lack of flexibility prompted attempts to compensate by adding new columns or by grouping column headers. The use of different kinds of journals was also experimented with. This, however, led to a loss of the overall view. No effective solution was found for this problem. It seems that the paper form was not flexible enough to respond to the increasing complexity of the processes. It nevertheless demonstrated the need for a tool to follow the process itself, not only the flow of papers.

2.7.2.3 The co-principals

The institution of co-principals also raised problems the guidelines could not resolve. Co-principals were used for matters touching on the competencies of more than one department. In these situations it was difficult to determine which journal should be used to register the matter, and the guidelines described various methods. Even more problematic was the situation in which the Principal did not agree with the vote of the co-Principal, or he drafted a text for the outgoing correspondence which the co-Principal refused to sign. In such cases both were instructed to resolve their differences either through joint discussion, by bringing the issue to the plenary session, or by allowing their superior to decide. If agreement could not be reached both were able to make an official report of their view and submit it for filing. Formal written correspondence between the departments was expressly forbidden. The only alternative appeared to be oral discussions.

2.7.2.4 Hierarchy and disposals

Finally, there were problems in reconciling the sequence of responsibility indicated in the task lists with the hierarchical ranking of the participants. It appears to have been difficult to distinguish between the persons and the positions they occupied. The

task list could only address the material needs of the matter; at the same time it represented the structuring of the problem solving process and therefore it addressed professional competencies.

However, this process was not linked to the hierarchical structure. This conflict again shows how the difference between the organisational structure and the transient structuring of processes created instability. Some of the guidelines stipulated that the names of the contributors should be written in order of their rank: here organisational structure had priority.

This conflict between constant hierarchical and temporal horizontal relations demonstrated the capabilities of the new technique, which allowed working connections to be created according to the needs of the matter even if these differed from the organisational structure. Whilst it still sometimes remained difficult to handle this tool, particularly from the perspective of management, at other times it worked quite well.

If, for instance, a referee felt that a certain matter required the signature of the head of the administration he was allowed to make a cross at the top of the paper as a disposal indicating that the head of the agency should see it. The source of the cross was easily identifiable by the colour of the pen used, and hence everyone could tell that it did not come from the president. Nevertheless, it was accepted as part of the planning, and hierarchical relationships did not interfere.

Disposals were not orders, and so they could also work from the lower levels to the top. In this situation it was clear that the organisational structure was not being affected, but instead used to advance the handling of the matter.

The guidelines which had been drafted by the regional governments were not, as a whole, entirely consistent in nature. Whilst they strongly supported self-organisational structures, they did not really trust them. The day to day work, as it was reflected in the guidelines, showed that different structures could co-exist without disruption; indeed, they could even mutually support one another. Thus the organisational structure of differentiated professional competencies provided the framework for their constant recombination in individual constructions of processes.

2.7.3 The legacy of Prussian collegial traditions

The Principal legacy of Prussian collegial tradition was the idea of the unity of the process. It prevails in the guidelines whether they concern committee based or written solution finding. The regulations were mainly concerned with communications and operations that required co-ordination in order to achieve common goals, and not with the handling of papers. The transition from oral to written processes provided an example of how tools could be transposed from one medium to another. At the very least it indicated how important functions are in comparison to forms. The reproduction of forms in other media can lead to different results, usually undesirable and uncontrollable. Converted to writing the oral message can be seen as composed of

two sides, the verbalised text and the non-verbal framework. Transferred to written forms both sides are separated from each other. The written verbal message demonstrates the absence of its author, who therefore cannot support the understanding by gestures and mimics or other signs. However, the Prussian tradition demonstrates that also this other side, the establishment of the framework, the articulation of intentions without verbal texts can be converted to a written environment, yet also separated from the other part, the verbalised message.

The non-verbalised, non-textual indication of intentions together with marks of fulfilment after each step can, however, be used for the co-ordination of a collaborative process. That use emerged unintentionally out of the oral environment of committee debates and offered a set of tools for the construction of more complex and more effective business processes.

The shift from oral to written decision making processes provided for a largely increased complexity which allowed highly complex matters to be dealt with by offering innumerable possibilities of recombining differentiated professional competencies in the course of single processes. This complexity needed three areas of internal functions to be identified:

- The actual decision making by Principals with high professional qualification, combining their capacities together for each case in a way that followed the special demands of just that case;
- The registry and mail office as assistant part for handling the papers and providing the logistics, ensuring that the plans for collaboration established by the responsible or conducting principal are executed;
- The management level for the distribution of responsibilities and for the provision of resources for the functioning of the two other areas, which encompass personal capacities, qualifications and organisation framework like the distribution of responsibilities as well as guidelines describing methods for situations which might be misunderstood.

The shift from committee based oral decision making to self-controlled written processes had been made together with emerging organisational structures which would have needed to be consolidated to enhance the productivity. However, the adoption of the organisation did not really happen. Instead it seems that the development encountered feelings of insecurity on the side of the central government faced with a loss of control for higher ranks in hierarchy.

When towards the end of the 19th century the Finance Ministry and the Interior Ministry of Prussia, which were responsible for the organisation of the administration, together ordered the sending of the guidelines of the regional governments, they tried to initiate a reform whose goal was to eliminate the traces of collegial structuring and to create lean and efficient structures. Later, when the movement was taken over by the Reich's ministries it was called the office reform. Although officially intended to enhance responsibility of the lower levels of hierarchy, the ordinary employees were

thought of as unwilling and it was deemed necessary to force them to accept the reform. The office reform in effect put a stop to any reflection on administrative business processes, as rudimentary as they had been in the past, by classifying them as straightforward techniques of no interest to upper levels of management. Finally, office techniques became viewed as routine matters not worth thinking about, whilst middle and lower level personnel were considered intransigent and manageable only through coercion.

2.8 Work process guidelines for the central ministries: legacy from the Office Reform

The term 'office reform' described a movement, which included political debates and resolutions in parliament, publications by authors who themselves were members of the administration at various levels, and work by the Reich Ministry of the Interior. Following the defeat of Germany in the First World War, the movement for administrative reform was taken up by the central government of the Weimar Republic.

2.8.1 First attempts of an office reform for the central agencies in Prussia

In the 1890s Prussia had already taken the initial steps in reshaping the operational structures in its administration. This initiative can be seen as the preparation of the later office reform in the Reich administration. It was stopped by the war which started in 1914. However, a commission was installed in 1917 and one of its main results, a publication in 1919 [Drews (1919)] under the authorship of the Prussian Minister of Interior, Bill Drews, with the title "Essentials of an Administrative Reform", containing an annex about new business process was the main basis for the efforts in the Reich ministries in the twenties.

The work of the commission had been preceded by several attempts of the Ministry of Finance to obtain better control over the regional governments. Following passage in 1883 of a law concerning procedures, organisation, and duties of administration, which was an important step towards the professionalisation of administrative work, the Ministry of Finance, together with the Ministry of the Interior, issued a circular to the provincial governments entitled "Concerning the Simplification of Work Processes and the Reduction of Paper Work in the Regional Governments", and requested them to submit their own regulations, based on the model the two ministries provided. They did send their own texts to Berlin, yet new circulars were written and sent out with new proposals; it seems that there was no dialogue between Berlin and the regions. Instead the commission was installed and led to the publication of Drews' brochure.

In 1921 Arnold Brecht, who later emigrated to the United States, became director of Department I of the Ministry of the Interior. He was responsible for the organisation

of the administration and for its reform. In this capacity he drafted the text for a joint procedural code which, after five years of work, was eventually adopted. After the Second World War this code then served as the basis for a new joint procedural code for the central administration of the Federal Republic. Even if Brecht did not notice it himself, his efforts were part of the reform process starting in the beginning of the 19th century and having until recently a decisive influence on the shaping of German administration.

Brecht became the best known representative of the 'office reform'. His work in the ministry of the interior led to the publication of a small book about the joint procedural code[4], and his memoirs, published in 1962, describe his role in the reform. He was rather well known in post-war Germany and acted as a consultant during the reconstruction period. In the 1920s he had founded, together with Bill Drews, the German Institute for Economic Management in Public Administration in Berlin.

The copious text of the joint procedural code for the central ministries was a compilation of many contemporary sources. Aside from codes already existing in the various ministries, he drew especially on the text that had been published by Drews in 1919 as part of a brochure on the administrative reform. After Brecht's appointment as General State Commissioner for the reform of the administration, a position he held conjointly with his post as head of the department I in the ministry of the interior, he sent an official letter to Drews requesting the text of his publication. However, what he received had been slightly altered and adjusted, and it was this version which the Prussian ministries adopted. The public, for its part, remained unaware of this, and it appears that Brecht did not notice the difference either.

2.8.2 Brecht's first source: Drews'publication

The official publication by Bill Drews of 1919 was the report of a commission which had been set up by the Prussian government. The main topics were the new distribution of competencies between the central and the regional agencies, as well as the abolishment of the middle level of government. In one of the 15 chapters the improvement of the business processes was addressed. An appendix contained a separate text entitled "Essentials of a Simplified Business Process in the Administrative Agencies"; it was a revised version of this text which was later sent to Brecht. This text had its own special history.

The personal papers of Drews, now in the Prussian State Archives, allow its origins to be traced back to a text drafted by the former mayor of the city of Halberstadt Weissenborn, who had been called to the ministry during the war to work as an assistant after many of the staff there had been called up for military duty. Prior to this Weissenborn had published a booklet in 1912 regarding the reforms he thought to be

[4] Later he co-authored an English version of this book, which remains the only English-language description of German administrative methods of this period. Cf. Brecht 1940.

necessary at the municipal level. The main ideas expressed in this book found their way into Drews' text.

After the publication of Drews' report it was supposed to be presented to the council of ministers for approval. In preparing for this presentation, following the death of Weissenborn in 1918, his successor travelled to Halberstadt to see for himself the results of the reforms introduced there prior to Weissenborn's departure for Berlin. In the report on his visit he noted his astonishment upon discovering that most of the traditional practices had been restored after Weissenborn had left. As a result of this finding, the text of the publication was altered and it was this new version which was approved by the ministers. So they approved a text which was not the version that had already been published two years ago.

Both texts, even if they differed in some central aspects, dealt with the same main issues. These included three Principal topics: (1) the abolishment of the journal for incoming mail; (2) the integration of decision making and records management; and (3) the appointment of an internal central auditor. A major intent of these proposals was to get rid of the registries. The persons working there were supposed to receive more interesting tasks, and the time spent for transportation of files inside the agency as well as the cost of salaries of registrars should be reduced.

The journal should be disposed of by replacing its reference code on the letter with a new code consisting of the number of the post to which it was assigned, the file number, and the date for the expected result. However, this combination, called the 'transaction code', did not allow for unique identification of letters or of matters. And it connected the number of the letter with the organisational structure through the assignment, thus reducing flexibility in handling the matter.

The integration of decision making with records management was supposed to enhance an understanding of the files. In the earlier version of 1919 the clerks were supposed to file their letters in chronological order, making the establishment and use of the traditional filing plans unnecessary. However, in the later revision of the text, approved in 1921 by the ministers, the registry was reinstated. Centralised files seemed to be especially useful for matters in which more than one person was involved.

Finally, the most senior clerk was supposed to be appointed as auditor, and thus ensure that the guidelines were followed. He was to observe the opening and presentation of incoming correspondence, conduct spot checks, and make sure work progressed properly. He had the right to enter the offices and inspect the files, lists, and other material. If he observed delays in the work flow he was supposed to note these and report them to the heads of the divisions. This idea of an internal auditor was retained in the second version.

The result of these innovations was that the process itself became lost to sight. Instead, attention became focused on work with papers, and whilst this aspect of the process became more and more explicit the structuring aspect disappeared. The use of task lists for organising shared participation in decision processes was not mentioned.

It was neither enjoined nor forbidden. It simply had no function any longer. However, a new tool was invented. Instead of disposals or task lists for individual matters, standardised work plans were supposed to be created in advance, describing the model work flow for repeatedly occurring matters, including the personnel who participated and who had the right to sign in special matters.

This was supposed to be a way of standardising the work. The processes were to follow a pre-established course, just as they had in the legal cases of earlier times, when the regularity of the procedure ensured acceptance of the outcomes by the parties involved.

This special idea of work plans was not applied in practice and there are no indications of any experience with such tools. They look very much like automatic work flows and it might be interesting to use these historical proposals for developing strategies identifying problems or advantages in regard to standardised procedures in administrative work

At the same time the groundwork for ensuring a positive public reaction to the reform had been established by several other publications. Brecht himself referred extensively to the work of Weissenborn of 1912 when he published his commentary on the joint code in 1927. His main source of inspiration, however, was a small book by Hermann Haußmann, President of the regional government in Stralsund in the east. Both Weissenborn and Haußmann had employed historical arguments to prove that up to their own time all instructions and regulations had been expressions of extreme suspicion towards the members of the administration, and they pleaded for more responsibility.

Haußmann suggested that officials be given occupational training before taking office, including courses in office techniques. He had praise for the support given to collegial forms by the two regulations from 1808 and 1817, which he saw as contrasting with the earlier police state mentality. But his main influence was in the field of reducing individual influence on work processes. His progressive ideas were combined with an absolute faith in the idea of scientific management. Hence he also advocated the introduction of standardised workflows and the precise division of responsibilities, in order to reduce co-operative work to a minimum. Mechanisation of work was supposed to lead to greater productivity.

For Haußmann the guidelines had the nature of laws. They were supposed to be strictly respected and their observance checked. They were regarded as orders from above, with the purpose of standardising personal behaviour. Thus along with an abstract plea for greater liberalisation of the administration, there came new ways of stricter control and subordination. Perhaps his own experience as an administrative head had so influenced his thinking that he lacked the necessary detachment for an impartial analysis.

2.8.3 Content of the guidelines: a mixture of problematic elements

Such was the context of Brecht's own efforts to compose the text for the joint procedural code for all Reich ministries. Whilst they had already adopted some of the key features of the regulations issued by the Prussian central authorities, it appears that the guidelines of the regional governments, which were more advanced, were not consulted. In Prussia the procedural codes were an expression of traditions and routines which were an inherent part of the organisational culture. When imported into the Reich administration, however, they were divorced from this environment.

The regional Prussian guidelines did not simply specify how work was to be carried out. Not being written as impartial observations, but rather as instruments for improvement, they primarily addressed problems requiring attention, and suggested solutions. Hence, when external agencies adopted these texts as instructions complete in themselves, they only introduced points which addressed problems, but nothing relating to practices which functioned properly. None of those procedures which functioned smoothly, and which really deserved study, were evident in these documents. Instead, they only pertained to procedures which had to be better managed, or to new procedures which should be introduced, against the grain of tradition and established practice.

Brecht began his reform activities by preparing a group of files with the title "Simplifying and Accelerating Business", providing subdivisions for topics such as collaboration among ministries, reduction of the number of ministries, task analysis, delegation of tasks to provincial units, and training and public relations.

His first contribution to the reform was a 16-page memorandum dated 23rd May, 1922. This document contained interesting statistics intended to prove how little effect on the state budget it would have to eliminate the staff positions in the registries. However, this argument was also supposed to ensure that he was assigned the chief responsibility for the administrative reform, rather than the Ministry of Finance, where a state commissioner had been appointed to work out cost reduction strategies. Three years after the revolutionary movements which rocked post-war Germany, Brecht's vision of office reform found expression in his description of the purpose of the new guidelines as "facilitating the realisation of its positive potentials whilst avoiding its disadvantages and banning the familiar dangers, which democracy poses to administrative structures." [Bundesarchiv (Federal Archives), RMdI 17047, f.10v]

In the memorandum Brecht suggested that Drews' publication be used as a basis, and that representatives of all the ministries make a start by exchanging their experiences. In preparing for the first meeting he displayed virtuosity in his use of the traditional task list. The draft for the invitation was embedded in the planning for its production and dispatch, demonstrating the steps in its development and showing how he hoped to create a *fait accompli* through it. He proposed a preliminary agenda comprising the following items: (1) the appointment of an auditor; (2) the acceleration of the processes; (3) the organisation of the registry; (4) the integration of decision

making and keeping of files; (5) the unification of financial accounting; (6) the simplification of correspondence among ministries; and (7) issues concerning form and layout, such as the salutation, the placement of the address, and the dating of outgoing correspondence. This list was rather unsystematic, and did not facilitate a thorough discussion.

Subsequent discussions proceeded in a similar fashion. No clear idea of the goals was presented, and thus the result was a conglomeration of traditions and claims, brought together into an unsystematic model.

Brecht required five years for his project, and produced several drafts for joint procedures using texts supplied from other departments. The first version contained 260 paragraphs on 100 pages with 15 appendices. The final approved version was less than half this size. It presented a model for facilitating the business process, the Principal new elements of which were the following:

- All incoming mail was to be brought directly from the mail room to a so called consignee in each ministry, who was supposed to be uniformly identified in advance. This could be the head of a department, or one of the principals;
- Incoming matters were not registered, and the registry had no function in the preparation of the incoming matter. It only came into play when the papers were ready to be integrated into the files after the matter was handled;
- The first step of the decision making thus consisted in the consignee checking to determine whether he was the correct addressee. This procedural step meant that the same person who was responsible for the decision making also had to undertake the examination leading to the acceptance and identification of the matter, something which previously had occurred in the opening and presentation; furthermore, he had to determine whether the matter came under his area of competence. At the same time the consignee was urged to do his work faster;
- The number of collaborative steps was supposed to be reduced. When matters were handed over to the chancellery for the dispatching of the replies, a Principal especially responsible for lean administration was supposed to conduct random spot checks to see if any matters had passed through too many hands. Thus task lists specifying collaborative efforts on the part of other staff members became potential liabilities for their authors;
- The workload of the chancellery was supposed to be reduced by using the original incoming letters for correspondence and retaining copies only when thought necessary for future reference. This provided the conceptual shift from task lists to the later use of carbon copies for the files. The copies presented an image of the document, whilst the task list presented the actions leading to its production, including the composition of the text. The ability to construct, and later reconstruct, a process was replaced by an image of its result.

The guidelines did not refer to a disposal competence either conceptually or literally as an instrument for the internal management of processes. They even created structures which could make the use of disposals or task lists embarrassing. At the same time, however, the term disposal was used in other parts of the text as something self-evident and not requiring further explanation, especially in regard to the communication between principal and clerk, as well as between the office as a whole and the chancellery. The guidelines thus suggested that this instrument was actually used, but implied at the same time that this was not desirable.

The disposal or task list was able to survive as a kind of inherent and tacit know how, and was regarded as a very rational tool for organising collaboration. However, it became unwanted and increasingly invisible. New officials, if they began their career in a department with strong traditions, learned how to use it by watching and absorbing customary practice. In other environments, however, the practice disappeared over time. In particular, newly created departments with new responsibilities usually did not adopt these ways of working and people working there did not learn this method and did not realise the difference from other departments.

2.8.4 The modular structure of the text

For the first time the guidelines were divided into different parts representing partitions of the whole text with a certain mutual independence. The structure of the text of the guidelines thus represented in an interesting way the structure of the processes. The different components described competencies or operational contexts related to, yet distinct from the others. This unprecedented format facilitated new ways of looking at business processes. The modularity reflected the network of various operations within the business process and thus provided the basis for more flexible implementation, more than the author himself realised. While modularity of the working process was itself not specifically discussed, it was nevertheless presented. In fact, because it was not explicit, it became one of the strongest and most sustained features of the entire code.

The modules had different forms, representing different functionalities within the structuring and control of the processes. The Principal text described the main process. It was divided into four parts, covering (1) the organisation of the ministries, (2) the decision making, (3) supervision of the office space and the library, and (4) the outgoing correspondence. References were sometimes made to appendices. One of these contained a series of sample forms for various purposes.

Another appendix showed an example of a task list used in the production of outgoing letters. Although illustrated here, its use is not described in the main text. Two attached regulations provided instructions for the registry and for the chancellery. These in turn also had appendices illustrating various forms. This modularisation of the entire text demonstrated in a non-verbal manner the independence of the different organisational units, and indicated the potential for integrating their capabilities

horizontally across the organisation during any phase of the process. The appendices facilitated the standardisation of certain operations by predefining steps outlined in special forms, and the registry was given examples for the layout of the journal, of co-signature and appointment lists, and of master file covers. The chancellery received an example showing the use of letterheads.

The registry received explicit attention because the intention was to get rid of it. The Minister of Finance had insisted on having a special text for it, in order to better isolate it from the rest of the procedures. However, the immediate effect was that it appeared as something distinct. Separating it from the decision making section provided an opportunity to view it from a separate perspective, indeed in the same way as, in practice, the work of both parts was viewed as different. Their distinction became clearer, and it was even more obvious that an integration of the two was not possible. The registry appeared as a service unit that could be utilised as the occasion demanded.

Brecht was not aware of these effects. Although he was a good organiser he was no theorist, leaving this to others such as Haußmann and Drews. He tried to develop working methods in a pragmatic manner. Not really trusting the ordinary personnel at the middle and lower levels in the administration, he regarded officials with suspicion. Bureaucracy for him had negative connotations. Personnel were supposed to do their duty, act correctly, and not criticise the situation. Brecht's intention was to facilitate this.

The business processes, on the other hand, remained a mystery to him, and he wanted to banish the aura of an esoteric science of office techniques. Thus the code he produced, while providing no clear vision, nevertheless enabled every administration to recognise their own traditions in it. This is why, in spite of obvious inconsistencies, it was accepted by all the ministries. The code, as an adaptation from other contexts, thus unintentionally acquired new functions. It adopted the form of the Prussian regulations of the 19th century, which had been developed and used as self-describing tools for communication systems prescribing solutions for problematic situations without describing what was implicitly functional.

Both old and new organised the internal relations and provided the tools and techniques for understanding the activities of each component where potential for misunderstanding might arise. The new code, however, was interpreted as being a set of prescriptive regulations to be obeyed, with the result that contradictions and inconsistencies could no longer be supported.

Tendencies to self-organised processes and horizontal co-ordination became suspect. They were criticised as time consuming and threatened to get out of control. Monocratic tendencies became reinforced out of fear of uncontrollable dangers of democracy.

The same phenomenon can be observed in regard to Brecht's attitude towards records and files. For him these just constituted collections of information. They were supposed to be composed after the work was finished, and organised according to

subject headings. Brecht provided an example of a filing plan he considered to be a good model. It contained headings such as:

1000: German Unification and Liberation History especially since 1806,
1000-01: The Constitution of 1871 and its Interpretation,
1000-02: History of the War,
1000-03: History of the Revolutionary Period,
1000-04: Origins of the Weimar Constitution.

He recognised that this was not really a filing plan, but rather a classification system for information. He explained his view thus: "There will seldom be incoming letters and transactions concerning these points. But if they come it is useful to keep them separate. And furthermore, the existence of these headings means that such files should be created. The heads of the departments and the Principals have both the occasion and the place to store important material concerning these questions. There are not only matters from the outside, but there is also material that should be collected on our own initiative." [Brecht (1927), p. 44]

In making such statements Brecht showed that he did not really understand decision making processes. As a result he unconsciously produced effects contrary to his articulated intentions of greater responsibility for the lower ranks. Whilst professing liberal intentions, he in fact reinforced monocratic tendencies by abolishing all systematic approaches to self-organisation, something which can be hindered with just very small changes. For example, simply providing the potential for hierarchical control can prevent the initiation of self-organised processes. As it turned out, the elements of self-defined processes in the actual work of the administration were rather robust and survived for a long time. Nevertheless, they were left without support and increasingly came to be regarded by the upper levels as threatening their own exercise of power and control as they became increasingly less understood.

2.9 Business processes in post-war German government

After the Second World War and the previous 12 years of a strictly monocratic government during the NS régime, a new government had to be established in 1949, and ten years later a new joint procedural code was completed and adopted by the ministries. At first glance, it did not appear to differ much from the version of 1927. Nevertheless, minor changes introduced in the course of drafting the new code proved to have major consequences. On comparison, it is clear that the motivation for the codes differs. In 1945 the implementation of scientific management to reduce staffing costs was no longer a priority. Instead, the focus in the new code is placed on the proper functioning of the new government structures. Here the tradition of process-oriented work again received instruments allowing it to express itself. However, no consistent line of thought was applied.

The old conflict between the intent to establish better control on the one hand, and to delegate responsibility on the other, was also carried over into the new procedures. The code also failed to present clearly defined goals, something which became clear as difficulties arose in applying the guidelines to the new situation created by the use of electronic supports.

The first steps in accommodating electronic records with the guidelines produced only small isolated improvements, which were soon rendered useless by technological development. Then a thorough reform took place in the late 1990s, and the appendix for the registry was completely re-worked, so that it now represented a kind of manual for organising files. With the first experiences of electronic communication (e-mail, digitised documents, web pages etc.) the volatile character of electronic recordings attracted attention to how they were to be handled. Now the new versions of the codes seem to be caught in the dilemma of processes vanishing once files become visible. The new formulations are even further removed from the actual operations of the business process. This phenomenon appears to be supported by the actual development of IT applications, which tend to offer mainly either document or work flow management systems, thus representing the two sides of the old paradox of communication.

The understanding of information as the content to be transmitted during a communication operation is transferred to the storage and retrieval of texts. The texts are converted to writing in the form of documents, which means a form that in itself should prove its liability. On the other hand the common control of the operation is transferred to standardised procedures, incorporated into a piece of software. The procedure is modelled in advance and cannot be designed according to the needs of an actual problem. Even a selection amongst different forms or the possibility to create ad hoc steps can only choose what was designed before. So the workflow procedure tends to be that of production processes, optimised by the predefined outcome. It is rarely applicable for the processes of defining solutions for problems that are still open. Both sides, process and communication, are thus individualised in separate instruments. Their strict division is the reason for them lacking the necessary capacities of supporting self-organising. Therefore they do not replace old forms, but may offer new ones for other demands.

Writing in its electronic form cannot be used to control the process, and hence the process cannot be internally guided if work is based on the exchange of digital documents. Instead the technical developments for the moment reinforce monocratic elements again, and it is not surprising that they are supposed to permit greater control by superiors, for instance by inspection of automated login files. They reproduce a well known effect, because they reduce complexity of the communication process for solution development and thus reduce the capacity of responding to complex problems. They correspondingly reduce the problem-solving capacity of the collaborative structures. Therefore in considering the application of IT it seems to be very pertinent to think about finding out how it can be used for building processes, and which supporting instruments are possible.

2.9.1 Contradictory elements

There are several elements in the code of 1956 which indicate a stronger orientation towards processes than previously. In particular, the modular structure was refined so that it now reflected the interconnection of operations. As with the code of 1927, there were two attachments containing separate regulations for the registry and for the chancellery. Both units were strictly segregated from the decision making. Indeed, the chancellery was even practically sealed off by being provided with a register in which new drafts, along with task lists received for the production of outgoing letters and their dispatch, were recorded, as in the former Prussian governments. Some parts of the chancellery regulations explained how the secretaries were supposed to interpret different forms of disposals and task lists.

However the actual creation of these is never accounted for. Even in the main part of the code their use by the Principals was not described. It was simply implied, showing again that it is normal and nothing worth discussing. The registry was provided with a sample form indicating the column layout for the pages of the journal, showing a slight change compared to earlier versions, in that a reference to other incoming matters could be noted, and thus the connections among the files in the processes made clear. Apart from this sample, however, no further reference to the use of journals was made. This was just a way of acknowledging them as useful tools in spite of the earlier attempts to abolish them.

Changes were also introduced to the form of the appendices. Besides the samples of forms, which were nearly identical to those of 1927, there were now several special pages with notices functioning much like sub-procedures. Examples included the preparation of incoming matters, the use of notes like “cito” (at once), the production of task lists for outgoing correspondence and so forth. These all describe parts of a process. However, these parts do not stand in a linear relationship with each other, which makes them useful in practice.

The entire process consists of the combination of smaller processes in mutable relationships. These smaller processes represent action units, which can be internally altered without affecting the process as a whole as long as the result remains the same. Such processes cannot exist on their own, but need to be initiated by different events in the main process. Once initiated, they can be used repeatedly. The links between the main process and these smaller component processes are created spontaneously.

These processes are represented by a corresponding number of supplementary procedures, such as the guidelines for the registry and the chancellery, the forms to be filled in, and the notes and different steps which can be used if required. Whilst the forms are for standardising operations, the notes describe the steps to be taken, and the appendices provide flexible guidelines for complex working units. All of these can be referenced from the main process whenever needed.

Modularity signals differentiation and provides an opportunity for their interaction in uniquely structured relations, which in turn can be used to build up the entire

process. In this way modularity also represents the high degree of complexity which its use facilitates. This complexity, however, is neither described nor made explicit, it is simply evident. Through the use of the sub-procedures as tools that are available within this structure, the processes can access a greater variety of forms and thus create a high degree of internal complexity capable of reflecting a high external complexity of problems.

Another new element was the reinstatement of the bureau as a basic unit of collaboration between Principals and their clerks. The bureau's function as a focus for competence and responsibility had been foreseen in the Prussian administrative structure, but ignored in Brecht's code. The bureau concept rests on the idea of co-operation between at least two persons, and thus requires a common form of organisation to provide a structure within which communication on common goals can occur, and hence also a framework within which the focus on common goals can be more easily maintained.

The code's concept of the disposal or task list was not very clear, whilst in the case of memoranda some useful new aspects for their use were indicated. The task list was mentioned in several contexts, but no space was provided for a clear definition of its instrumental functions, its forms, or its use. It was accepted in the form of the so called closing disposition, used at the end of the decision making process to indicate how the outgoing letter should be produced and when, or whether, the remaining papers should be filed.

Task lists for the chancellery, or for communication between Principals and clerks, were not mentioned. Brecht's text, as well as the guidelines of Drews, indicate an awareness that the use of carbon copies in the production of outgoing letters meant that no traces were left in the records, whilst the task list including the draft, on the other hand, showed all of the steps taken, hence permitting the reconstruction of the process. For them the carbon copy was not supposed to actually replace the disposal or task list for the outgoing letter, but was intended instead as a substitute for the retention note placed in the files if the letter itself was sent back together with the answer written on it.

When copies of internal papers were produced the decisions behind the production of the outgoing correspondence were no longer transparent. Today, creating a second computer printout or saving a copy on the hard disk is even less helpful in reconstructing the process leading to the dispatch of the letter. The decision making in the end of the process, as well as the choice of form for the message, are still required, but they become latent and therefore cannot be controlled or managed in a flexible manner.

The internal memorandum for filing was thoroughly dealt with in the guidelines, being regarded as a tool for providing supplementary information in a form appropriate for individual matters. It was supposed to integrate the results of meetings, telephone conversations or events relevant to the matter at hand. Relevance was determined according to the nature of the matter and the need for further information

in its handling. The memoranda were supposed to be used in such a way that the actual state of the handling of any matter could be determined by examining its file.

There were several elements in the code that tended to strengthen monocratic forms. This was especially the case in regard to the preparation of matters and to the use of the consignee as the undefined addressee of new mail. The former process of handling the incoming item as representative of a new matter, in which several steps were involved, each concluding with a decision concerning its further progress, was now condensed into the simple task of treating the incoming letter as a document and thus as a single physical thing.

What appeared as simply a new term was actually an entirely new concept. Now the incoming matter was no longer a form to be filled with content during its preparation, but rather a thing which was ready as soon as it was delivered to the mail room. The mail room sorting and the date stamping had no other meaning beyond determining the correct addressee and noting the date when the letter was received. The former presentation, during which it was determined whether the matter should be accepted or rejected, no longer happened, because there was no mention of any examination, and hence the responsibility for transmitting the actual tasks shifted to indiscernible self-evidentiality. As in the code of 1927, the Principals were supposed to check to see if they were the correct addressees, but if they refused to accept the matter, this scarcely had any consequences.

They could not rely on any responsible decision regarding the acceptance and distribution of tasks nor, on the other hand, did they have any means of influencing it themselves, a rather frustrating situation requiring other ways of taking care of matters not described in the guidelines, such as having discussions and exercising personal influence.

Nevertheless, one of the code's appendices presented a list of 20 operations supposed to be carried out in the course of opening the mail. For example, the mail room was supposed to reject mistaken deliveries. It was supposed to check whether attachments described in the letter were actually part of the delivery. If money was attached to the letter it was supposed to be removed to be placed in a safe place, and this fact indicated on the letter. If the sender's address in the letter was not complete then the envelope was supposed to be attached to it. None of these steps, however, provided any answer as to whether the matter belonged within the jurisdiction of the office, nor of which personnel or material resources should be assigned to its solution.

In addition, the consignee was supposed to receive the letters, just as in 1927, before any entries in registers, lists or on cards were made. This was supposed to accelerate the work. Today, as a result, this is best achieved by the distribution of electronic copies of incoming matters to the responsible consignee. However, in the text of the corresponding guidelines, the mail room is advised to make a copy and to write 'advance copy' on the top before dispatching it to the Principal, whilst on the original, which was sent to the head of the department, the creation of the advance copy was noted. This procedure had different consequences, since both officials were

informed as to what had happened to the letter before they received it. The indication ‘advance copy’ was not intended just for the paper version. It had specific purposes and provided useful information, and therefore something similar will be useful in electronic environments.

The position of the consignee itself was contrary to process structuring, since it integrated the examination of incoming matters even more into the actual decision making. The preparatory nature of handling the incoming matter disappeared, this process instead becoming part of determining the solution. While keeping the two aspects distinct can ensure a neutral and impartial decision regarding the acceptance, combining the two confuses their relationship to the handling of the matter.

In addition, the identification of the consignee was left to the discretion of the various administrations. This procedure resulted from the debate in the 1920s and represented an uneasy compromise which tended to divide rather than unite. The consignee is conceived as a role, not a function. A role is formal or standardised behaviour assigned via administrative provisions, whilst a function can be assigned in a more flexible way according to actual needs. By defining a role structural stability is provided, reducing flexible responses. Only processes provide the opportunity of combining separate functions in flexible ways according to the needs of the current situation. Processes do not require roles, and if the processes disappear as a selectable form for collaboration the result is lost flexibility and reduced efficiency.

2.9.2 Preparations for electronic records

In 1996 the joint code was again revised. At that time an attempt was made to integrate the application of IT. The main changes affected the attached part of the text meant for the registry. Its title was now ‘Regulations for Records Management’ instead of the former ‘Instructions for the Registry’. The change in wording had deeper implications, introducing the idea of removing the boundary between decision making and registry, and thus finally initiating the integration which was the goal in much earlier times. Removal of the boundary, however, means ending the functional differentiation, with the result that reciprocal services can no longer be offered. Furthermore, while records management is finally made completely visible, the decision making now shifts into the blind spot, and hence looses support.

The appendix itself acquired a new character. The old regulations were replaced by a kind of abridged manual for registrars, including instructions on how to make a filing plan, and what types of files to form. The text, which was completely rewritten, no longer described main processes, component processes or activities as collaborative elements. Instead, the registry, and with it all the files, was placed at the end of decision making, it now being confined to the final stage of all the processes. It was perceived as the place where the records were filed and kept after they had lost their usefulness for the work at hand. The registry had no responsibilities any more during the actual decision making. Its work no longer accompanied the processes, but again,

as in the very old form of the central administration in the 17th century and as Brecht unsuccessfully attempted to put it, found its place after all relevant work of the agency was done.

The new appendices were no longer process modules, but rather short explanations like manuals or codes of conduct serving to replace non-existent yet desirable, professional qualifications of the registrars in an extremely abbreviated, and therefore superficial, form. The new text was structured according to the activities of ordering, provisioning, keeping, and disposing. However, none of these tasks were assigned to any specific organisational unit. The tasks might be assumed by the Principal, by members of the clerical staff, or by a separate unit, such as a registry.

There are some passages which make the problems with this approach manifest. For example, the clerical assistants are supposed to formulate their requests for files clearly. At the same time they might themselves be responsible for records, in which case handing out files to others is supposed to be carefully registered. Instructions such as these are contradictory and cannot help in daily practice.

Nevertheless, there are two paragraphs in the text which, on the contrary, tend to strengthen the position of the registry as a separate unit, providing for functional performance for the decision making and support of the processes. However these are simply remnants of older traditions, not really fitting into the new concept. In the one it is stipulated that the duty of the registry is to check all of the papers assigned to files in order to ensure that their respective task lists have been completed. In the other a new definition of paperwork is introduced showing a greater awareness of the registry functions.

Traditionally, one of the most important tasks of the registry was to ensure that all processes had been completed before the papers these processes had generated were filed. Prior to the actual completion of the filing, all of the task lists had to be checked against the corresponding ‘done’ marks. Now the competence of the registry for conducting this examination was again clearly described, and even supplemented with the additional task of checking the structure of the existing files, adapting it to new developments as necessary. A new file could affect the entire structure, and the registry now had the autonomous authority to make the necessary re-arrangements. This regulation signifies that the structure of the records is important for the registry’s own tasks in fulfilling its mandate. As such it is an inherent function with consequences for its environment.

The other element contributing to the functional strengthening of the position of the registry was provided by a new definition of records. This definition made a distinction between recordings and their attachments. All images, plans, and pictures, all audio, video, and data recordings were either regarded as appendices to the textual records, or as objects which different information management systems had to take care of. This definition is still very much oriented towards material forms. However, the differentiation it presented was useful, because the distinction was made between recordings which were actually part of the decision process, and others which served

merely as illustrations or support. The files themselves could then be formed according to the function of the material. They were supposed to contain only those recordings which had served a purpose in the decision making processes. The distinction between records management and information management is drawn up according to function, making it easier to determine how to integrate new documents. It also represents an appraisal during the production of the files, in which the usefulness of the recordings in relation to the processes is determined. In spite of these two functional aspects, records and papers were now treated as things. The registry became the place to store them and its main tasks were to maintain the storage and deliver files when asked for. Whereas files were previously instruments the registry used to support decision making, now the registry existed for the purpose of the files. The files became visible and, at the same time, lost their functions. This is a typical paradox. Functional differentiation is one way of dealing with it. It is obvious that both sides of the paradox, the files and the decision making, cannot be simultaneously visible from either the perspective of the process or the perspective of management. The process' perspective makes the files vanish, whereas focusing on the need for records management makes the processes disappear.

The paradox needs a new solution, meaning new connectivity for both sides has to be found which work in a productive and functional way for supporting self organised processes, including providing them with their internal memory for the construction of their own internal future. Here a new perspective is needed. It seems not to be sufficient in future to just continue in drafting new versions of guidelines which function the same way as described. They ignore what is self-evident and works in a tacit way and they make explicit how they want to have things changed.

The changes occurring with the introduction of electronic media are such that a deeper understanding of the processes and their needs is urgent. The analyses of the processes have to be made from the outside to be able also to articulate tacit methods without disturbing their functioning. Administrative science, and especially archival science, as a rather young scientific discipline, is external in relation to both perspectives, the process on the one hand as well as the records on the other.

For the archives the processes are closed, and hence their analysis and the examination of how they worked can be carried out without any risk of affecting them. From the archival point of view both the decision making process and the support provided by the registry can be analysed, as well as the influence of management on these two factors. Within the stacks of the archives is the assembled experience from all kinds and levels of government. Here their various advantages and disadvantages may be studied, thus providing knowledge which can be used to further improve processes. Up to now, however, the improvement of business processes rarely took past experience into account, and hence repetition of earlier efforts can be frequently observed. The holdings of archives offer an immense reservoir of sources for the analysis of business processes, neither disturbing nor influencing what it looks at, and thus providing the possibility of coping with the paradox of the decision making process.

3 RECORDS

Records are the other side of business processes. They are produced for the inherent needs of the organisation, mainly because these needs cannot be addressed sufficiently by oral communication. This is the main motivation for the creation of records. It therefore seems useful for the understanding of records, be they in paper or electronic form, to see them in relation to other media and to those other parts of internal communication done orally. Every form has its special effects on communication and influences both the formulation of something to be communicated and the understanding of it by someone else. The same words used in an official letter with letterhead and formal greetings look quite different when they are put into an e-mail, whilst the more informal wording of e-mail would look strange used in a conventional letter; telephone calls are also quite different from written texts.

The specific effects of the media influence the use of oral, paper based or electronic media for communication. Every written message can be filed, whether originally on paper or in digital form. However, much e-mail communication is not thought of as part of the records when it is formulated. It is used more to replace a telephone call, which by its mere physically volatile character cannot be filed. This difference however stems from the techniques, not the function of the actual communication operation for the processes. For instance, important telephone calls could be converted to records by writing their content down in the form of a memorandum. E-mails can be simply printed and then filed. For both operations, however, a decision must first be made about their relevance, which depends on their function in relation to the advancement of the process.

The nature of administrative records reflects their functions in highly complex communication systems. If this complexity is not taken into account by organisational measures, their functionality may be seriously endangered. Understanding their function requires an awareness of the consequences of methods, whether they are explicit or implicit, of knowing where the blind spot is, and having a respect for latency. The result of administrative work is not the production of records, but rather the provision of solutions to problems and the delivery of services. Records are a special form of tools, created when needed. Records emerge from organisational communication without being intentionally created. If they are intentionally created their functionality for the processes vanish. Records are the latent side of decision making processes and they can be made visible only from a perspective uninvolved in the decision making.

3.1 Forms and functions of records and files

The forms of records depend on the ways in which administrations work. Whilst there is no fixed historical development from lower to more developed forms, some

common characteristics can nonetheless be identified. One part of the records consists of the incoming correspondence, as well as the drafts or copies of the outgoing correspondence. Another part consists of internal communications. Record keeping systems are characterised by the dominance of either the one or the other. Registries consisting mainly of incoming correspondence are different from those which organise incoming and outgoing letters together with the internal communications.

In medieval monasteries, for example, registers were mainly used to keep track of charters received from political or ecclesiastical rulers. Drafts and all other texts produced by the monastery itself were, if kept at all, arranged in accordance with the incoming charters. This constituted a receiving archives, in which records were arranged according to subject matter. The internal structures of work were hardly reflected in such holdings. Monocratic organisations often produce comparable structures for paperwork. The documents received from the outside determine the organisation of the records.

In organisations where the decision making is based on collegial structures, and in the later bureaucratic forms, internal communications predominate and accordingly determine the structure of the record keeping systems. They produce an issuance archives in contrast to the receiving archives as Brenneke classified them, a distinction useful for a proper understanding of the records and thorough analysis of their structures.

Collegial boards primarily produced internal minutes required to organise the production of the outgoing letters once the resolutions were reached. The files were accordingly organised in chronological series, following the sequence of the deliberations. On the other hand, bureaucratic forms towards the end of the nineteenth century, using self-organised processes, structured paperwork to reflect the network of tasks. In this situation files consist of task lists using the incoming letters as an informational basis, and of drafts of outgoing correspondence embedded into disposals for the production of the outgoing letter. The disposals or task lists present the activities leading up to and following the decision, and the draft represents the outgoing letter produced by the decision.

Here the structures of the records are built in accordance with the internal processes. They do not represent a collection of received external papers. The differences between these forms reflect the degree to which writing was introduced into the processes themselves. The more it permeated the actions, the more the structures tended to mirror the work itself.

3.1.1 Effects of writing

In contrast to the volatility of utterances, writing is chiefly characterised by stability, at least as long as analogue media like paper are used. Digitisation of writing, on the other hand, leads to a paradoxical situation in which stability and volatility coexist, and thus requires new strategies. Nevertheless, even electronic writing is a

form of writing, even when reduced to an exclusive set of characters. However, whilst electronic texts have certain characteristics in common with traditional writing, digitisation also endows them with some characteristics of oral communication, making it difficult to anticipate their actual behaviour after storing them or sending them out.

Writing, in contrast to utterances, can be stored, and written records and files can be kept in archives. Archives do not preserve reality in its entirety, but just that part of it for which writing was used. What is present in the form of writing points to what is absent in explicit or implicit ways. Used as a means of overcoming inconveniences of oral communication in special situations the use of writing is always controlled by certain purposes, which can reveal much of the context if understood in the right way[5]. Four major reasons for the use of writing can be identified:

- Transmission of a message: Writing is often used to send a message to a person who is not present at the same place. It can also be used to give a message to a person who comes later to the same place after the author has left. The motivation for the use of writing here is apparently to transport a message over a temporal or spatial distance. The stability of paper materialises the text and enables it to be either transported, or simply stored until the addressee can read it. However, because the author is absent when the text is read, it is not the same text that would have been used orally in the presence of both. Many of the accompanying gestures and mimics of a conversation are converted into explications, polite forms or layout;
- Precision: Writing can also provide precision to an utterance for one's own purpose or for common use. Here the stability of writing enables the use of more complex language, since the linearity of hearing and understanding is partly suspended and the text can be repeatedly read to ensure a proper interpretation of for instance internal references. In addition, the formatting and layout can also assist in making the content more clear by facilitating the presentation of complex problems. In this case writing is used neither to transmit information to someone else, nor for storage, but simply as a tool for the writer and the reader to convey more information simultaneously than would be possible orally. The visualised form of the text supports the outline of the content and the understanding.
- Storage and later recall: Provision for individual or common memory in some future time is often made through writing. This use of writing serves to record present facts or thoughts for later recall, and is especially suited for legal matters, as evidenced by statutes, contracts, or regulations. It is also suited for the keeping of registers. When cast in a more formal, or even solemn, style it indicates the intention for continued respect over a longer period of time.

[5] It is not surprising that an archivist was intersted in finding out why writing was used. Johannes Papritz established an entire taxonomy of purposes for writing and for keeping written texts in storage, to which the following refers. Cf. Papritz 1969.

However, the profession of lawyers has one of its roots in the necessity of interpreting inherited written texts of laws, because they just cannot ensure only one 'master' sense of their message.

- Organisation of co-operation: Whilst the preceding uses focus on content, even if this incorporates graphic elements like the lay out, the fourth type of motivation for using writing may be to organise joint activities and thus focus on action instead of message. In this situation the function of text is not to transfer content, but to simply identify required actions in a nominal or even symbolic fashion. The form of the list may already imply the intended action. It therefore might be difficult to be understood by outsiders. Examples of such action oriented notes are shopping lists, or the collaborative task list in the administrative agencies. Symbols may be applied by way of qualifiers, hence a check mark next to an entry in a register or account book may show that the item has been approved, or a line through a section of text may indicate that this part is to be omitted when the next copy is produced. Such symbols can only be understood through their context. They do not address anyone in particular, but are created on the presumption that they will be noticed and read as intended. When the reader is a competent agent they can also lead to a certain action, or series of actions.

While commonalties exist amongst all four cases, there are also significant differences, which stem from writing being a more private activity, usually not directly observed by a third party. Replies are therefore not to the writing itself, but rather to the message that is written.

Normally, utterances occur only when someone is looking at the speaker and when audibility is presumed. Gestures and facial expressions engage the listener's attention and enable the content to be also visually transmitted. Writing, on the other hand, separates the product of communication from the person communicating through the storage of the message on a material thing, namely the sheet of paper. By linking the written text to a material thing in such a permanent manner, the message assumes the physical qualities of both its support and the medium. Both determine the longevity of the message. If the author is less involved because he is absent, he is more strictly bound to it because his text can be re-read at any time. Since the author is further removed from the writing, it is more difficult for him to control the communication. And as the reaction of the readers cannot be seen, it is not possible to respond to it.

Another major difference lies in that an author of a written message, even if it is very personal and private, has no real control over later access to it. The addressee may make copies and distribute them to others, or the envelope may be opened whilst the letter is being delivered. It is much easier to control oral communication, which is often the reason for choosing to have a meeting or to make a phone call, rather than write.

Only in the first case, when writing is used to bridge a temporal or spatial distance, are one or more persons explicitly addressed. Hence it is only this form which really

replaces oral communication when the addressees cannot directly follow an oral delivery. It thus converts most of the oral communication to a written form. Amongst the variations are personal letters, reports, diplomatic correspondence and also publications.

All of these forms rely on text to deliver a message in situations in which a remark or oral contribution is not possible. This is not so with the other cases, in which writing is not explicitly used to address one or more intended persons. The following two cases listed above, namely the use of writing for better precision, and for the possibility of later recall, are both cases of texts being used without direct communication purposes. The last case, the more symbolic use of writing in contrast, is used for communication without explicit addressee and without employing explicit texts.

In contrast to the first three cases the meaning lies no longer in the verbal text, which is more or less supported by the appearance, layout, quality of paper, and mode of expression that convey or support textual meaning. The way its purpose is accomplished in the final variant differs completely from the others. It just represents expectations for inspection and does not describe and articulate them.

In the last case awareness and perception of whom it concerns is relied upon rather than the understanding of verbal messages. Only perception by another person able to react to it guarantees the intended effect. The way this works recalls the non-verbal visual aspects of a deliberation, in which the gestures and expressions seen by all those in attendance, establish the links between the different communication events, because they indicate the will to say something, to reject one contribution, or to consent to another. In the same way, organisational notes or marks have no particular addressees, but depend on being noticed and interpreted correctly so that further actions can be initiated.

This perception based communication has some useful advantages for intra-organisational communication, which can be explained using communication model with the assumption of double contingency as described in the context of functional systems theory. As no deliberate selection is done on the side of the sender for choosing information to be transmitted and no selection of a form for it has occurred, the contingency of other possible selections and the question why they were excluded is less relevant.

On the other side of the communication operation, the side of the addressee, the choice of asking why being the one addressed and how to understand the message is avoided too, because the addressee was selected by his own pre-established responsibilities. On this basis he perceived the notes and reacted to them. So the addressee selected himself. Common task lists or disposals therefore avoid double contingency, and with it the need to devote effort to optimising the circumstances of understanding.

Double contingency cannot be avoided in oral communication. It can only be balanced by mechanisms such as confidence. It has to be respected and taken into

account. An oral communication can be more open than a written one, because if the effect of double contingency creates misunderstanding this can be realised and potentially corrected. Double contingency is the reason why writing is usually more formal. The layout, fonts, and paper quality can ensure or contradict the good intentions of the writer, who, however cannot react to any misunderstanding when the letter is read in his absence.

The phenomenon of double contingency is the reason why internal correspondence with explicit addressees might create internal contradictions and build up border lines instead of unifying the organisation for common goals. Written texts addressing someone in particular, or an indefinite number of future readers, in order to transmit a message are just as subject to the phenomenon of double contingency as is the case in oral communication. This effect, characterised by a selection on both sides of the communicative operation of how to understand it, provokes questions and contradictions.

The questions concern the reason for the selection of the content, as well as of the form and the intention of the author when starting the communication. In written form the communicated texts recreate these gaps whenever they are read, and thus even reinforce the detrimental affect of double contingency. The gap is continuously reconstructed.

This is why letters exchanged within an organisation have a divisive effect, whilst oral communication in meetings has a cohesive and hence opposite effect. Whilst personal commands from the top, as well as reports from the bottom, reproduce these same effects, the gaps they create are outweighed by the organisational structure. This is typical of hierarchical organisations, which often are kept together more by the forcefulness of their leaders than by an orientation towards common goals.

The reinforcement of the effect of double contingency in the use of writing in place of oral communication can be observed in those situations in which reports and votes in collegial structures are prepared in advance. Whilst attempting to effect greater precision typical of writing, they nevertheless contribute at the same time to divisiveness within the organisation. Formerly oral communication could control the gap of double contingency, since it was constituted by the unity of utterances and processes within the direct involvement of the persons. The written text, on the other hand, leaves structuring and process control to other, external instruments.

Whilst effects of writing such as precision and storability are desirable in an organisation, it is necessary to avoid using it for the concurrent internal exchange of messages, since the organisation has then to make constant efforts to counteract the divisiveness which threatens to split it up. This is why conferences and team meetings are often used to replace internal written communication. However, these devices are unable to provide the precise formulation required to ensure the quality of the decision. Nor can they guarantee that internal and external memory needed for controlling the process until it is complete, or provide for recall when reference needs to be made to it later.

This dilemma can be overcome by common goals, for instance when joint effort is directed towards the collaborative production of decisions formulated in texts which can later be used to communicate the decision to the outside world, at the same time avoiding the exchange of written messages. In the production of such a collaborative text representing the final decision, a process is constituted which avoids the exchange of messages, being constructed from commonly understood marks and symbols. The background necessary for ensuring the uniform use and interpretation of these marks and symbols is provided by the organisational structure. The tools are standardised, not their use.

Marks and symbols, as opposed to language (even if language is made up of conventional characters such as the letters of the alphabet), have a distinct meaning established by conventions within an organisation. Their essential characteristic is that they do not represent sounds as do letters or syllables, but rather single actions, for instance the check mark in an account book, which signifies both the approval of the respective value, as well as the activity of checking. Making check marks in the book proves, together with the result of the action, that the checking has been carried out. Once the action of checking is finished, further business activities which depend on the checking being accomplished can begin.

In the same way, marks and symbols can be used to indicate the need for something to be done. For example, a question mark in the margin of a letter can indicate the need for further elaboration of the reasons given. Such signs are either perceived or not, and in the former case they lead to an action. They do not transmit content as do messages, but they simply indicate operations expected to be done or already accomplished. In regard to the importance of the activities they are neutral, because their function is simply to organise these activities. Because they are placed on a letter they relate to it, and because they concern actions, they can manage time, being placed before, by, or after an activity as a sign that it is expected or that it is done.

Organisational notes or marks are also a form of writing because they use a support on which they are placed and they allow the author to vanish. However, unlike writing whose purpose is to transmit a message or store some content for later use, they have an ephemeral character. Since they serve just to indicate a need or a task accomplished they are of great importance as long as the intended action is not done or as long as the finished action is needed for connectivity. They seek perception only up to the point where this purpose has been achieved. After they have led to an activity, and have documented its accomplishment (for instance by another mark), they become redundant.

The ephemeral character makes organisational notes useful as tools because it gives them a volatility comparable to that of oral utterances. If the notes are written on yellow detachable stickers they can simply be thrown away. But even if they stay there they are no longer perceived if there is no person to react to them. Once their purpose is accomplished they vanish from attention and do not interfere with the subsequent processes.

The volatility given to the notes by their ephemeral character is functional, not material, in nature and does not even require a physical equivalent. It works even if the marks persist, since they have just lost their relevance and are no longer regarded. The action referred to in the note cannot be repeated like the communication of the message in a written text, even if the note is not discarded, because the activity it specifies can happen only once. Therefore they may stay on the letter and thus be available later on for reconstructing the chains and networks of intended and done activities.

Just as in a deliberation, when the ephemeral note vanishes from attention, it simply leaves its effects, which in turn can lead to further activities. Just as every new contribution in the deliberation replaces the preceding one, the new action replaces the action prior to it. Nevertheless further operations can rely on the preceding activities having occurred, and if the marks and symbols which initiated and approved them are preserved in the files they can then be referenced as preceding actions.

This is how collaborative task lists function, and it is why they are able to provide structure in a manner similar to that of a deliberation. The individual events are linked by instigation and succession, and thus become interdependent. The process builds itself up with every new event, and continues until the overall purpose has been achieved, that is, until the answer to the initiating problem has been produced. The process-building characteristics of these collaborative organisational notes are similar to those of the visual elements in an oral deliberation. They provide a structure by integrating the various participants who each contribute to the accomplishment of the entire process. Every individual operation is necessary for the process as a whole. Taken together they establish a cohesiveness which integrates all of the separate contributions. Like the deliberation, the process produces the effect of inclusion by identifying the contributions, thus making them distinct from those excluded events occurring outside the process without relevance to its progress.

The process can be directed towards its open conclusion, just as in the oral process. Open ended and operationally closed are two sides of the same processes, and each requires the other. By implementing operationally closed processes open ends can be handled. The written task list or other organisation notes show how tools can be constructed to control internally open ended decision making processes, in contrast to the external control of close-ended but openly organised production processes.

The tools have to enable both inclusion as well as the internal structuring of the process. This needs time because structuring refers to past actions and prepares the next ones. References to past actions within the same process can be accomplished either by the collective memory of the participants in a deliberation, or through the stability of task lists used to initiate actions, and which provides marks and symbols for their accomplishment.

Whilst the stability of textual writing obstructs the process building in those cases in which messages are exchanged, symbolic writing provides a valuable functional tool when disposals and the organising task list is used. In this form it is past actions

which are stabilised, not messages. Stabilised actions can be referenced repeatedly for connected actions, whilst stabilised messages simply repeat the same action of understanding some information.

Organisational writing creates a memory based on activities, just like the collective memory generated by the participants in a discussion. However, whilst the memory of a discussion disappears after the discussion is over, the stabilised actions referred to in the course of constructing a process can still serve as points of reference after the process is finished. Once stabilised, they are available for external inspection. Should such inspection occur during the process, it could hinder its natural development as guided by its participants, particularly if it is not understood and hence abused in a misguided desire for transparency. Once finished, however, the files present the entire process as open and transparent as if through a window.

Written records are only produced because the particular needs of the situation cannot be addressed by oral methods of communication. They separate the two sides of organising the communication and understanding content. The first is converted into writing with the organisational note or disposal expressing expectation and used to get something done. The second side is converted by the written message addressed either indirectly as a kind of memory device to someone within or outside the organisation, or directly to someone outside as a way of communicating a decision.

The purpose behind both types is different: either to organise further co-operation, or to let someone know something. Because of the nature of writing, both purposes cannot be served by a single written communication operation, as is possible during oral deliberation. A bifurcation takes place which creates two distinct forms with their own unprecedented characteristics and effects. With the introduction of writing a higher complexity is achieved which will be reinforced with the broader use of electronic communication, still in its age of incunabula [Hedstrom (1991)].

The preceding examination has shown that once records and files become visible they lose their ability to be used for planning future joint actions and for effective structuring of collaborative processes.

Self-organised processes providing high productivity because they are tailored to the special needs of individual matters require records as tools. However, this is no longer possible once records management is integrated into the problem solving. In this situation records become used to keep track of activities after they are finished, like protocols or log books.

This shift disables their functionality in the organisation of individual co-operative events, and they take on the character of descriptions after the fact. They are no longer produced by the events themselves, but rather by the observation of the events, and instead of organising operations they provide a narrative about them in the form of messages. This, in turn, affects the authenticity as well as what is understood by those reading the files later on in the archives, whereas organisational notes present what happened from the internal perspective of the collaborating participants and give the impression of authentic atmosphere.

Both forms provide different kinds of information to external observers. Descriptions, being texts written to be read by others, create double contingency. They invite the question as to why their particular subject was chosen, and why it was presented in the particular form actually chosen. On the other hand, because organisational notes were never intended for communication in the first place, they do not directly reveal what they are about, and are only available to study if they happen to be correctly interpreted. However, this means that the information they provide is authentic, since it has not been filtered through someone's perspective.

It appears that those functions of records which permit the observation of the internal workings of processes from the outside because they served the inside control are becoming increasingly necessary in modern administrations. They make it possible to acquire authentic information about internal developments if they are understood in their contexts.

As the complexity of the problems increases, so too does the importance of the process function of records, making their organisational functions more vital. For this reason it is necessary to understand how records are distinct from mere collections of information. Such an understanding is also required for constructing an adequate organisational framework. Here too, an external perspective can allow aspects and characteristics to be noted which are not visible from the inside.

3.1.2 Effects of oral communication

Oral speech has some typical characteristics which explain its use in the historical forms of collegial boards and also its frequent use today. These characteristics serve to facilitate open discussion and create a sense of community. However, these same characteristics can also lead to disfunctional and unintended consequences, particularly in cases where an effective decision requires individual qualifications rather than the openness of discussion. A closer study of these characteristics can lead to a more rational use of orality in particular situations.

3.1.2.1 Volatility

Oral speech is best understood through its volatile nature. Once delivered, any oral expression will vanish. A message presented orally cannot be recalled for better understanding, or for comparison or checking. Thus a response depends on the effect of the utterance on the listener. Volatility also provides opportunity for change and development, something extremely useful in brainstorming meetings, although potentially detrimental when responsibility needs to be traced.

Another important characteristic is the de-synchronisation of any deliberation in relation to its environment. An autonomous temporal framework is initiated with the beginning of a deliberation in a group, constituted by the internal reactions of the contributors to each other. Time within this framework differs from external time,

allowing a common perception of what has passed, which means what has been agreed upon and what is future, that is, subject to further discussion.

When oral events react to each other they can even be viewed as happening within two concurrent yet different presents. The initial topic, theme, or subject constitutes a kind of enduring present as long as there are new aspects to consider, or new questions to ask. It endures as long as the question remains open or unresolved. This initial openness of the problem permits one to determine whether a subsequent contribution is part of the same discussion, or if instead it opens a new one. The other present time is created by the individual contributions. Unlike the present time of the topic, their present temporality is ephemeral, disappearing as soon as it occurs. In this way an internal past is created with every contribution, which serves as the basis for collective memory. Thus the discussion can be reviewed up to its present point whenever necessary, and an estimate can be made as to what is further required to bring the deliberation to a conclusion.

The difference between the two temporalities helps control the course of the debate and organise its progress, and thus forms the basis of that self-organisation which is eminently capable of both perceiving where needs exist, and assigning available resources. Self-organisation is a proven method of structuring the process into a form best suited to the nature of the problem. At the same time, however, it is associated with some complex problems, because it relies on the awareness of the participants, and on their common memory capacities. Any stable and enduring support for the common memory they might like to use has the effect of negating volatility, and hence the flexibility essential to the functioning of this form of collaborative problem solving would be abolished.

Collective memory is constantly being reshaped during an oral deliberation or discussion. Constituted by the individual memories of what transpired, it is not identical with any one of them, nor is it the sum total of all the individual memories. Collective memory is supported by repetition. Oral cultures use special techniques such as formalised language or association to retain awareness of necessary knowledge. Their memory is constantly being re-formed according to actual explicatory needs. In the case of the deliberation memory provides the basis of its identity, and serves to structure it in the manner most appropriate to the particular matter at hand.

The perception of a common past functions as a reference point in identifying contributions as new and innovative, just as the perception of common experience serves to guide further steps. This explains why it cannot be interrupted, and then resumed at the same point later on. It crucially depends on the identity of place, time, and participants for its process to proceed and attain finalisation.

The deliberation depends on the physical attendance of the participants, even when it takes place in separated locales, connected via video conferencing or chat rooms. No one can participate unless he is present, whilst everyone in the room is integrated to the extent that even silence is a form of communication indicating the absence of

contradiction. This phenomenon can only be circumvented through the explicit presence of an external observer, such as an administrator or president or secretary, who is not allowed to contribute, but is able to manage the agenda, suggest new topics, or take notes, all functions regarded as conveying impartiality. By nature of their special tasks they stand outside the game of provocation and answer as carried out by the actual participants.

Integrating all participants within the same spatial and temporal framework creates exclusiveness in relation to all who are not in attendance. Inclusion only functions through exclusion. No real external influence can be exercised, because as soon as this is acknowledged it becomes integrated into the internal proceedings, that is, it becomes a part of the deliberation. Through the use of its own spatial and temporal criteria in drawing the distinction between participants and non-participants, and between contributions and other utterances, a deliberation or discussion marks functional borders which do not necessarily have material equivalents.

The deliberation is self-organising as long as it lasts. It starts because its outcome is open. It sets up, in an unreflected manner, its own temporal framework in a process independent of all other previous processes. The form of this framework results from the operation itself, not from a goal consciously identified. If a suitable framework had to be deliberately selected from a range of available forms, this would have initiated a new deliberation on precisely the topic of how to choose among them.

These effects have their origin in the volatility of utterances. The author of an oral contribution is less bound to its content because it tends to be replaced by the following contribution, especially if representing a contrary position. Only the last utterance is valid. In this way oral deliberation provides the opportunity to change one's mind without embarrassment.

At the same time, utterances attract the attention of those present, creating a feeling of belonging together. Everyone present in the deliberation has the chance to voice a differing opinion, but whether they do or not they are still responsible for the final decision. Because everyone who is present is integrated, individual participants have less cause to criticise the results afterwards. Participation divides responsibility, and hinders subsequent criticism.

These characteristics help in understanding the use of oral speech in administrative contexts. A deliberation can only be started orally, in other words the participants first have to agree that they now wish to discuss a certain topic. Whilst it is true that such consent can be obtained implicitly (if no one opposes the agenda it is regarded as accepted), nevertheless the agenda still has to be first mentioned or read aloud before it can be accepted.

The reading aloud of incoming letters or of proposals in board meetings has the same function. Everyone is brought up to date on the subject, and it is clear that the deliberation can begin, because only what was orally pronounced can stimulate further oral communication in reaction. The aim of deliberation is consensus. This is achieved once nothing remains to be said. A deliberation can be stopped without conclusion if

the participants leave. In board meetings, however, this method will not work if there are other topics on the agenda. Taking votes, counting them, and noting the result in the minutes terminates the deliberation when consensus cannot be reached. Once the minutes are taken the deliberation is closed and over. The introduction of writing stops the effects of oral communication. Written notes do not disappear, their presence is physical and stable. If they are read aloud a new deliberation can begin to ascertain whether or not they are accurate, but this deliberation is a new one and it may comment on but not continue the preceding.

Within a deliberation all attending have the same status. Hierarchical relationships are left outside, and everyone has the same opportunity to express his views. Because of this everyone also needs to have access to the same information, meaning that the qualifications of the board members must be roughly comparable. Specialised knowledge does not have much of a role in affecting the final outcome, and professional qualifications are important only if they can convince non-professionals. This is why boards act as levellers for skills and fail if innovative solutions are required.

Owing to the parallel integration of skills into the decision, no one individual is responsible for the results. Thus if the required decision is intended to remain open to subsequent criticism, relying on a board may not be the best way of arriving at it. A board functions best when there is the broad desire for consensus and integration of potentially opposing viewpoints.

Deliberations progress because speakers refer to each other. Individual remarks can reveal new aspects, and support or reject, repeat, reformulate, or renew what others have previously said. Each remark is provoked by its predecessor, responding to it, or contradicting it. This process continues until the last remark, which provokes no response and hence rests without contradiction, the ensuing silence indicating common consent. Thus the decision, in the form of consent, is made apparent by silence, not by comparing utterances for similarity. Only an external observer, such as the secretary or the president, can perceive that the goal has been attained, at which point the result can be formulated and read aloud for the group's approval. If the participants remain silent the minutes are considered accepted. Awareness of these effects, which are owed to the volatile nature of oral communication, is fundamental to understanding of how deliberations work.

3.1.2.2 Visibility

Besides the volatility of utterances the visibility of the speaker, of his gestures and mimics, as well as of the whole situation provides a context to the orally spoken words and may support or mislead their understanding. The hearers feel provoked by what they understood and articulate their own opinion. Double contingency caused by the free selection on both sides is the main engine which drives deliberation forward. In the oral deliberation with the volatility of the contribution it can be better balanced and integrated than in writing. Here it is needed for the construction of the process.

Each utterance and each reaction provokes further questions or comments. Since all refer to the central topic which all the participants have in mind, a certain mechanism can be observed in every deliberation dividing the development of the topic into two distinct phases. The first phase involves the examination of all aspects of the topic. Once the issues become clear, the second phase begins, where the deliberation changes direction. It is now oriented towards the identification of alternative solutions and the final selection of one which is commonly acceptable, and continues until nothing more remains to be added.

Selecting information in a contingent situation as speaker in a deliberation is not a choice between alternatives or from a metaphorical basket containing a finite number of possibilities. It is instead based on a special awareness and on the perception of something as being new and interesting, informing, for the question at hand. The utterance gives form to the selected information and makes it a message, an operation carried out according to the goals of the communication. The addressees perceive both the information and its form, and, once accepted, understanding then begins on the basis of the selection of what is relevant and what is not.

The addressee, selecting in a contingent situation, chooses to perceive the message and to analyse its meaning as something of probable importance and which perhaps calls for an answer. This process of selection occurring simultaneously on both sides, on that of the author and that of the addressee, is precisely the meaning of double contingency. In a meeting situation involving more than two participants these selections are constantly taking place as the participants alternate between the positions of author and listener. Everyone attending is potentially both an addressee and an author. There are no fixed roles, but changing functions. Everyone observes what is going on in order to spot those occasions when an intervention is called for, either in opposition or criticism of what is being articulated.

Speech is a form of action. Understanding speech perceives the actions of others and views them as relevant to one's own subsequent actions. If one can agree with what others have said, or if one has no reason to object, no further action is necessary. The deliberation in a meeting provokes action and reaction because it operates on the two levels of aural and visual perception. The visual aspect supports the recognised aural aspect with its sequential operational mode, of which the participants are much less conscious.

Whilst visual perception can convey very large amounts of information instantaneously, verbalised aural information is more precise, even though it delivers a smaller quantity at one time, because it relies on sequential transmission. This can be accounted for by the use of language, which excludes all other tones and articulations and thereby allows an endless number of combinations. Both the visual and the aural aspects work together as complementary elements of oral deliberations. Since the aural aspect is related to the use of language, and therefore is more precise, the visual aspect is often neglected. However, it is at least just as relevant for the understanding of the utterances.

Each has an impact on the selection process, both in terms of identifying relevant information as well as understanding the utterances. Every action, every change in facial expression, whether it be a smile, furrowed eyebrows, or other movement, is regarded as significant by those who observe it, and can be interpreted as supporting or contradicting the accompanying utterance. Furthermore, every contribution uses such signs to make itself more reliable and trustworthy.

The way in which both the visible signs as well as the uttered contributions are understood depends to a large extent on the degree of confidence prevailing among the members of the group. The ongoing interpretation of visual signs as evidence accompanying information accounts for the involvement of the entire person. It requires continuing effort to sustain group cohesiveness to establish and secure trust during the exchange of messages by its participants. Thus considerable effort is required, not directed to the matter itself, but rather needed by the attendees to ensure that effective communication happens.

Some gestures are used in a standardised way of visual communication. For example, raising a hand may indicate the intention to say something, while raising both hands can mean that a point of order is being made. Signs used in this way rely on the supposition that they are perceived and correctly understood by everyone who sees them. They thus serve to rationalise communication within the group. The authors can assume that their signs will be noticed and properly understood without having to provide someone with an explicit message. Other participants notice the sign simply in the course of being aware of their environment, and wait for the chairman to react to it.

This form of communication is very effective because it avoids the second selection normally required for the exchange of verbally articulated messages. The author does not choose specific information, nor does the message require a specially selected form. It is nevertheless effective because a potential addressee is defined outside the communication event. This can occur because the responsibilities have been distributed, especially the task of chairperson, and because the meaning of the signs is known to all. Thus the potential lack of clarity associated with double contingency is reduced, and some ensurance is provided that the communication will have the intended effect.

All of the standardised visible elements of a joint deliberation use this reduced form of communication as a very efficient and fast means of co-ordination. Such elements also serve to provide in the most efficient manner the feeling of coherence within the groups, whilst the effect of double contingency tends to create a division between the author and the listener. Contrary to the effect of hearing and understanding a text when questions are raised regarding the reasons for the selections made, thus provoking an initial feeling of contrariness prior to their resolution, visible signs work to reduce these divisive effects of verbal communication. Moreover, the visible part of the communication is the level on which the form of the deliberation process is mainly built. Without the need for explicit expression, the group decides who will speak next and to whom their contribution refers, whether a preceding utterance is being quoted or not. The sequence of activities is understood without

explanation, and if explanation becomes necessary, this indicates that something went wrong. Hence a certain division of functions can be seen to exist between the aural and the visual aspects of deliberation. The explicit contributions serve to explain, to answer a question, or to provide some information. However, the inter-relationships amongst the individual contributions cannot be created through verbal means alone, but is accomplished much more reliably through the visible interaction.

In regard to the control and structuring of the process, visible signs are trusted more than utterances. This is another result of the phenomenon of double contingency: everyone observes the other members of the group, including their actions and utterances. Everything perceptible is interpreted, including the words of the speech, and hence a process of significant selection takes place. Everyone reacts to his or her own impression and interpretation of what happened. If the speech involves two selections, both of which must be understood to convey the intended meaning, simple appearance, seen with one's own eyes, becomes more trustworthy.

The phenomenon of an oral deliberation is a very complex one. This complexity, however, is very much owed to the effects of orality on the communication, and to the need for joint control over the proceedings. As such it cannot be altered, and thus cannot be used to create an internal representation of the external complexity of the problem to be solved. Instead, the problem solving capacity of such a system is reduced on account of the many other problems concerning the participants and their relations to each other, all of which must be addressed during the deliberation. Whilst the result may be a thorough integration of everyone into the final decision because of the built in capacity for organisation, very few means are available for evaluating and improving the quality of the decision, in comparison to the challenges of the initial problem.

To summarise the effects of oral communication, three main characteristics of deliberations can be identified.

(1) Oral messages drive the process forward using double contingency, which creates contradictions needing to be resolved. It defines the individual steps of communication events.

(2) The visual level of communication provides non-verbalised coherence, thus avoiding double contingency. It links all of the events together in a single process by defining the sequences and by controlling the course of events.

(3) The distinction between external observers and internal participants is defined by their exclusion from, or inclusion in the process. It structures the process as a closed form with an open end.

Through these characteristics decisions in board or committee meetings or in spontaneous conferences and coffee breaks increase administrative capacity in an important way compared to monocratic hierarchies. They start processes which cross institutional boundaries through the creation of their own respective zones of inclusion and exclusion. Through the process form a kind of internal time is introduced.

Contradictions cannot exist together, especially those between the problem and its solution, but can very well follow each other and gradually replace each other. Another effect is the self-control of the process arising with the aid of visual signs. As a result of these effects decision making becomes very flexible and powerful.

On the other hand, oral decision making processes can contribute to the emergence of effects which sometimes produce contradictory results and disturb the structures of the organisation within which it is used, if the tasks are not clearly defined and the beginning and end not readily identifiable.

The structuring of organisational forms is a side effect of exclusion, which ensures that the end of the deliberation remains open. It is also supported by the distribution of the functions of participant or observer, which provides an infrastructure for the deliberation. The function of participant must be precisely distinguishable from that of observer. This difference is not one between persons or identities, but between identities which the same person can fill, for example by first contributing to the debate, and then by writing the minutes.

The function of observer, whether it is filled by the president or by the secretary who takes the minutes, is distinct from the function of the participants. The observer is responsible for determining what was decided. The functional division of labour amongst the participants responsible for the subject and the observers responsible for the outcomes is needed both to initiate the deliberation and to register its results. The observers have administrative functions and provide the link to the outside world. They see the outer form of the process. It is here on this border constituting the frame for the deliberation where writing can be used without disturbing the internal elements of oral communication.

Temporary structures within organisations, such as project groups, task forces, or committee meetings, tend to take up more time than necessary to achieve their goals. This may be harmful to the quality of the final decision, because it absorbs working capacities and reduces problem solving potential. Situations may also arise where some participants require a lot of convincing to accept a new idea, where the final result could have been achieved much earlier. Hence monocratic decision making often appears as a more economic alternative, in spite of its inflexibility and restrictiveness.

These effects of oral communication occur in all meetings, regardless of whether they are regular or spontaneous. They also occur in the same way during video conferences, where the cameras create a sort of virtually shared space and allow people to see each other. However, some aspects of an actual physical meeting with the same persons are lost. For example, if the camera zooms in on one speaker the reactions of the others cannot be seen, reactions which in a real encounter might indicate important aspects, in turn impacting on the behaviour of the following speakers. The effects of oral deliberation can be used explicitly; however, its perhaps unwanted side effects have to be respected at the same time. They cannot be excluded by using forms of writing.

3.1.3 Characteristics of oral and written decision making processes

Comparing oral and written decision making processes has revealed certain similarities between them. A written process is constructed in a form similar to that of an oral process through the use of organisational notes, rather than through written communication and messages. Both forms rely on visual perception for their continuation, rather than on utterances. The great advantage of these forms of communication is their ability to avoid the gap produced by double contingency, and hence to counteract building up internal barriers which result from the exchanges of messages. The disfunctional effects of oral messages can be counterbalanced by the visual elements involved in articulating them. However, the divisive effects of written messages cannot be compensated for by facial expressions or gestures. Hence, if writing is used organising notes and special symbols replace the expressions and gestures and serve to indicate what the participants intend and desire. In this way the structuring of the process can be initiated directly by its participants.

Both forms can provide a solid basis for further operations, beginning with an open ended situation. They exchange a potentially conflict laden confrontation with a defined problem and its demand for a solution into a measured sequence of steps, each of which leads purposefully to the next. This is the main advantage of processes when compared to monocratic hierarchical governance. In a monocratic structure the head of the organisation is responsible for the content of all the decisions. If tasks are delegated only the preparation for the final decision remains.

In purely monocratic structures new matters cannot be accepted as problematic, but only as faults which have to be corrected as soon as possible. Faults have to be eliminated. There are no instruments for working on problems if it is not possible to take time to gradually transform the problems into solutions, once they have been acknowledged as such. Since no co-operative techniques exist to facilitate procedure according to a joint working plan, as is the case, for example, in oral deliberations, no such plan is ever drawn up. This kind of administration has difficulty managing co-operative time. Instead, reliance is placed on individual time management, with the result that everything tends to be accelerated because there are no criteria for determining the right amount of time.

In contrast to this, administrations which understand how to work with decision making processes have instruments to plan the tasks and to use time effectively in systematically advancing towards the solution. Use of the temporal dimension provides more opportunities for understanding the problems and for rationalising the work. The problem can be broken down into smaller parts, which are then individually addressed, and the results are then incorporated into the final solution.

This kind of structuring enables the use of the competencies available within the organisation, and their effective application within the solution process when they are needed. This complex structuring of the problem is effected within the organisation, reflecting the external complexity. Since it is a closed process with an open end it is

the final result which counts, not the way in which it was achieved. The manner in which the problem is divided up internally is based on the formal structure of each decision making process. Regardless of whether it is oral or written, the same pattern is followed for each process. There are four distinct phases in which the process can be shaped in a way best suited to each problem. These are the starting phase, the analysing phase, the creating phase, and the selection phase which closes the process.

3.1.3.1 The starting phase

In the starting phase the problem is perceived and accepted as a task to be worked on. Information about the existence of the problem is created internally, resulting in knowledge about the factuality of the problem. If necessary this knowledge is converted into that particular medium best enabling its internal handling. For example, an oral application by a citizen is noted in the minutes, a note is produced about a telephone conversation, or an observation made by an employee is jotted down in a memorandum. In this way problems can be integrated into the written process and checked to determine whether they belong to the sphere of competencies of the agency and whether they can be accepted as legitimate concerns. In the case of oral processes, these operations take place in reverse order. Notes or letters are read aloud to initiate the debate.

In some cases the process begins with a discussion concerning the proper competence for providing a solution to the problem. Whether or not a certain task pertains to the sphere of competency of a certain body is not something an external person can ever determine. Assigning a task to a certain position, or proposing that a letter be deliberated in a board meeting means that the problem has already been interpreted as falling within the category of those appropriate to the administration.

3.1.3.2 The analysing phase

Following the definition of the problem comes the analysing phase. This is a purely internal step, which is not subject to any external influence. It creates the necessary knowledge about he problem and its contexts. In a deliberation it consists of all those questions arising from the need to understand the problem more thoroughly, for example the real meaning of the problem, the reasons why the problem arose, the wishes of the author of the letter, the view of the author, and what information is required for further treatment of the matter.

In this phase the written process offers considerable flexibility in comparison to the deliberation. It can use all of the available tools for gathering the necessary information from the outside. Meanwhile the process can be interrupted, and then resumed as soon as all the information is present. For example, the author of a petition may be requested to supply supplementary background material, or new publications in a scientific field associated with the problem may be consulted. The professional qualifications of the employees enable them to formulate the right questions and

identify helpful answers. No president or supervisor can exercise any form of control over this step. The unfolding of the problem can only follow its own internal conditions. Because this depends on the complexity of the problem the internal structure of this phase differs for each new problem. Furthermore, the persons involved can only structure it from within and it cannot be interrupted in order to collect further information, and therefore its capacity in this phase is reduced.

3.1.3.3 The deliberation

During the third phase the deliberation serves to create and identify alternatives for the solution. The shift from analysis to the creation of alternatives is easier to manage in a deliberation than if only one person is responsible for the shaping of the whole process. The internal dynamics of the deliberation promotes this shift from open analysis and understanding to problem solving. In the deliberation the phenomenon of double contingency drives the shift from the analytic to the selective phase by presenting the inherent contradiction between the thoroughly explicated problem and its solution.

Whilst the second phase involves the complete unfolding of the problem, in the third phase the problem begins to be closed through the preparation for the selection of alternatives. During this phase the contributions in the deliberation are evaluated according to their usefulness in determining the solution. Just as with every contribution, each proposal provokes a reaction until silence indicates that consensus has been reached.

Through the distribution of problem components to qualified participants in a predefined order, written processes have a greater capacity for reducing complexity even in the case of difficult problems. Unlike the deliberations, however, they are not able to provide an automatic shift from analysis to the creation of alternatives. Therefore before participation begins, the individual responsible drafts a proposal for the outgoing letter that is regarded as the most precise form for the final solution. This draft is made available to other persons, who are then able to contribute by assessing those aspects falling under their area of competence.

Hence, instead of the message it is the proposed solution which provokes criticism or approval, and communication is directed towards the matter at hand. It is not the person making a contribution who is involved, but only the proposal. In this way the most competent and qualified suggestions for the various parts of the problem are gathered, and the person responsible for the entire matter can then bring them all together for a final answer.

The continuation of this process is ensured by its own inherent mechanisms based on the sequence of steps ending on the desk of the initiator. For everyone involved in such a process the requirements relating to their own contribution are clear in each step. Everyone is motivated to deliver their contribution without delay, and the subsequent rewards come directly from the process because there is a clear sense of

individual accomplishment. In this third phase there are two different mechanisms used to provide internal continuity. Whilst deliberation depends on double contingency, ensuring its continuity, this would be detrimental for the written process, since it would only produce differences without the possibility of oral exchange to re-unite the matter. The written process, with its strict focus on the problem rather than the participants, creates other dependencies obvious to everyone involved and which provide the sense of one's own contribution to the whole.

3.1.3.4 Finding the solution

The fourth phase serves to provide the outside world with a solution to the initial problem. It is similar to the interface between inner and outer represented by the incoming letter in the starting phase. In the deliberation an observer, defined as external by functioning as president or secretary, takes the minutes. In complicated matters the observer's notes are converted into oral form by reading them aloud prior to approval by the board. Finally, the address has to be chosen as well as the appropriate form in which to transmit the letter or communication.

The form has an influence on the effectiveness of the solution, and indicates to the addressee that he is the intended recipient because of the special manner in which it has been formatted. In the written process, on the other hand, the draft (including alterations made by the participants during preparation) serves as a task list for the secretary in the production of the outgoing letter.

Used in this way it demonstrates without any explicit statements how the answer was developed, and hence enables factors to be perceived which are not accessible in oral processes. The written process thus has the advantage that through planning and controlling, traces of its progress are produced which are not only required within the process, but can also transmit to the outside information about how it worked.

These four phases characterise the basic structure of an open decision making process, regardless of the medium used. The comparison between oral and written shows in detail how it works with important differences owed to the media used. The principles viewed here are the basis for the construction of similar processes, which integrate electronic media with their own special functionality, differing from oral and written, without reducing the capacity for solving open problems.

The introduction of electronic media is useful and will be accepted if it can increase the capacity of the co-operative problem solving process in a manner similar to the way in which the introduction of writing in its time enhanced effectivity in comparison to the purely oral process. Until now electronic office systems more or less tend to endanger the efficiency of the problem solving process. They close the process by opening it up to external influence during its progress, whether this is through anticipated modelled workflows or through controlling audit trails.

3.1.3.5 Common characteristics and differences

The main common characteristics of oral and written processes can be summarised as follows. Both are based on self-organisation. They both construct and control internal relations through the use of visual elements, which may or may not accompany the aural transmission. The processes are structured through perception and interaction rather than through the exchange of messages. The main requirements for beginning the process are the common goals which, on the basis of the infrastructure provided by organisational and communication guidelines, direct the collaborative efforts.

The differences between both are a result of the bifurcation introduced by the stability of writing which creates a mutual exclusivity between message exchanges on the one hand, and visual interaction on the other. By avoiding the use of internal messages, interaction can make use of writing and therefore has the opportunity of interrupting, storing and restarting processes which can therefore also be inter related, acquiring an increased capacity of reflecting external complexity through internal networks.

When compared to the deliberation, the written process has some considerable advantages in regard to its usefulness in handling more complex problems.

(1) The initial problem can be structured not only through a knowledgeable description, but also in an administrative, action-oriented manner. It can be divided into components according to the capacities provided by the organisation. Each component can be solved separately, and the individual results combined to form the final decision. This facilitates the solution of problems of greater complexity.

(2) The process is permanently present and its actual development is obvious from the task list used to plan further operations, as well as by the check marks indicating what has already been accomplished, all of which are present on the same piece of paper or in the same file. The combination of task list and check marks thus functions as the internal past of the process, because it presents in a clear manner what has actually happened up to that point in time.

(3) It is easy to work on several processes at a time, since each process can be interrupted without loss, and resumed without having to repeat what was done before. Whenever a contribution is required, whether it be information from the outside, or a report from the engineer on the technical implications of the suggested solution, the intervening time can be used to work on other processes. Writing does not involve the persons, and the course of the process is independent of personal interventions. However, it must be planned in advance, and it also requires the presence of certain logistical facilities.

During the process, as well as after it, the task lists indicating future actions and the checks and marks showing what was done provide insight into the activities themselves. For their actual realisation such notes need at least two persons, one who plans the action, and another who is responsible for its execution, and who also marks it beside the initial symbol, thus completing it. Such writings do not describe the action, but represent it. Used to organise the process, they also indicate to anyone who can interpret them what happened, without any verbal explication or signature to confirm it. These characteristics of written processes enhance productivity. They also have consequences for the structuring of the files because, as has been shown, the writing consists of representations of actions.

The actions in turn unite the process as a whole, being dependent on each other and having a definite beginning and conclusion. Between both ends the sequence of activities can be interrupted and resumed. The documents themselves only contain action plans, the check marks showing the accomplishments, and the texts, which initiated the process and which suggested its conclusion. The documents do not contain any information apart from the information required for the decision, and which was selected and prepared for this purpose.

If the files are needed after an interval of time has elapsed, they provide all the writing used for the process, and nothing extraneous. It is, after all, not the information which is desired, this was already integrated into sub-decisions, but rather the past operations themselves, which are then examined in order to link new actions to them and continue the process. Thus the guiding principle for the composition of the files is based on the activities and their combination.

The result is an alignment between the structure of the file and the structure of the process, an alignment, which underlies the term ‘action files’. The file is created when the first letter arrives, receiving a number or a name indicating the problem. Therefore the title of the file does not indicate its content but its purpose, the content being describable only after the file is closed. Further documents or notes created in the course of solving this problem are then incorporated into the file, which accordingly always shows how far the matter has progressed.

In this way it can be used as a tool for consistently maintaining the work on the problem even in cases where there is a change of staff. This form of file also permits the writing of memos containing new information explicitly for a particular file. Thus a link is created to preceding operations, without any explicit statement being necessary regarding the fact that such a relationship has been created.

This combination of all the papers resulting from one decision making process into a single file bound into one folder with the name or number of the process as its title requires a special approach in archiving. The ephemeral notes and their relationships form the backbone of the file structure as they are created during the administrative work.

The basic unit of such files is the single action represented by entries in the form of task lists, which indicate the planning, and the checks or marks indicating the

accomplishment. Each action thus produces two inter related marks, which can be distinguished according to the time in which they were produced.

This combination of initiators and terminators as observed in the action files is a guiding principle for the construction of administrative collaboration, and it is present on different levels within the administrative work. The initial letter and the final answer are indicative of this relationship, as is the assignment note with the initials of an employee and his signature under the final draft. The same temporal relation can also be indicated by, for example, both the request to the engineer to check the suggested text for the outgoing letter and the subsequent remarks written on the margin indicating agreement or disagreement and appropriately initialled.

Within this structure each combination of initiating and terminating signs represents one operation. On an elementary level they represent the individual basic acts, which as elements of the file are represented by single entries. They do not necessarily correspond to a sheet of paper or to a document, but can be placed anywhere, and can even make use of the layout to indicate relations, thus making further elaboration in text superfluous. Thus the action file is not a composition of papers or documents. It is a combination of entries.

Each entry represents an action and the references between them constitute the network of the originating organisation. This is a material combination in the cases of action files represented on paper; however, it can also be imagined in other, immaterial forms. It recalls the network of contributions in an oral debate and perhaps having this network in mind might facilitate finding ways for archiving electronic records as entries or other representatives of operations as constitutive parts of business processes. Archiving such networks requires the understanding of the communication networks and the identification of the administrative backbone as a guideline for arrangement and description.

A written decision making process is a very complex tool structuring the problem solving as a sequence of events. It requires an organisational infrastructure supporting the different functions required for the division of labour in planning and executing the various steps of the internal process. It is a form useful for coping with internal paradoxes and latencies, and it therefore needs a special structure in order to control the blind spots. If new forms of co-operation are designed for electronic processes, the inter-dependencies between the use of written stability for communication and certain uncrossable barriers within the organisational infrastructure may be important. Both belong together, forming a distinct communication system in the same way as volatile oral contributions require the synchronised presence of the participants. Perhaps new forms of electronic communication also require special organisational structures, even if only in a very loose form, in order to attain their full productivity. The inter-relation between both the form of communication and the organisational structures provided as background have to be understood in order to see how the processes work.

3.1.4 Written instruments of oral administrations

The working basis of collegial administrations was oral in nature. Writing nevertheless played a role in providing a basis for the organisational framework, and as a support whenever memory or precision was required. Thus already from the beginning of the 16th century the guidelines for collegial bodies were set out in the form of written instructions. Similarly councillors were advised to take notes during the deliberations, and they also relied on writing when preparing for the meetings. Such notes, however, merely served individual memory and hence were not filed. Apart from these uses, writing had no significant role in communication, nor did it have any organisational function.

Minutes of meetings were mentioned only later on, and even then the texts provide no clear picture of their use. Writing was probably not specifically addressed by regulations because its use was unproblematic. Records in the archives indicate that their form was a matter of local usage. Lothar Groß, who conducted extensive research on the subject in the Vienna State Archives, distinguished two Principal forms for the 16th and 17th century, one form created by the secretaries, the other used by the councillors. He also found a series of minutes obviously created by a councillor responsible for reporting to the Emperor after the session. These minutes place the subjects of the deliberations on the left side of the page, with the corresponding decisions on the right side. The names of the attending members are also indicated.

Whilst minutes of this kind provided a comprehensive overview of the session, their use was discontinued in the 17th century. Otherwise the usual forms were those of the secretaries' minute books. Their appearance depended largely on the person who kept them, and some of these, with their very individual entries, have been preserved in the archives. Normally they did not record the entire session, but simply noted what was relevant for their further work after they had been charged with drafting the appropriate outgoing correspondence. It appears that these minutes were quite often copies of drafts made during the sessions.

The paperwork of these administrations consists to a large degree of documents bound in big volumes. Pre-bound books were used for continuing entries. However, there were also volumes which were bound after the pages were filled, and frequently incoming letters were bound in a similar way, so that it is not always easy to distinguish them from the minutes. Identifying bound documents can often only succeed through noting the fact that loose paper sheets were stitched together.

Such volumes were also used as registers for the most important outgoing post. Their form alone provided a guarantee that nothing could be lost once it had been entered, and their physical characteristics, being large and heavy, also made them easy to peruse. The entries were copies normally made according to the drafts, but there were also regulations which stipulated that they should be done according to the fair copies, perhaps to avoid too many discrepancies. Summaries of less important letters were entered in the form of tables. Incoming letters were kept separately, arranged in

chronological series. When the answers to the matters they had introduced were copied into the registers, no cross-referencing occurred between incoming and outgoing correspondence; the only connection was provided by the minute books. As long as they survived, therefore, they provided the only means of understanding the internal relations of the papers resulting from the collaborative processes. The purpose of the minute book entries ended as soon as the outgoing letters were finished; they were made without special instructions because they were needed immediately and hence done quickly.

The files consisted of collections of incoming mail arranged in chronological order according to the sequence of the sessions and the order of the entries in the registers. Later, as matters became increasingly complex, papers were more often organised according to different kinds of matters, nevertheless the document collections themselves remained in chronological order.

In the Prussian form of collegiality the minutes also structured the paperwork. The registers were the chief instruments for the management of the paperwork, and the files were composed in series. By the end of the 18th century new structures had developed, and collegial forms of collaboration were confined to more complicated matters. During this century the registry began to be separated from the chancellery, although it remained subordinate to the director of the chancellery. It had originally been located there because the chancellery was charged with all of the writing tasks, including the actual preparation of letters, the secure management of concluded papers, as well as the preparation of memoranda and expert reports on legal matters.

At first the task of the registrars was to ensure that the documents were not viewed by anyone unauthorised. At the same time they were the persons who were most familiar with them. They were thus qualified both to arrange the files and to facilitate internal access to them. The more information regarding the handling of previous matters was required during current decision making, the more the registries became involved in the actual work. They ensured continuity in the decision making process, which no longer occurred in a single session, but rather within a network of discrete operations. Hence a new way of viewing the functions of the registry evolved, as became formally expressed in the above mentioned regulations for the registries of middle level administrations in 1788. Apart from instructions for the organisation of the registry, the regulations of 1788 also described tools for registry work, as well as instruments for organising the files.

The chief instrument was the general guide, the predecessor of the file inventory. Its entries were supposed to account for all existing files and its structure accord with the pre-established registry plan, the predecessor of the filing plan. The registry plan and the general guide were thus central to the work of the registry. They were inter-dependent. The registry plan articulated expectations, while the general guide represented the inventory of corresponding achievements. With the help of both, new matters could be integrated into the files, and open files could be delivered when needed.

Finally, they could be used to identify those files which were ready to be archived. These two elements, registry plan and general guide, thus became essential aspects of activities. The plan identified them on the basis of the areas of competencies, and the guide showed their actual realisation by means of the files which corresponded to the processes as they actually occurred.

The files were gathered together as solidly bound volumes either on the basis of the area of competence they pertained to, or simply according to individual decision making processes. If new letters arrived they were stitched into the file volume. The entire volume was used in the work. The numbering of the volumes reflected the structure of the registry plan, and their existence was recorded in the guide. They were stored in sequence on the shelves according to the registry plan.

Within each section of the plan the registrar could create new volumes as new matters began, so that the numbers indicated not only the place within the structure, but also the chronological order within the section. All of the pages in the general guide were supposed to be laid out in identical fashion. At the top of each page the registry plan code was to be written in large characters, and below this were to be entered first the sequence number, next the title of the volume, and in the final column the year when the volume was created.

The guide could be supplemented by an alphabetic title index. The Latin term for the guide, repertorium, remained part of archival terminology as a term for finding aids. Its etymology reveals much about its meaning: the Latin verb reperire, which is the root of the word repertorium, means something akin to ‘investigate’; the Greek roots of ‘catalogue’, on the other hand, mean ‘to search’. The concept of a guide implies taking into account other strategies for research, and requires contextual information (physical appearance, for example) for inferential purposes. The repertoire was intended as a tool to facilitate an examination of the files without prior knowledge as to whether, or in what form, they existed[6].

The general guide could not be established without reference to the registry plan, which both provided the model for its structure, and indicated the relevant contexts. The regulations provided the registrar with instructions as to how to go about creating such a registry plan. First the existing files had to be analysed, and the central concept of the registry thoroughly grasped. The actual files served as sources for the analysis, facilitating the study through their internal structures. After the central concept had been identified, sections were created, each denoting a particular area of competence.

The registry plan was not intended to serve as a classification of existing matters, but rather enabled the projection of future operations. New matters could be integrated into its structure as soon as they appeared. The registry plan thus functioned to integrate future matters, whilst the general guide inventoried what had already been

[6] It is supposed to function as a map which provides orientation in a landscape without showing every path, house, or tree of potential interest. Indeed, maps of the registry office and its shelves were often drawn, and some of them survived in archives. Windows, doors, and chimneys aided in orientation.

integrated. In integrating a new matter into the registry plan the registrar was instructed to identify the nature of the activity at the heart of the matter, and then its object.

The file title could then be created in a standardised fashion using a verb to indicate the activity, and noun for the object. An example would be "Building of the new bridge at Marburg", where 'building' is the activity, and 'bridge' is the object. Following this method the names of the files then characterised the nature of the activity involved in their respective matters. These two elements, activity and object, were to appear in both the registry plan as well as in the general guide. Personal names were only used to guide arrangement in cases of official applications, where the applicant's name determined file order.

Accordingly, the form of the document itself, for instance correspondence or reports, was irrelevant for the filing. The registry did not examine and arrange physical objects, the material form of the records, but instead structured matters and working processes, and hence presented a formal representation of these.

Files were bound into volumes. The documents within the file were stitched together. These were then given a title, their pages were numbered, and the start date was to be indicated on the cover. When filing, the papers of each individual matter were thus kept together, separate from other matters. Within each file the arrangement was as follows. First came the incoming letter which had provided the impetus for the matter, then followed the resolution along with other internal remarks and notes, and finally the task list indicating the work to be done, including the draft for the answer.

The first page of each volume had to list all of the documents making up the file. This list was called the 'rotulus'(i.e. 'series'), in accordance with the traditional usage of Latin in office work. Everything assigned to the file had to be indicated here, along with their corresponding journal number, even if they had been placed there only to be taken out again for use by the responsible councillor. Once such a removed item had been returned to its volume the number was crossed out or underlined. If the quantity of files became too great the registrar was expected to list those files no longer required for the actual business, and to prepare a disposal list for them.

The registry was supposed to keep only those files needed for the current work, it was not intended to serve as a storage device for long term memory. Continuing usefulness of the files, and their ongoing storage, was determined solely on the basis of their relevance to the individual problem solving activities of the agency and their associated needs.

Other volumes were kept for the registration of different operations and to keep track of interruptions in the process. In one such volume the regular delays incurred when reports to other agencies had to be made, and when reports from subordinate agencies were awaited, were entered. For these interrupted processes a list was used to check actual re-submission dates against those determined by the Principals in the task list. The registrar noted the file code and date in his list, and then checked the task list. In this way time management became part of the specialised services provided by the

registry. The nature of this time was co-operative. It did not involve the working plans of individuals.

This co-operative time management fell to the registry because by looking at open or finished co-operative task lists it was able to view the origin and development of the individual matters as part of the entire activity complex. The registrar could then share this perspective with other staff members, whose view was much more restricted. Knowing that the registry was taking care of the co-operative time management, the referees were able to plan further steps using their task lists, confident that the registry would manage the interruptions and let them know if things were not proceeding normally.

In addition, the registry made past action available to current decision making by providing the appropriate files. Being composed according to actions, the files could demonstrate what had already happened, which decisions were taken, and how they had been communicated to the outside. This type of file, the so called action file, thus enabled current planning to be associated with past operations, and hence ensured continuity.

Files emerging from this kind of close collaboration between decision making and registry differed significantly from the old files series, arranged in chronological order according to the sequence of meetings. They did not contain many reports or other descriptions of events or facts. Instead, their contents were made up of the various contributions to the same matter. As such, they showed which effects were produced by which actions. The registry became the organisational unit managing time for the entire agency, as far as this related to decision making. It knew how far the decision making had advanced in each matter, and which operations were planned for their further progress. These functions gave it a powerful position, and it became irreplaceable. It was the one organisational unit in which individual processes could be examined, since the Principals only saw matters as individual tasks they had to resolve.

Both perspectives, the on of the principals as well as the one of the registry, could not be mingled. They were available in different and strictly separate, but nevertheless concurrent, functional environments. Both environments, the matter oriented and the process oriented, were in the other's blind spot, but the other could deliver the results of each view for use. In this way complex situations could be understood and treated from differing perspectives.

However, this led to the situation in which the registry was no longer controllable by the various members of the administration involved with the handling of matters. Only management had this capability, as long as it maintained neutrality to both the content and form of the matters, for then the relationship between both could be understood.

Three functionally distinct spheres of work, each one with their own perspective, had emerged. Creating definite boundaries allowed their competencies in concrete matters to be co-ordinated, whilst blurring these distinctions could only put an

immediate end to collaboration. Functional differentiation had become a prerequisite for co-operation in a highly complex yet very effective way.

The structures for this form of collaboration within government agencies had emerged from traditional working methods in oral environments. The registry office was needed as a sort of a control centre for the internal processes whose traces were made up of the internal entries and marks in the corresponding files.

3.1.5 Files of modern administration

Besides controlling the work flow within each process and enabling a perspective on matters as individual units, the actual organisation of the papers had to respect the conditions involved in handling material things. In practice a complete congruence between the matter and the file was never really achieved, nor was it required. However, this inconsistency created a tension between both and ensured an awareness of the difference. It offered even richer opportunities in reflecting on the needs of decision making and collaboration. The principal file types emerged from the practical work. A basic distinction was first made by the regulations of 1788 between two forms, general and particular files. General files were supposed to be used to integrate instructions and circulars originating from the ministries. Particular files, on the other hand, were for individual matters. If, in the handling of matters, résumés or instructions of general relevance were created they were supposed to be copied or extracted for the general files.

The particular files normally contained papers from processes around an individual area of work, and were therefore filed as part of a common group in the filing plan. Archivists later referred to them as Betreff-Akten, because “Acta concerning ...” was printed on their cover, with the blank to be filled in by the registrar when creating the file. The Latin expression acta meant “activities”.

In other parts of the country the term was translated as *Händel*, an old German word for actions or deliberations. These processes were not always brought together as a physical unit, rather, several instruments were used inside the volumes to represent their inter-relations. Whenever a new letter was received and directed to the responsible referee long strips of paper were put into the bound file volume of the files to indicate the presence of papers from previous decisions relating to the same matter. In a list on the first page, where new papers were entered with their journal number, those parts of the file belonging to the same matter were often indicated by arrows linking them together.

In contrast to the particular files managed according to the registry plan and inventoried in the general guide, the general files were arranged according to a general subject scheme. These files contained content lists made up of the titles of the included papers along with appropriate keywords instead of journal numbers.

Later on, the general file type was no longer needed because laws and decrees became published and thus replaced the collections of circulars. The distinction

between general files and particular files was replaced by distinguishing file forms according to different kinds of action. Towards the end of the 18th century the definition of general files was altered, hence adapting to the changes in their practical use.

An instruction issued by the Prussian government in 1910 stipulated that if a precedent should be set in one particular matter affecting similar matters this should be integrated into the general files. According to this new concept, the general files then should take on the nature of reference files for individual matters, their purpose now being to ensure procedural memory. This, however, was achieved differently.

In the offices records could be used as "similes", that is, as specimens for specific procedures if a similar matter come up. Thus specimens were looked for when they were needed, not as a distinct collection but inside the past and closed normal files. Thus even if this stipulation of putting aside cases that could serve as procedural samples was not very effective in a direct sense, it nonetheless indicates an attitude towards general files which accords them high priority, especially for memory purposes, whilst neglecting the particular files, even though they were the mainstay of procedural memory.

The purpose of the special files was ephemeral and hence it was difficult to see them when considering use from an alternative perspective. These files inherited their ephemeral character from the ephemeral notes and disposals representing the actions that formed their backbones. The files lost any value after fulfilment of their purpose, that is, after the problem that initiated their existence had been brought to a solution. They only could acquire new value when they were used for insight into what had happened. Yet this was not the perspective of administration, but of archives.

Here the difference between primary purpose for controlling actual processes internally, and secondary purposes for viewing the entire operation externally, is quite pronounced. The high regard for the general files as containing essential information suggests that procedural information was also to be found there, albeit in a predetermined manner. The particular files remained invisible, not being perceived as potential sources for the same purposes. The administration itself, being involved in all of the current problem-solving matters, perceived particular files as serving general purposes but was not able to articulate this use.

The means of increasing awareness of this potential was required, but never actually set in place. Instead the general files retained their value as receptacles of information of relevance to all other records. In a way similar to library collections they were regarded as tools for organising information, a functional shift which became generalised as the overall purpose of the registry during the first decades of the 20th century by the protagonists of the office reform, who considered for a while replacing the term acta, or its German form Akte, with something like "document collection". Haußmann suggested that all the documents, which were actually used should be gathered into collections before being integrated into the files. Later on the joint procedural code for the German ministries from 1958 resurrected the distinction

between general and particular files by distinguishing between records of Principal value ('A' files), and those of more ephemeral value ('B' files).

The 'A' files were supposed to be supplemented by a content list, and the pages of the documents numbered. 'A' files were further divided into main files, which were supposed to contain the central documents of the matter, and supplementary files, to be used for larger attachments, brochures, and collections of press clippings.

The regulations for records management, as they appear in the 1996 revision of the procedural code, now contain more detailed instructions for record keeping. The paragraph presenting the general principles of file making refers the reader to an appendix where four different types of files are described. In each case, general remarks about their purpose are followed by details regarding their structure and title. The first form covers single action files as the most common, corresponding to the file level heading in the filing plan.

If not enough papers are created to form a single folder, a combined action file is formed, which integrates several small individual matters. Particular attached files are used for reports and other voluminous attachments, such as the former 'B' files. Whilst these types are used for the same kind of business processes, a fourth form is offered for individual matters resulting from formalised parallel procedures as initiated by applications, called the case files. Such files normally occur in huge quantities, and resist integration into the filing plan because of their parallel and non-interdependent structure.

All of these forms represent units of decision making processes, even if they are mixed up with others. They can be clearly distinguished from collections of information. They constantly grow during their use, and are created when the matters begin, not when they end. New papers are integrated as they appear, and new records such as memoranda or task lists can be made specifically for them. Serving as working instruments during the decision making, they represent what was done in a particular matter, hence marking further needs clear and obvious.

3.1.6 Archival definitions

In German archival science a typology of files had been drafted for purposes of description reflecting the developments in the registries of German administrations. It mainly distinguishes between

- Series: collections of papers assembled normally in receiving archives. They are arranged in chronological order or according to correspondents or to a specific handling. It is a rather simple form of records and does not need further qualification for its management;
- Subject files: all papers concerning an area of responsibility brought together. This form can be subdivided into:
  - Case files: all papers belonging to one case are bound together in a file. They

are structured in parallel forms and do not show inter-dependencies between the files as they represent independent cases. Forms are:

  - Legal cases: collections of papers without internal growth reflecting predefined procedures;
  - Parallel files: representing each a chain of single decisions growing step by step following an application and directed by information needs according to laws and regulations;

- 'Concerning files': They concern activities from which they emerge. Considering the way they are filed they form:
  - 'Concerning series' with networks of activity chains from one area of responsibilities in the agency representing collaborative decision making. These series may span long times like the series with the title "reform of the administration" in the Prussian ministry of finance, which started in 1817 and was closed in 1947. Such a series is divided into consecutively counted volumes;
  - Action files with all the papers from one single collaborative process independent of the amount of papers needed for it. These files represent most exactly one decision making process, however their inconvenience for the practical daily work may be that this process is at the same time separated from the context of other processes.

The differences between the different forms of subject files affect the work in the agencies and therefore registrars applying them need to know their pros and cons. However, the use of these forms need organisational contexts such as competent registries as do the different forms of collaborative decision making processes and they are themselves part the context ensuring the functioning of the co-operation.

With the increased introduction of ICT, new forms are emerging which cannot yet be clearly captured. Initial experience indicates, for instance, that the formation of many small units for action files can be supported. However, their interrelation and networking may be even more endangered. Yet more than the file structures the use of communication through e-mail, common servers, and other forms such as video conferences for decision making will lead to important changes.

The special effect of this technology on communication is more interesting than the digital representation of papers and documents. The chief questions concern the ability to construct processes and to take their functional requirements into account. Completely different forms will probably be needed for this. As collaborative decision making processes in oral as in written form are constructed out of single actions and inter related events, the records form of action files may be helpful for designing new tools. As they are built up from residues of actions, namely, the inter-related marks of intention and fulfilment, perhaps these records composed of representatives of actions ought to be considered as the single units out of which electronic records and files could be composed as representatives of interconnected networks. So the smallest

indivisible unit of records and files is the entry that represents an action as the atomic unit of the respective business process.

3.1.7 Elementary units of the record: the entries

File development, and the different forms it can assume, shows how writing is used in administrations. Files are composed of parts written down by different people in different situations, connected by a common purpose. If an agency accepts an application sent to it by initiating its own activities in its regard, it makes the goals of the sender its own, and determines what course of action to take. An external activity, expressing a desire in a message, initiates a chain of activities ending with the response, itself sent out as a message.

Writing cannot occur without an accompanying intention to produce a certain understanding. Writing a letter to an administration normally is accompanied by the desire for action. When the application is received by the agency it is not viewed as just a piece of information about an unsatisfactory situation. It is accepted as a task because it expresses the intention of having something done. The initial phase of the internal process therefore serves to make clear what the sender wants done.

All such writings imply actions. They either serve to request that an action be carried out, or are the result of another action. They can only be understood and serve as communication when the context of the actions is known. Writings in administrative files allow their contexts to be reconstructed, because they depend on this for their purpose, which is more or less exclusively organisational. This can go so far that they do not contain any information in the form of messages at all, but only present the operations required in a form such as task lists supplemented with corresponding check marks.

Writings which organise co-operation implicitly rather than explicitly were already in evidence in the meeting agendas. A special form of relation between entries and corresponding documents produced by interdependent activities could be observed in the so called rapsodia, thick register books in Hessen dating back to the 18th century. They served to register the topics of decisions. In these rapsodia can be found so called products, a term derived from the Latin language used in legal suits, where statements intended to be given to the court were ‘produced'. The products were integrated into the volumes of protocols by being inserted between the pages. They received numbers connecting them to the corresponding entries. They thus referred to the entries. However, they were not attachments or appendices. The link between the loose documents and the entries was established through action. The products served to initiate the matter which was the subject of the entry. They contained an application or a note and the entry showed the consequence.

These forms of records are thus connected in a way similar to that of action files, the only difference being that one part of them is an entry in a book, and thus part of a pre-bound volume of similar entries. The use of the volume served to better protect

against loss, and thus ensured the preservation of the most valuable part of the matter. With all the letters between the pages, however, the books look heavily used and their binding was damaged.

Other forms of entries in records emerged from the decrees of the councillors in collegial meetings, and from the task lists later used to organise further steps. They were written on the same sheet of paper as the letter or draft to which they referred. They even took on the layout of the letters or papers, thus making the bond clear. Here is a good example of the use of materialised space and two-dimensional topography to demonstrate internal relations [Moore (2000)]. The task lists were used to initiate further operations, and were themselves results of activities. During the internal process, those activities were mostly examinations. The authors checked the matters in front of them on their desks. Alone, or together with others, they analysed the situation and determined the outcome. Then they noted what remained to do, and produced the task list.

The task lists, as results of individual checking operations, functioned as co-operative organisational notes. Thus they had the same nature as register entries or minute volumes, which were also the results of examinations. The register entries originated in the examination of a document for the purpose of determining its relevance for further operations, whilst minute book entries were made after a new matter had been accepted, in order to prepare for its deliberation. Afterwards the result of the deliberation produced another entry resulting from the resolution. This final entry marked the end of the deliberation, and the next step could be taken, namely, the preparation of the final draft.

The working processes consisted of sequences of operations, each of which left traces in the form of writing, resulting from the preparation of, or as consequence of the separate actions. However, theses traces must not have been brought together in one volume or file but could have been spread across different collections of papers. They nevertheless created the bond which united them and thus represented the process. Collective organisational notes were useful in co-ordinating the efforts of several persons working on the same matter.

Integrated, non-collaborative forms of work do not produce similar marks, which is why monocratic administrations make less use of task lists, meaning that fewer traces from the actual operations are left in the records. This is because they are based on the individual work, which does not require horizontal co-ordination and is characterised by the production of vertical reports and commands. In collaborative administrations with horizontal communication, on the other hand, records represent operations because they are needed for their organisation. Such records are representations of actions within communication processes.

This means that the component elements of files are only the traces of an action and not a document or a paper. The elements of actions, in turn, are individual operations. The need to co-ordinate these operations gives rise to communication. This is why notes, task lists, and also texts from and to the outside world are used. They all

have the character of entries, each of them corresponding to a single event during the communication process.

Single operations are the smallest indivisible elements of communication processes, as could be observed in the oral deliberation. Since these operations produce marks and task lists, they correspond exactly to entries in registers or on papers. Hence the single indivisible elements of records are entries, whether they are made in books or files, or simply placed on the incoming letter.

This definition stems from the view that the essence of the entry lies not in its form, but rather in its function. An entry is thus regarded as the materialised representation of a communication event, essentially independent of both the support used, as well as the composition of file or book. It can be used just as well in books as in files to express the function of materialised events.

The instruments used for their construction can define decision making processes, along with their potential conclusion. These instruments are the individual communication events allowing the process to advance independently of the supports used to organise it.

The entry thus being the smallest single representation of communication events in written decision making processes, the question remains as to how the individual communication event takes place in an electronic environment. Are there instruments available comparable to entries? Or is it necessary to invent different tools? If so, what characteristics do they require in order to fulfil the same purpose of facilitating the construction of open ended collaborative decision making processes?

The functions of entries relate to their use in writing environments. These same functions may be filled in other ways when different media are used, something which can be demonstrated by comparing oral and written methods for organising collaborative decision making. Such a comparison can also lead to a general description of decision making processes and the requirements for their construction, a definition perhaps useful in assisting to identify electronic tools which achieve the same or better performance for collaborative decision making, rather than simply producing electronic versions of existing forms.

3.2 Organisational backgrounds

The processes analysed up to this point, deliberations with written minutes for further reference, or task lists and check marks for planning and control, rely on communication between persons in particular situations. These persons are relevant to the process because they contribute their share of the collaborative decision making. This contributory ability resides in their roles as defined by the organisational structures. These structures assign the competencies and responsibilities through which the members participate in the common communication. Thus the organisational dispositions determine how communication functions, and can enhance

or reduce its effectiveness. However, this coherence between types of communication and organisational disposition does not mean that they have a parallel structure. On the contrary, a tension between both levels of permanent and spontaneous organisation is required in order to make communication useful.

Structural gaps are bridged by joint actions, which permits flexibility and adaptability to a great number of situations. These tensions enhance the internal complexity and thus the capacity for reflecting external complex problems.

3.2.1 Infrastructure for board-based decision making

The communication guidelines analysed in the preceding chapters function as instruments for the combination of previously defined discrete units of responsibility inside the organisational structure. The guidelines for collegial boards describe how the president, separated by his function from the members of the board, made the proposals for the deliberation, how he established the sequence of votes, and how the final decision was determined.

The organisational background consists of the members of the board, equal in skills and with parallel responsibilities. This background is needed only when the board meets. The group as such does not constitute a permanent body, but only comes into play when a meeting is scheduled. Its actual work is accomplished in the course of the deliberation. The purpose of this body is to produce in a creative and open minded manner new and innovative solutions to current problems.

Separated from the fluidity of the board, the chancellery provides the stable structures required to ensure continuity. It is made up of a number of permanent staff, who work regular hours every day and is integrated into a hierarchical structure headed by the chancellor. This body has the very important task of handling writing, including its protection from misuse. It is as permanent as writings are, and its hierarchical structure also facilitates the consistent handling of the papers or parchments.

However, these two structures inside one organisation, board and chancellery, are quite contradictory. The volatility of oral communication is as dangerous for writing as the stability of writing is dangerous for the openness of discussion. Contributions, messages, and texts cannot be both volatile and stable at the same time. The two requirements are contradictory, even if both stages are necessary for the accomplishment of the different goals to be attained through their use. In its oral form one message should be replaceable by the next, and therefore must be allowed to vanish without trace. In its written form, however, the message must be available for repeated reference in order to state its case also in future times.

These conflicting goals constitute a paradox characterised by two irreconcilable aspects, either of which can be perceived and reacted to, whilst the other becomes invisible. Both aspects cannot be perceived at the same time from the same vantage point. But when two different vantage points are provided by organisational

boundaries, both can be viewed. This is the case with the two different units. The distinction between these two different vantage points which enable the perception of both sides of the paradox of the decision making situation between oral and written communication, results from the responsibilities assigned and from the activities to be undertaken. The textual nature of a letter read at the beginning of a deliberation is not perceived as long as the oral relation of its content lasts. This kind of restricted perception enables the topic to remain volatile in the thoughts of the participants, and continues until the solution is found.

At this point the written form of a disposal marked by a councillor on the letter is combined with the initial subject, which thus remains stable on its paper support. The disposal can then serve to instruct the secretary on what needs to be done in a manner not to be misinterpreted. This manner of handling oral and written communication enables the separation of both tasks assigned to two units clearly distinct organisationally, yet combined in the work on the single case.

Making this clear distinction between persons and different organisational forms supports the differentiation of work processes. There are two very distinct units which, in spite of their differences, nevertheless belong together. They need each other and each is dependent on the outcome of the other's work for its own proper functioning. The secretaries cannot do anything if the board does not meet and make decisions. Similarly the board may make a lot of decisions, but if these are not communicated to the outside its work has no relevance.

This organisational division is bridged by collaboration in the production of decisions in single and timely cases in ways which are effective and produce results. The use of the task list or its predecessor, the decree, establishes the bridge and facilitates communication between both areas. There is one person who ensures that both parts not only function properly, but are also collaborating effectively. This is the chancellor. He organises both without really belonging to either of them. When he reads the incoming letters aloud in the board meeting, he converts written to oral. When he establishes the resolution by counting the votes he converts oral to written. When he revises the drafts according to the minutes, he checks the communication between both. None of these activities concern either the content or the form of the letter. The president does not decide in the matter. His activities only ensure that collaboration occurs smoothly, and that the products of both sides are combined into one outgoing decision.

Historical developments can show how structures change if the chancellor is either completely integrated with the chancellery, this body then assuming the power of decision making, or if he becomes the head of the board, thus exerting influence over its resolutions. In both situations one part is reduced to the point where it loses the ability to produce relevant effects for the final outcomes of the organisation. Either the chancellery produces decisions guided by political interests, or the councillors, later the Referenten, write the letters themselves, thus losing the capability of adapting to different external communication situations.

In these organisations a nascent form of functional differentiation between these three areas of functions can be observed. In other words an organisational unit is divided into two very distinct parts. However, instead of encouraging centrifugal forces on account of their differences they develop dependencies, which create indissoluble connections. The same phenomenon can be observed in the written processes. The functional differentiations used for their constitution create similar gaps and similar dependencies binding them together. In the later case the distinction between written and oral communication no longer predominates, because the decision making also uses written forms, and oral communication is no longer used for the decision making.

A new distinction between the development of the solution and the control of the process arises, marking new differences. However, even in this situation an organising instance is required to co-ordinate the collaboration, and this instance must not be involved in either of them. It is even more necessary because the distinction is no longer as visible as is the difference between written and oral. Instead it is a differentiation based exclusively on different functions. The main achievement is again the ability to handle both sides of the paradox between writing and action at the same time. Functional differentiation ensures the collaboration. In both cases it is the differentiation between the actual decision making, the management of the tools for communication, and the neutral organising and ensuring of the collaborative structures.

3.2.2 Functional differentiation for written decision making processes

As has been seen, oral communication is a form of action. The use of text during the action makes the communication more secure and more precise, but non language-based action can also be easily understood. It is this character of an action which makes oral communication volatile, and which also anchors it in the memory of the participants. They do not memorise the text of a communication, but remember the sense an action made for them. They continue the communication by reacting to their sense of it after the action is complete. Written decision making consists of actions planned or confirmed through letters and graphic signs. The actions are not described by the text, but rather the writing helps in organising and accomplishing them.

The differentiation of functional units within the organisation is less obvious than the differences between board and chancellery. Here the chancellery becomes less important, but a former part of it, the registry, takes over the central function as organiser of the processual logistics.

This shift is not easy to identify for contemporaries nor even in retrospect, because it must not cross pre-established organisational boundaries. Instead it provides the basis for a stricter organisational separation, although this was perceived as threatening and led to the reactionary measures at the end of the 19th century. At that time functional differentiation created new distinctions within the office, situated in

the functions of the Expedienten, who were used simultaneously for drafting, registration, and calculation. Although it developed in a very productive way, new efforts tried to reverse the trend one hundred years later. The organisational consequences of functional differentiation were not really accepted. However, records produced in the agencies during the nineteenth century, as well as the corresponding guidelines for internal collaboration, show how functional differentiation worked, and how the registry office was established as an organisational unit providing for the internal logistics in an effective manner.

The boundary ran between the two distinct partners, namely, the Referenten and their Expedienten on the one hand, and the registries on the other, the registry providing all necessary support services, whilst the Referenten and the Expedienten were occupied with the decision making. As a third party, management had to organise the distribution of tasks and to provide the means of collaboration. Whilst it could thus ensure the proper functioning of the entire operation, it was often tempted to do this by interfering directly in the decision making. This produced undesired effects, and reduced control instead of enhancing it.

This paradox arose because of functional differentiation and the effects of disturbing it. Management is needed as a third separate functional system within the organisation. It cannot help in creating organisational bonds through manageable co-organisation unless it is kept distinct from the other two and does not interfere with the decision making. The three functionally distinct areas need more effective structures, which might perhaps be created using electronic means.

3.2.3 Organisational structures

Management, logistics, and the actual decision making are the three forms of special functional tasks which can be identified in regard to collaborative decision making when use is made of written instruments for the planning and control of the processes. These are functionally separated divisions within a unit, distinct from each other, but mutually dependent for their own proper functioning.

The problem solving function is the responsibility of the former Referenten and of their Expedienten. They form a unit, the office, within which the individual problem is analysed. Further information, calculations, comparisons, as well as similar past problems, which are regarded as helpful in preparing an appropriate solution, are gathered. Together they draft the text for a proposal for a reply, which is sent to other offices with the organisation, so that these may examine the draft from their point of view and make their appropriate contributions.

This is where professional qualifications are called for. The Referent introduces more strategic views and the assistants work out the details. This working unit was always regarded as self-contained and was referred to as the Bureau, the office. Here the papers were transmitted from one person to the other directly without registration in the journal. Communication within this unit did not need to be observed and

controlled from without, since it served only to understand the problems better, and to determine how they should be solved.

This was the core of the self-organised process of handling each individual problem. Here it was organised so that it could integrate other competencies before formulating the final resolution and entering into the process of approval through the management, insofar as this was considered necessary.

Before determining the individual aspects within this function it is first necessary to understand the entire complexity of the problem and to identify its contingencies. It is then closed again by the subsequent selections. For both steps professional qualifications are required. After formulating the appropriate questions, the ways to find new solutions have to be indicated. In this situation professional qualifications cannot be reduced to the mere application of rules.

If rules do exist they have to be known. While they can enable the standardisation of reactions and help economise efforts, before they can be applied the situation must be understood in order to determine whether the rules are appropriate. Thus the analysis is more important. Once it is acknowledged and accepted as an essential part of the decision making, solutions can be developed genuinely suited to the problems.

It is the proper understanding of the problem which provides the basis for flexible responses. Additional instruments are therefore required to assist in formulating the right questions and to understand the special conditions of each case. Knowledge concerning each single matter and its needs vis-à-vis resolution can also help in further developing the rules and in adapting them more effectively to changing situations.

During the decision making phase these two parts, namely the analysis and the subsequent formulation of the proposal for the solution, are another form of the development of its contingency. Seen from outside the administration it appears to be integrated into one single step. From within, however, it may be organised as a process, whether orally or with the help of task lists written on the incoming letter. The development of the contingency in this form requires fewer resources than is the case with the deliberation, and in addition, it can be interrupted for the gathering of more information. However, the questions may be less intense and interruptions less visible, leading to a possible loss of control.

Co-operative structures create their own forms of control by establishing internal inter-dependencies. This control works most effectively because a subsequent action may not happen if the step before was not done. It is a form of control that does not need redundancy and mapping. Furthermore, these structures constitute the process as a whole from the beginning, allowing reference to its outside form in the internal control of its development. This reference is achieved through the operations of the registry.

For instance, the number of the incoming letter as identification of the whole affair can be used as reference for memos and disposals. Just as writing and deliberation were entrusted to two functionally different units, the interest in solving the problem and the form of the procedure used to solve it are seen from two distinct functional

systems. The registry provides the external view of the problem solving, and can transmit its observations to the decision making unit, just as, in turn, this unit transmits its plans and intentions for interruption and restarting of processes to the registry. The external form can be re-engaged in the process and used to address it.

The former registry of secret papers, kept from the view of people not part of the administration, disappears, and the same organisational unit takes over the function of establishing the form of the processes for internal reference. This performance for the entire organisation makes it irreplaceable for the continuity of the work. It fulfils a function separate from the rest because it deals with the other side of the paradox between volatility and stability concerning the same operations constituting the process.

For the rest of the work the service begins with the establishment, identification, and formation of the incoming matter. Through the perspective of the registry, with its duty to register the matter, the incoming matter is formed as a unit, often represented by the file concerned, which develops during the different stages of registration and assignment, and which changes its content while retaining its identity. It becomes a form instead of a thing. This means that, as a form, it is already present when the work on the incoming letter starts. However, it is still incomplete, and the following steps add properties to it.

The single matter created in this way serves special functions within the subsequent decision making process, and can be addressed as a whole when necessary. The incoming letter represents this unit, and it is complete when all the marks and symbols resulting from the examinations provided for in the preparation of each matter are visible on its surface.

The guidelines describe the examinations to be carried out, and they also indicate the symbols to be used to indicate the result. Thus, for example, the date of the incoming matter beside the date when the work started serves to indicate that the letter has been accepted, and the assignment shows that is was examined from the perspective of where it could be worked on, who should be responsible for it, and how it is distributed within the organisation.

All of these symbols complete the incoming matter and simultaneously demonstrate that the preparations for the decision making have been accomplished. Subsequent operations are then able to rely on them, and further examinations are unnecessary.

The identification number on the incoming letter taken from the journal can be used as a reference point throughout the entire process until the answers are dispatched and the drafts and completed task lists filed. Identifying matters in this manner helps to prepare them as processes, it also focuses the work on the matter rather than on persons. This reduces the influence of personal relations as well as the need to work on establishing and maintaining them concurrently with finding a solution for an external problem. This phenomenon is often misinterpreted by critics of bureaucracy as a sign of inhumanity. However, it is nothing more than an instrument for the construction of

collaborative work involving as little resources as necessary. Other relations among the persons who are members of the organisation are not affected by these structures. The coffee breaks are as useful as before, but they are not needed any longer as a compensation for other deficiencies.

The process constituted as a unit allows its own internal time to be perceived and managed, instead of the time used by the persons involved. Just as in a deliberation, the process establishes its own pace and thus manages the temporal dimension in finding the solution. Nevertheless, with the help of the time stamp, it is possible to make adjustments to external needs whenever necessary. The internal time of the process is controlled by the registry using the indications of the task lists indicating what is needed, and when.

The responsibility of the registry for the management of collaborative time grew out of its responsibility for the records. Within the context of this functional differentiation the records also represent time, past time, and are used accordingly. This is because they present past actions within the contexts of the individual matters and indicate the internal inter-dependencies of activities by showing what was done, how it was done, and why. By providing insight into the reasons they facilitate the maintenance of continuity and the ability to choose between repetitions, or conscious breaks with the past. Furthermore, they permit the analysis of processes in retrospect, enabling sometimes an even better understanding than was the case when they were actually being carried out.

Past processes as provided by the registry are no longer subject to influence. Hence integrating external observations into their operations cannot alter them. The registry provides the ability to view the decision making from the outside, from a past but also contemporary perspective, yet from the other side of a functional border. In a technical sense the most effective means of preventing influence on actions is provided by a difference in time.

The same kind of boundary is created by the functional difference between registry and office, representing the view of the problematic matters on the one hand, and the processes as instruments to handle and solve them on the other, both sides being irreconcilable contradictions of the paradox of collaborative decision making. This functional differentiation was most clearly articulated through the modularity of the joint procedural guidelines of the central administration.

In traditional ministerial organisation it was also affected through the establishment of separate registry offices. However, the tendency to integrate records management and decision making, observable from the beginning, works in the opposite direction. It supports the re-integration of both sides, losing the capacity of complex re-combinations and thus directed to only one of the two sides of the paradox. If the difference between the internal and the external side of the process is neglected, that is, between the problematic situation needing a solution and the process leading to it, monocratic forms are the only alternative with their lack of capacities of process creation and handling of time

The management level still retains the decisive position in regard to the functioning of the entire structure. Here the differentiation must be provided with the necessary resources. Qualified personnel, the definition of responsibilities and guidelines for their collaboration, have their source here. Management decisions are needed to keep the structure going, thus ensuring qualified output.

Management has a function comparable to that of the chancellor or president in the old collegial forms. These were responsible for ensuring that the two functionally separated units communicated with each other and exchanged services. The management level in bureaucratic organisations with written self-organised processes has similar responsibilities. Its chief function is to keep the entire organisation together by ensuring differentiation, and enabling the mutual understanding between the decision making and the process control.

This special responsibility of management enables the combination of activities during the preparation for the start of processes with the decision concerning the responsibility of the organisation. The assignment of an incoming letter to a certain staff member by the management is also an expression of confidence in this person, a way of distributing work within the organisation, and an ensurance of adequate working capacity for the new process. It is therefore much more than simply sorting the mail according to predefined competencies. On the contrary, it indicates how a new matter should be understood and handled by the entire organisation, and how it fits in the overall work scheme.

The involvement of management is most effective prior to the start of the processes, since it provides the framework within which they can be developed. During the preparation phase of each process resources are assigned to it. The management tasks relevant for single matters include the acceptance of a new matter as belonging to its own area of competency, and the assignment of work resources in the form of an internal distribution of labour. Both decisions affect the structure of the organisation and its cohesion. Earlier, the same effects where achieved by the presentation of new matters during the meeting, and by the distribution of matters amongst the councillors. These effects are needed even more today, considering the huge quantities of new mail received on a daily basis.

The bureau reform campaigned against the mind-numbing duty of higher level managers to read all incoming letters each day. Reading and distribution was therefore increasingly delegated to incompetent offices until the post office simply distributed them according to their own discretion. Nevertheless, management still bears the ultimate responsibility for the distribution of resources, even if it abstains from actually deciding. Together with the delegation of distribution to the lower levels, the Referenten were now asked to check whether they had received the right mail and, if not, to correct the misdirection. In this case the Referenten assumed a management task, and so mixed it together with the work on the content of the matter. Functional differentiation was abandoned, and the distribution became meaningless because it was no longer part of organisational decisions.

The initial distribution of new tasks is a management decision. The final reservation of the competence for signing an outgoing letter, on the other hand, involves the person who participated in the actual decision making. Often outgoing letters are looked over by the management as a way of keeping informed, or the final task list or draft is brought to the head of the department before it is written.

At this time the signature is integrated into the decision making by virtue of the process which includes all observations, even those which do not change anything. Even if the signature is placed at the bottom of the task list without anything being altered, it is still a form of participation, and attributes the final decision to the signing person who had the chance to change it but did not do so.

Reserving the authority to sign in individual cases thus acts to distribute responsibilities both in regard to the content as well as to the manner in which it is handled, even if no influence was actually exerted by the higher levels. The decision making is re-organised vertically, and the hierarchy of the organisation is reproduced in a single matter.

However, control over the way in which individual cases are handled can be exercised much more effectively by assigning new matters to staff instead of reserving the authority to sign them. After the letter has been dispatched examination of the files reveals different effects. Then the records can show how the matter was solved, and the responsibilities are presented in a clear manner.

For effective control the records can be used to study the structures of decision making as they actually worked. After the matters are finished the observer is no longer involved, making analysis possible. The neutral position of management towards the individual matters is useful for a complete development of the areas of responsibility of the personnel responsible for the actual matters, as well as for its effective control.

The staff can make full use of their professional qualifications. In such processes shared responsibilities are established through the combination of differing competencies. These solutions cannot be repeated at a higher level of hierarchy without negatively impacting their quality. Nevertheless, if political or strategic problems arise these must be weighed against the professionally determined solution, in which case management has the final say.

During the entire 19th century, when this form of differentiated functions attained the epitome of its development, the separation of the distinct functions did not really find an expression in organisational structures. In particular, the registry appeared in a variety of forms, ranging from centralised to distributed filing offices.

Finally, by the end of the 19th century the number of registries normally found in a single agency increased dramatically, which sparked the idea of integrating them into the decision making. The organisational development of the registry offices showed a parallel development to that of the forms of files. Both tended more and more to reflect the internal coherence of actions instead of organisational structures or the convenience of handling paper. However, the centralised registry office was precisely

the organisational unit which kept the relations between the actions and cases visible, and which provided the ability to network. The example of the provincial agencies in Prussia showed clearly how difficult it was to find a suitable organisational structure.

3.2.4 Control of operational work

The community of decision making processes is distinct from other areas of the organisation, where the personnel and the financial resources are managed and prepared for their assignment to special tasks. It uses the structures of the organisation, but it does not reconstruct them. The organisation with its permanent structures ensures that the work goes on, even if there might not be an actual matter to deal with. New tasks will be perceived because the organisation creates the corresponding responsibilities and thus lays the basis for the awareness for new problems.

Pre-determined responsibilities indicate that something might happen which should be treated. Areas of responsibility are distributed by means of organisational measures. However, this does not mean that any individual matter is being worked on or that practical work has started. Before starting, individual matters must be acknowledged as relevant within these areas. A constant awareness of external events is needed inside the organisation in order to identify potential initiators of actions. The main prerequisite for such awareness is established by the identification of the various competencies.

The space where decision making processes occur is constituted as a separate level of interaction using, but not altering, the organisational structures. It is situated on another level different from those operations which constantly re-create the organisation, such as the establishment and extinction of membership, the acquisition and internal distribution of finances, and the assignment of locales and working instruments. Organisational structures may be very loose or tight; they may vary from hierarchical to more participative ones. Either way, they can be fashioned independently of the structures of collaboration within the decision making processes. This difference between organisational structures and operational relations allows for considerable flexibility, and opens up new ways of co-operation. It also prepares the ground for new organisational forms made possible through the use of electronic media.

All of the operations occurring during decision making have the character of an interactive system inside the organisation, of an interactive network tied together by an overall task, whilst the persons interacting in it may also take part in other communications without disturbing this common work. This in turn can be viewed as a special sort of communication system using a distinct technique, since it is established through communications based to a large extent on perception and evidence, rather than utterances and exchange of messages [Luhmann (1995), p. 412].

The entire interactive system reveals a synchronous perspective on the work, while examining the single process shows its historical aspect. The flow of operations is

made up of all the simultaneous parallel actions, each of which is part of a single process but all happen at the same time. On account of the form of interactive system this area of inter related operations acquires the character of a large network, exhibiting a specially reinforced productivity.

When examining the special processes of administration it becomes obvious that the co-ordinated finding of solutions in self-organised processes, be it oral or paper based forms, is the most common, and at the same time the most complicated form to use. In addition, its special characteristics appear to make this form especially suitable for the use of electronic media. As shown, tangible writing used in their control is not produced as intended products, but simply because there are no better tools for their control. The material form represents immaterial actions. Electronic media involve much less fixedness of writing, and hence offer more flexibility. Indeed, it is possible that they are even more useful for accomplishing the same aims.

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4 FUNCTIONAL REQUIREMENTS OF OPEN COMMUNICATION PROCESSES IN ELECTRONIC ENVIRONMENTS

The examples from history which have been described in the preceding chapters have served to demonstrate how business processes work. Two main types, based on oral and on written communication, were identified in specifically shaped forms in history. However that does not mean that they might not be useful in adopted form in modern environments. They describe two sorts of ideal types.

The first is the oral process around a common topic constituted during deliberations within board meetings where the topics are selected and proposed by a chair, and minutes written down by a secretary. Chairman and secretary as organisers and observers of the process are external to it, at least during those moments when they act as chairman or secretary, and are not taking part in the decision making itself but organising or describing it.

The second ideal type is the written process also concerning the preparation of a common action as reaction to a common question or problem as in the oral debate, but using writing to co-ordinate the common actions, reflections, and preparations of answers. It uses paper, often the incoming letter or a memorandum, and adds non-verbal written signs and marks, thus creating its own self-recorded minutes consisting of traces unintentionally left over after the solution is found.

This process does not work on the basis of exchanged messages but of shared texts and marks. [Brown, Duguid (2002), p. 189] Internally it works with the creation of physical and visible evidence through the adding of signs and marks, which is expected to be perceived by other participants in the process, whose awareness ensuring the perception derives from their responsibilities that create their requirements for initiating particular activities. Their responsibility covers a certain area of competencies, described in advance in a sort of chart or table. Just as secretaries observe the oral process and take minutes of the decisive contributions bringing the process forth, the registries observe the written process and compare the expressions of intention with the marks indicating that an expected operation was carried out.

More than the secretaries the registries organise the logistics of the process with the help of the records, because their focus is concentrated on actions as the elements of the process instead of contributions to the content of the matter. In the case of the written process it is not necessary to take minutes from an observer's position outside the process.

The registry observes the disposals which plan the single steps or the marks that confirm which happened indicate for the registry what it has to look after. Besides helping to organise the process the records create automatically and unintentionally the self-recording minutes in the action files without verbal information but full of

indicators of activities represented by their preceding intentions and the following results.

4.1 Needs of autonomous open ended processes

Compared to the oral processes the written process greatly increased the decision making ability of organisations by making use of the material attributes of the recordings, especially the fixity of collaborative notes and disposals that combines them durably to other previous writings and lends them the stability of the material written on. The sheets of paper make them stable, allowing them to be transported or locked them away from unwanted sights and stores them for repeated readings.

The stability of writing on such material support has its special significance for the functioning of the decision making process. It provides a snapshot of conditions at an identifiable moment in the past, and maintains it for reference. The action is represented by its traces in a stable way and can therefore be used as a reference point. A subsequent action can make use of this action itself, and not only of its results. It can assume that the previous operation happened, even if it produced no visible results. This referenced action is past and not simultaneous. Only the fact of it once happening is present, which makes the action itself unreachable and unable to be influenced by the second actor, and thus placed outside the responsibility of the person now acting.

The character of a past event is useful because past has the function of stabilising the event and its content, whilst its meaning to later events stays open. So the material support of the writing has the function of fixing the writing in time and letting it become past. And the past itself has a function for the process that it provides unchangeable, and therefore stable, reference points which link the single events together into a chain creating the process.

The relation between the first preceding and the second following event inside the same process was constituted by the first having expected the second to happen and before the second started, the first having been perceived as relevant for the initiation activities. This relation between trigger and response is not a logical but one bound in time. It is the relation of historical developments. One action prepares the ground for the next one without directly initiating or pre-programming it. And also the second occurs on the basis of awareness and of an estimation of the first as being part of an interesting context observed by the potential actor. Whether the action happens depends on the decision of the actor to act.

Such processes need techniques for handling time. That does not mean that they have to accelerate. Instead they may even be slow if the expected result is delivered in time. Time is also not needed in the form of fixed dates. Only the difference between past, present and future is important for internal construction of the process. All three dimensions are to be respected. What is present can be influenced and changed. In contrast, both past and future consist of events which are unreachable for the present intentions. They can be remembered or planned, but not changed. For acting in the

present only those parts of past and future are necessary and accessible which are linked to it as preceding or as possible consequences. These can be reached by memory or expectation.

Memory is needed to link one's own activities to preceding ones in the past. The opposite side of memory is oblivion or latency concerning everything that is not memorised in the moment. As the past consists of much more that just what can be kept in mind, memory and latency are the two sides of consciousness of the past as well as of the construction of the future, and collaborative decision making needs skills to handle both deliberately in common. A committee during a debate agrees tacitly on what has to be remembered and what has to be forgotten because it is not relevant for the moment. Only if a tacit consensus on memory or latency cannot be achieved for certain details is a debate on the content of memory made explicit.

A conscious construction of memory or latency needs special technical skills that can be applied according to the needs of the situation were concentration on special events in the past is necessary without denying the rest, not touching its availability for other references in the future. Memory is not something good or bad in this context, it simply is a certain body of techniques that allows creating references to some events whenever these references are needed. Only because memory cannot be other than selective is it naturally combined with its contrary, oblivion or latency, which signifies those events and contexts of the past that are not relevant for the actual decisions to be made and which are not memorised for the moment.

Stability and transitoriness are the two sides of single events which construct decision making processes. Oral contributions vanish. Their effects rest in the common memory until the deliberations come to an end. Written mark and disposal lists are as stable as their support. However they vanish from attention when they have had the wanted effects.

Stability and transitoriness are not only physical states but also functions of it for the process to emerge. Their relevance for the process is based on how they support memory or latency. How these are produced, ensured and controlled is central for the functioning of the use of written communication. They construct the possibility of always changing memory and of its opposite, latency. Both are functional requirements for the processes and will also be needed for electronically constructed decision making processes.

Both ideal types of decision making process need their own provisions and techniques for memory and oblivion. They depend on the media used for the internal communication.

4.1.1 Use and construction of memory

The decisive difference between oral communication and writing is the stability of the respective forms. Oral processes work because utterances vanish once spoken and raise questions concerning their intentions and circumstances. An utterance is

understood by its observers as an action combined with an intention to produce certain effects. Before the observer can react, however, it is gone and it cannot be reproduced.

A second utterance may be about the first or its repetition, but cannot be the same, because the past existence of the first is part of the message of the new one. The volatility of oral utterances may be regarded as dreadful, if authentic sources seem to be needed. However, during an oral communication the volatility is productive and is used because of its positive effects on the construction of a communication process. Because of its capacity to vanish, the next utterance replaces the preceding one, and so the last word stands until contradicted by the next. No participant needs to abide by his or her own opinion.

This effect creates an open situation in which every preliminary opinion can be said without fear of being forced to stick to it. Because of their volatile effects and the possibility of replacing each message by the next, one utterance can react on another and thus create a chain of operations following and provoking each other. This is why an open debate is a most effective tool for integrating opposing or conflicting opinions.

One typical characteristic of an operational chain or network of communicative events in both forms of processes is that the following steps are not known at the time the preceding one occurs, because they will react to events from before and every contributor can choose his own way of reacting. The contributions are not constructed deliberately, but are instead provoked, with each new utterance being a completely new answer. Neither the quantity of following steps nor their form can be predetermined, they simply emerge. This kind of sequence represents self-constructed processes, and during their construction each new step, in automatically emerging, references the preceding steps.

This kind of sequence constructs itself out of its own history and therefore is not subject to external influences. It is the typical form of a self-referential process. If self-reference is disturbed by interference from the outside the decision making process turns into a production process and the difference of trivial and non-trivial processes, as described by Heinz von Foerster, is felt in practice. The external aspect of opacity of the non-trivial self-referential process is functional for its internal autonomy, which means individual freedom for common decisions regarding subsequent steps, and it can provide the basis for later reconstruction and attribution of responsibility. Those who have no choice cannot be made responsible for their actions.

This external aspect of opacity is common to both forms; however, the written contributions to the advancement of the process indicate single areas of responsibility, that remain visible because they use the fixity of the writings for their own purposes. Only co-operative processes using writing, which work like non-trivial machines, provide autonomy and hence allow choices concerning the form of the process which can later be referred to, analysed, and understood.

Non-trivial processes retain the memory of their own past because they need it for their own construction and therefore find their own means for it. By applying the

method of self-referential creation such systems identify their own history while preparing their own future. This process form facilitates the control of both internal past and future time. The reference to its own history implies memory. If reference points are past and do not exist any longer, memory is needed to allocate to them.

Memory must compensate the volatility of utterances indispensable for the continuation of the process. In this context memory therefore is not guarantied by stability of written texts. It is obviously nothing stored or kept for later reference. It is created in the moment when it is needed, which means that when a certain reference point in the past must be used as reason for the actual contribution it is found.

This memory, however, used inside a collaborative process must be a common memory based on generally accepted methods to remember what happened. The internal memory of both processes is not identical with the memory of the individual participants and cannot make use of writing down in verbalised texts what it contains, because then its content would become part of the communication.

The memory of an oral communication process consists rather of the common ideas about what has happened and why during the common past which may be referenced but not articulated. In the oral process this memory is lost when the meeting is finished and can hardly be reconstructed for a later continuation. The next meeting can instead refer to the first, but takes into account that the first one has already happened and had stopped without finishing a debate. In the written process this memory is also not articulated and conserved, but it can be reconstructed because of the availability of stable sources. In both processes the internal memory is constantly changing and adapting to the actual needs and is refreshed whenever it is needed without being made explicit.

Therefore the basis of the common memory is an internal consensus about what happened and how to understand and use it for the common future. Its only basis is a common understanding of its own past. The consensus of what happened and influenced the present situation in which way is not established by inter-subjective mapping of individual memories of the participants but instead by an underlying understanding which works as long as it is tacit. When it is articulated it becomes itself a subject of discussion or of the exchange of memoranda, because this also provokes contradiction like every other verbal message.

When the stability of writing is introduced into a chain of communication events as carrier of verbalised contributions to its development, the paradoxical affect occurs that development stops. It freezes the dynamics of a process at the very point where writing is introduced. This effect may be used to close a debate. The written text of the minutes especially when read aloud stops any further joint reflection on the matter by stabilising the content of the reached consensus as observable by the secretary.

Stability is also purposefully used for documents with legal implications, intended as evidence of a will to act, and this is conveyed to everyone who reads such documents later. Such documents are the final products of a decision making process, in which the decision is made perceptible to the environment. They normally use

supplementary means, such as stamps and signatures or precious attachments like seals, and formal layouts to stabilise their message.

But their stability does not imply their constant memorability and the same understanding of its message for all times. If the writings are kept in a closed place they cannot be re-read, and thus the stability ensures oblivion, which in many historical situations was filled in with interpretation authorised by the political powers. Memorising the documents is reduced to potentiality and not reality. However, they can be memorised unintentionally if the secure place is violated and that makes writing harder to control than oral communication, which induced special techniques like the use of secret codes, for instance, in official reports in the 18th century. The secretaries in the chancelleries of the early times were lawyers who not only kept the records closed but also provided the appropriate interpretation.

But written stability can be used for a lot of other purposes. If messages have to be transported to a person who is not present or will access the message later or if special precision is needed for longer texts writing provides the tools needed. The stability of materials such as paper also permits note taking to provide relief from the task of remembering. Notes are written down to be referred to later on, and to remember something which should not be forgotten, without writing down the complete text of what should be remembered. Notes work like a trigger to stimulate memory when needed. Unlike messages, notes do not need to be very precise, and they are effective as long as they serve to recall the intended content. Notes therefore have a distinctive character. They are ephemeral, because when they have fulfilled their purpose they are not needed any more. They are hard to be understood by the outside the administration because they are oriented towards actions and do not reveal easily their intentions to others. Third parties understand them if they can interpret them inside the context in the right way.

Writing, however, used for memorability and introduced into an oral deliberation stops the process because it prevents the connectivity of contributions. Each reading of stable writing is a single communication operation and it leaves behind impressions, just as an utterance does. Every reaction to the text can be questioned and compared with other reactions. Different communications can emerge from it, such as asking questions about the writing or its meaning and intentions, but it cannot answer them. Therefore written messages cannot be connected to following operations as they can in an oral process.

Thus whilst stability can serve the purpose of repeated reading, for example of legal documents, in order to maintain the intentions associated with them, it also obstructs the creation of continued communication. A written message simply repeats the factual nature of its content, even if this is shown to be erroneous. This cannot be altered through technical provisions of integrated trustworthiness.

Stability is required if repeated reference has to be made to the same articulation, text, or graphic sign, but it cannot be by itself a form of memory, being able to ensure oblivion at the same time by hindering access, as was the case with the old registries in

the medieval chancelleries, where important documents were kept secret by the secretaries. Although memory uses traces of the past to recall reasons, intentions, and relations, it happens in the present and is constructed when knowledge about the past is needed to explain present conditions. Through the interpretation of the sources it makes the past available for the planning of the future, and in doing so constructs certain perspectives and views of the past.

The possibility of repeated reference based on the stability of writing and its effect to hinder connectivity explains the collapse of collegiality in the 18th century, as would be the case in modern teams. Written reports and preparations cannot be converted into an oral form without diminishing their effectiveness, and the written form does not allow the contingency of the problem to unfold through questions and their subsequent answers.

The stability of written messages introduced into an oral environment disrupts the emergence of the processes and replaces their flexibility with externally defined procedures the chairman is supposed to carry out. The effect is reversed. Instead of open discussions, closed statements are now strung together and the majority, rather than a consensus, indicates the result. The collaborative decision making is reduced to the individual decision of the chairman, based on the numbers of votes supposed to ensure the quality of the answer.

Disposals and task lists, just like other marks and signs on letters, are not intended as messages for a contribution to the contents of the problem and its solution like the written texts introduced into oral deliberations. They do not claim to be part of the process. They just organise it. They are oriented towards the events and not intended to transfer information but to initiate an event. Therefore they have the character of collaborative notes instead of internally exchanged messages.

Communication with collaborative notes or task lists create and use a special form of memory, concentrated not on information and contents but on things to do. It serves the memory of the recipient as an observer of traces which reveal to him certain past actions like examinations of facts or decisions which should be transmitted to the environment. Memory as a link to a relevant event in the past in this context takes place because it is desired and needed by the second party, the one who needs to understand what happened because only this understanding enables action on the own account.

Memory is made up by perception, observation, and interpretation instead of storage. This is a very effective method considering that nothing has to be stored in advance before the actual need is known. The exact amount of memory needed will be available and created by using and understanding traces left as evidence from the past as sources for the reconstruction of events.

Paper provides a stable medium for creating evidence through physical appearance, perceived whenever it is needed. The stability replaces the need to decide in advance when it will be perceived and reacted to. Evidence consists of traces created through the use of marks, standardised by tradition as well as by the common guidelines, and

understood by everyone who is acquainted with them. A repeated perception of stable signs such as task list, may intentionally lead to different interpretations since they are required in different contexts in which different questions arise and different actions are useful.

The kind of repeated communication detrimental to the form of messages on a stable paper support exchanged within collegial boards turns out to be useful for the construction of processes in environments of distributed and shared responsibilities used for the organising of activities in the form of collaborative notes. Here the stability of the paper supports memory not of texts and contents but of the need to act, as long as the action is not undertaken.

After the action is done and outside the group of people responsible for adequate actions, the notes acquire an ephemeral character and are overlooked. Then memory turns into oblivion when it is not needed any more for actual operations.

This comparison of the effects which have oral or written media on communication during a collaborative decision making process can again show how similar functions are provided with the help of different forms and that these functions constitute the process. Introducing writing into the collaborative processes by only indicating what was to be done, not the form of the oral verbal message but only its function for the common work is transmitted from one medium to the other. It is not the verbal text which is written down and stored to serve as message and memory, but the joint construction and control of the process is transferred to paper as the new medium at that time.

This is an important lesson for the successful development of methods for applying electronic media. The memorising techniques needed for continuous communication cannot be ensured by storing texts as memorable contents but by providing sources for the virtual reconstruction of the past. The reproduction of the textual form of a message in a new medium can have undesirable consequences. Just as a spoken and a written text are completely different, even in their wordings, an electronic document cannot be regarded as just another form of a paper document or like an image in an analogue conversion form such as on microfilm.

Just as the analogue reproduction is different from the original in that it points to it and reveals its absence, thus allowing it to be reconstructed in the mind of the observer, electronic documents, even in the form of images or PDF format are composed of encoded data and need at least a decoding device to read them, introducing the additional need to rely on the function of this tool.

Electronic documents have no equivalents in the paper world. Moreover, the first forms of office systems which effected either the exchange, storage, and retrieval of documents, or the use of prefabricated models of processes in work flow management systems, demonstrate further new behaviours, which will make it even more complicated to design tools for self-referential autonomous processes that allow collaborative decision making. However, without them no open processes are possible that can combine different professional specialisation to common solutions of open

problems. In discussions on the effects of electronic forms, stability as provided in traditional environments is often understood only as a means of keeping memory. But the other side is not less interesting. The techniques for using latency purposefully are highly relevant for the construction of collaborative decision making processes and can help to find out new forms for electronic purpose oriented collaboration that allow the collaborative work on shared texts and linked disposal lists. Decisions aim at replacing a problematic situation by its opposite, and hence are more complex than simple choices between obvious alternatives.

A calculation is not a decision, and therefore we can speak of decisions only in problematic situations. However, this means that decision making has to tolerate a constant tension between the problem and the desired solution. Once the solution is found the problem vanishes. This is the aim of the decision making.

The problem and its solution are different and contradictory sides of the same thing, and hence they are mutually exclusive. This is a typical paradox. Only when this contradiction is acknowledged through special techniques adapted to cope with paradoxes can an appropriate solution be elaborated. Therefore latency is needed as the only way to accept oblivion for certain aspects, knowing, however, that anything that was left to oblivion can be recalled when necessary.

The appropriate technique for coping with paradoxes is a working method which allows one side to fade away while the other is being treated, but which is also able to alternate between both whenever required. The other side has to be kept for further reference without disturbing the actual event.

Oblivion is needed, but not by complete destruction or deletion. Technical practices for the intended use of latency provide such a possibility. However, these techniques can only be used in collaboration, because the oblivion needed in a certain situation is only complete if the fact of forgetting is itself forgotten and this can only be achieved by someone not involved in the forgetting, if it is to remain reversible.

Only a third person or instance, uninterested in the forgotten content, can observe the action of forgetting and keep it in mind for later remembrance provided to the first. Therefore the techniques of using latency and memory in collaborative environments need a separation of content and form similar to the labour division between the process and its control as it was practised by the mutual collaboration of *Referenten* and the registry office.

It is records management that has these functions of keeping accessible what can be forgotten for the moment and reproducing it when needed. Therefore it was necessary that the registry could answer without delay whether a record asked for did not exist, something that is much more demanding than to search for existing records.

Records management thus is the external instance which is not engaged in the content of the process but only in its control, a position that can be seen as coming out of the tasks of the secretaries who observed and recorded the collaborative processes, and thus without taking part in them delivered a vital function for its progress as for its communication with the outer world. Because of its position of external observer it is

able to control the ways in which both memory and latency are created and used. However, its involvement can only occur coupled with an attitude of strict neutrality to the process itself which is based on an uninvolved attitude together with the specialised responsibility for the external form.

4.1.2 Usefulness of latency

Latency allows oblivion to occur without hindering the potentiality of memory in a different situation. It hides what is not necessary to know for the moment and for the actual context effectively without erasing it completely. As writing with its capacity of being stored just contradicts memory to be created as needed, it serves, on the contrary, to create latency.

Latency is normally regarded as something undesirable. The so called blind spot is considered to be detrimental, and methods are devised for removing it and make everything clear and transparent. But it is no contradiction. Instead transparency and latency are two sides of the same thing, since transparency as well as memory always is selective and cannot produce a complete copy of what is remembered or presented if only its character of a copy distinguishes it from the original.

Latency, especially in cases of self-referentiality, increases productivity without preventing transparency. This only requires the acceptance of the use of time, meant in a technical manner. Transparency can be provided in a profound way if the operations which are supposed to be made clear are first allowed the time needed to develop. What is not there because it had no time to emerge cannot be seen, even if it can be influenced in its development. Influence, however, is not transparency, but participation, and participation creates opacity to the common outside in both directions for observations coming in and going out.

Transparency may not be necessary for certain achievements within the process. It might even be detrimental for the performance itself and disturb the growth of trust in the present moment. However, it can be accorded afterwards when the events are past and thus unchangeable in a really complete sense.

Assigning latency to certain parts within co-operative structures for other parts, which means the introduction of true labour division together with special forms to transmit working results from one to the other, is a most effective way to establish responsibilities for the correct production of the exchanged outcomes.

Functional differentiation is based on labour division. It needs the ability and the skills to handle latency for those parts not covered by the respective functions which are, however, service units inside the same organisation which produces as a whole the common solution for the environment.

The management of the functional differentiation is the only way to manage the contradictory sides of paradoxes simultaneously. That means that there must be at least three different spheres of responsibility inside one organisation:

- those who take part in the actual decision making and form the process together with constantly changing memory and latency as reference points for their internal communication. This is the decision making function;
- those who manage the process and observe it from the outside and thus also observe and support recall or oblivion of the internal past of the process by providing or keeping the records apart. This is the process management function;
- those who manage the organisation as a whole, including the provision of personal and material resources but also ensuring the function of the internal structures which also covers the functional differentiation between the two first and therefore excludes any participation in the actual decision making. This is the framework management function.

Because of this tripartite structure of functional differentiation it is necessary that management restrains itself from any involvement in the content of the problems to solve. If not, it does not see any longer the services of the second party and cannot control the collaboration between both. Then the capacity of the first to use memory and latency technically for the construction of the process vanishes and the consequence is the loss of the capacity of the organisation as a whole to work with the most effective instrument of collaborative decision making.

The only alternative is monocratic decision, which reduces dramatically the problem solving capacity. A similar structure is more or less automatically installed in group meetings inside the organisation, but its use in written communication must be supported more consciously, and it is the way to make latency usable in a technical sense.

Functional differentiation is especially interesting and useful for organisations which use electronic communication because it allows the use of effects similar to the use of time in its technical sense, that means to create spheres of unreachable and unchangeable phenomena. Its effects of creating latency for those aspects of commonly treated matters that are endowed to others has the same function as the effects of the past, since it allows the actual events and activities to disappear and thus does not disturb those decisions which they are not needed for.

Like past events latent events cannot be influenced by the other operations in the area for which they are latent. Just like the individual communication events in a deliberation that are past, and therefore unchangeable, latent operations are not reachable, even if they happen simultaneously. In the same way latency can create connections between simultaneous operations without the need that they are past, because they are unreachable from each other.

Latency, like the past, stabilises the events by immunising them against influence and this immunity stabilises them and allows them to be used as stable reference points. What records management does must not be done by the deciders, and deciders

can trust in the professional achievements of others. Stability of references provided by latency, as by the past, allows the referring side to change as needed. Just like past events, which are fixed in time and can be identified in a reliable and unchanged way, and can therefore be interpreted under different perspectives for different purposes nevertheless remaining the same, also latent and by this stabilised events allow the same flexibility of their use for different connecting operations.

If latency is not understood, respected, and used in a rational way, it is nevertheless created but cannot be controlled and thus may have the opposite effects. The desire to create complete transparency may have the effect that what should be made transparent, in fact becomes completely invisible. If lack of stability of the preceding events prevents reference, the participants of a solution-finding process will meet in person and make use of discussion. However, this discussion practices closure, because for reference purposes it can only distinguish itself from the environment through exclusion.

On the other hand, if decision making has the time to mature and to produce its results in a written, yet opaque, process, traces of its construction may be left, providing precise insight, with an informational quality, which could never be realised through other means.

The observers must stay outside if they wish to analyse what they observe. A process integrates every synchronised observation as a silent contribution and as an element, which influences its continuation. Even the silent observer is part of the communication network, and even the slightest possibility that an observer may be regarding the scene and has the possibility of reacting to it, whether this actually happens or not, affects the course of the deliberation.

Therefore observers who really want to understand what happens must remain outside, and especially the function of taking the minutes or organising the continuation places the observer outside the context of the process. If they do not they become participants, influencing the outcomes and thus assuming part of the responsibility they wished to understand and which slides into their blind spot.

Stabilised messages meant as contributions have the effect that they could be read by anyone who has access to their physical representation. They can be interpreted in different ways, depending on the interests of the reader. Even published books intended for many readers can be understood differently, depending on the background and the interests of the readers. The writer of a personal letter cannot control the further effects of communication, and is dependent on the willingness and ability of the addressee to interpret the writing in the way intended. With regard to the physical existence of writing on paper or on comparable physical media, it is sufficient to lock them away in a secure place to protect them from unwanted access. Electronic writings, on the other hand, can be easily copied and distributed, and cannot be locked away as easily.

The stability of evidence intentionally left for later interpretation works in a different way. Whilst it offers itself for interpretation, only those who are aware of the

signs and marks can really see them, because they need them for their own operations. For others, it is meaningless scribbling. The communication can be repeated whenever someone examines the writings with clearly defined questions, and determines what happened.

The communication operation relying on awareness and perception is begun by the recipient. It therefore has the same effect of closure, which characterises deliberations, because the recipient selects what is relevant, be it the utterances of someone, or a written letter, or even some artefact and how to understand it. In the case of oral exchange everyone who is present communicates whether or not they want to.

Each utterance is integrated into the continuing stream of observation and understanding, of provocation and reaction, including the silence, which is interpreted by the others as an expression of agreement, regardless of what the actual motive for the silence may be. A similar phenomenon can be observed within the written processes. The joint visual control of the oral process is replaced by the structuring of the process through conscious planning of further activities without intention of communication, and by the perception and understanding by others of the evidence of the written notes as reference points for their own further activities.

A common language, consisting of signs and abbreviations and their syntax, is used by all of those who know how to express the results of their single operations, for example on the incoming letter, and those who know how to interpret them and who require these indications for their own activities. Internally this language offers possibilities for rational and rapid understanding. However, it also makes it rather difficult to understand the records from an external position without knowing the guidelines and the actual practice of writing task lists or placing check marks.

This common language is connected directly to activities which, however, it does not describe. For example, the activities during the preparation of the incoming letter result in identification of the matter, and this identification can be interpreted as actions by those who know the language used for the preparation of the incoming letter, as it is described in the procedural guidelines for instance. If actions have produced signs on the letter then everyone concerned can be sure that the actions were done and that the examination associated with it does not need to be repeated. This creates dependencies and a mutual reliance on one another.

The two main aspects of the written process, where stable supports are relied upon to enable subsequent repeated interpretation of the written signs, are either the matter (and the content) of the case, or the dynamic progression of the finding of the solution (its form). Each of them offers their own connectivity on their side of the uncrossable barriers of latency to each other. Although both are dependent on each other, they cannot be combined. They are in each other's blind spots, and any attempt to circumvent this latency would result in making both of them unavailable for the decision making.

The two separate functions of solution finding and process control each require a special space for their activities. What they actually do is not visible to or

comprehensible by each other, but they consist of events and produce results which are mutually useful. In the written decision making, the quality of the process is represented in the records. It is the stable aspect, whilst the matter itself evolves during the different phases of the process from first being open and recognised, then developed to understand its relevance, to finally being closed again by the selection of an adequate proposal for its solution. Both aspects depend on each other and form parts of a whole.

Hence the records containing the writing, produced by and during the process, cannot be isolated from it because it incorporates the process itself. Records management in this context does not mean document management for easy retrieval, and the records are not produced for posterity or any external insight. If they are, they lose their usefulness for the process, because they just emerge out of the need to provide the logistics for the process itself for its advancement and control.

Records management strategy becomes a process management strategy in this context. The respective status of the process during its evolution is stabilised only insofar as it is incorporated into a draft for the outgoing letter, which can be supplemented or altered to account for other professional decisions on parts of it.

All other texts in the files are either internal memos collecting new information and shaping it in a manner relevant for the matter, or letters from the outside, which similarly supply supplementary information. Reports or statements from other departments in the files also reflect parts of the problem.

The backbone of the records consists of the single processes established by the communication events that produced and used written sings and marks. Each of these events is represented by entries preceding and expecting or often initiating it and others documenting, indicating or making plausible that it took place.

With the help of the unchangeable events as its elements, the problem itself develops during the process. During this development it is flexible and constantly evolving and therefore never the same as before. It is never present or described verbally, because this would fix it and prevent further development. It thus avoids the inflexibility of stability and is allowed to step forwards towards its solution.

Readers of such records obtain the impression of watching someone constantly breathing in until the message is finally uttered. This is the exact representation of what is happening. The problem is kept in mind and its development leaves traces behind. The development as indicated by the traces in the records allows the actual development of the problem to be reconstructed at any moment.

Even if it is never described verbally, it is always present and can be well understood by every person involved in the process. The tacit part of it is as real as the writing and the physical traces. The files represent the aspects of process control. They are not produced to store information and messages for later use or for other persons. They are not products at all. Files emerged only by chance as ephemeral co-operative notes through the control of the process, because the characteristics of analogue

writing on paper, for instance fixity and stability, offered the best means of controlling it. From the point of view of the person who is responsible for the content, the files represent the latent aspect of the problem, which is the process. Their materiality does not touch the decisions, it just supports its organisation.

The files are therefore not regarded as essential from the perspective of the deciders. They are like notes on a shopping list that only support the purchase of the required goods and which is thrown away afterwards. The files just serve to co-ordinate and incorporate the collaborative notes concerning the development of the cases. However, once the matter is resolved they no longer have any value for those occupied with finding the solution. A problem which has been solved is no longer a problem and it is not spoken about any more.

This is the genuine paradox of problem solving through decision making. It concerns records and influences their management. Like every paradox it has two sides with their own connectivity but with an unbridgeable gap between them. Either side can be seen and worked on at a time. The problem and the process of its solution, as such, is not visible itself if the records are seen, but it is represented there by traces used as initiators of actions, and marks indicating when they are done. It is only present in the form of the potential for reconstructing it.

If the process is not finished the reconstruction of what happened up to this step initiates its continuation. Thus the observer is drawn inside if its function as observer is not defined previously as concerning the form. If the process is finished and the solution found and communicated to the outside world the reconstruction enables the observer to understand what happened and why. Whilst physically intangible and invisible, the problem nevertheless occupies the centre of attention, with everything revolving around it. On the other side are the records, which have a material existence. They are quite visible and physical, occupying space and personal resources for their maintenance which cannot be used for other purposes. Their organisation and storage, however, is not part of the decision making and therefore it supports the activities, but is not integrated. In regard to the work on the matter, records are either invisible or perceived as tiresome burdens.

So a paradox exists consisting of the contradiction that control of the process neglects the papers or the control of the papers hinders the process to flow. This is the background for the desire to finally realise the paperless office through electronic means. It is then assumed that the paradox can be eliminated, and a direct focus on the problem can make the work go on in an undisturbed manner.

But electronic records present the same paradox of content and form, and their immaterial or intangible character even reinforces the difficulties because it makes it much more difficult to provide latency as the possibility of oblivion without destruction.

The concept of replacing conventional documents with corresponding electronic forms centres on the content of the decision making, isolating the finding of the solution from its dynamic development. This has severe consequences on the function

of the administration because it sacrifices the ability to use time in the handling of matters.

If the electronic records become more visible in the designing of the work then the processes, for their part, drift off into the blind spot, and the characteristic of latency moves over to the other side of the paradox. Hence document management systems or information systems differ from analogue record keeping systems. Administrative business processes need support for autonomous self-construction. However, this is much more difficult to achieve in the design of electronic forms than is the case with paper.

Latency is a consequence of the paradoxical situation when two sides contradicting each other, and depending upon which one is taken as the starting point for connected operations, hide each other. The assignment of a new task to a person within the organisation presents, for instance, two such contradictory sides. On the one side is a decision concerning the assignment of a new task. On the other side is a contribution to the development of the skills of the person involved, and to further professional development. The situation can be regarded from either aspect at one time.

The assignment of the task uses the perspective of the matter and the work that has to be done on it. It is thus concerned with the content of the matter. In contrast, the assignment seen as a concrete step within a sphere of competencies uses the perspective of the organisation, or of the personnel whose qualifications should be supported, and who should be allowed to gather experience in order to increase his or her capacities. Because both sides are mutually exclusive a management which becomes involved in the concrete matter will lose control over the organisational development.

Only the functional differentiation of personnel management and problem solving as two different responsibilities allows both perspectives to be seen and handled inside the organisation at one time.

During the office reform in the 1920s this paradox led to the solution of removing management from making decisions regarding the distribution of new tasks with the intention to involve it more in the affairs to control what is done. Instead the internal mail room distributed the incoming letters and the recipients, who were responsible for the actual decision making regarding the matter, first checked to see if they received the right letters.

However, the opportunities for reacting to the results of this examination were restricted, and the procedure demonstrates a solution which focuses on the content side, accepting the consequence that the other side is neglected. Whilst there are certainly consequences for the organisation, they have simply drifted into the blind spot. If they are no longer seen, that does not mean that they have disappeared. They only can no longer be controlled.

This creates problems when staff attempts to identify with their work. They know very well that no organisational decision was made about their effective use, which

indicates that there is no interest on the side of management in the quality of their performance.

The presentation of the new incoming matter, or the assignment of new letters by the head of a department, on the other hand, integrates decisions on the organisation into the handling of the matter. The responsible decision-maker, however, cannot alter these decisions. The assignment made at management level has different effects from the sorting of the letters in the mail room. Integrating decisions on task distribution and organisational structures in general leads to a concretisation, which in turn characterises the new matter. By integrating it into a special area of competence it shows how it is to be understood by the organisation as a whole. Such a decision cannot be regarded as correct or incorrect, but rather as a kind of additional explanation.

This happens if both sides of the paradox are accepted, and if provisions are made to treat them in a manner in which both sides remain independent, each respecting the autonomy of the other. This means that not only is the decision of management respected as further explanation of the new matter, but also that the subsequent decisions of the person responsible for the content of the matter is respected as an autonomous product of their sphere of competency.

This manner of collaboration entails that both sides respect the latency of the other for their own work. Management decisions cannot be affected by the decisions of the decision-maker. In the same way, decisions made in handling the matters, both those leading to the resolution as well as the resolution itself, are respected in their autonomy by management. However, as soon as management attempts to become involved in the actual decision making of the matters these structures no longer function. Latency cannot be rejected for one side of the paradox without affecting the other side.

Latency is established and secured through the drawing of organisational boundaries, which may consist of hierarchical competencies outside the actual decision making, for instance concerning the management of the personnel, the construction of the organisational structures, or the availability of resources. It may be ensured by clearly defined competencies that work across professional competencies and mark out different functions. The traditional procedural guidelines, for example, first described the different functions within the business process, and then explained the tools available for collaboration.

The modular structure of these guidelines demonstrated the divisions, whilst the text explained the points where connections for the delivery of special performances were possible. Functional differentiation creates latent spheres of autonomous work, and through the products present for each other functionality is integrated into the whole.

Functional differentiation divides an organisation into working spheres, able to acknowledge the respective latencies without being disturbed in their own work, and without endangering the coherence of the whole. As such it represents a significant

increase in flexibility and integration of specialised technical skills for work on increasingly complex problems.

Latency is useful, and not something to be avoided at any cost. It is necessary for the construction of networks and for fruitful collaboration between different partners. It is relevant whenever contributions of specialists are required, and their products, which could not otherwise be accomplished with the same quality, are required for their own purposes. The acceptance of mutual latency is a prerequisite for functional differentiation. With this technique, contradictory sides of paradoxes can be treated at the same time, because they are worked on within different functional contexts.

Distribution of latency through functional differentiation offers possibilities for the control of networks. It respects differences and facilitates their utilisation, thus offering an alternative to investing in efforts to eliminate them. The autonomy of decision-makers is respected; they can decide by themselves how to produce solutions which are then available to others as input or support for their own tasks. Distribution of latency within collaborative structures cannot be influenced by orders or prohibitions. Latency can only be created or withdrawn through distribution of competencies and responsibilities, and it is prepared before the work starts, not afterwards. The ability to influence actually something generates the need for information and an awareness of new opportunities. It frees imagination and creativity, and it is a powerful instrument in establishing responsibility in advance. The need to act entails the need to know, and therefore initiates the gathering of necessary information. It also leads to the assessment of the usefulness of the information as well as of the writings required during the process.

The need to act generates awareness, which is a prerequisite to the understanding of what ought to be done, and which enables the perception of problematic situations. It provides the basis for re-orienting the communication so that it can begin with the recipient's need to know rather than the impulse of the author to send a message.

Functional responsibilities provide a powerful basis for establishing the need to act as a controlling element within communication events. The competence for controlling the development of the processes orientates awareness towards all external influences on the actual course, the planning of future steps, and the delays, which will be necessary between steps. It is a functional competence, distinct from the function of determining the content.

Both functions lead to internal operations without connectivity for the other. Neither side disturbs the other because they are separated by organisational boundaries. They can exchange their products when needed. The task list, then, is an instrument for the decision making. It is used because the person writing it can rely on the other functional system, namely, the registry, perceiving and using it for its own tasks.

Neither side needs to understand in detail what the other does. It only makes use of the outcomes and can rely on them being available when needed. The latency concerns the working methods and their tools, the professional qualifications and the

organisation of the work. With regard to the personnel, functional competence has the effect of creating the need to act and the awareness enabling persons to decide autonomously in starting their action. This appears to be a frightening scenario for many managers with responsibility for the whole. However, it presents a method of effectively applying the qualifications of the personnel and of establishing genuine responsibility.

From the hierarchical perspective the disadvantage is that the production within such autonomous service units cannot be controlled by means of traditional instruments. However, this form of work is very well controllable. Control finds its anchors before the actual work begins and after it has been finished, for example in the choice of the personnel, in the distribution of resources and in the design of the organisational structures as background, together with the provision of access to tools and instruments. All these are decisions which influence the work, create the spheres available for autonomy, and define the necessary limits.

After the work is done its traces deliver a clear insight on how it went on and who was responsible for what. This is different from control in monocratic agencies where something is right, because the head would have done it the same way. Such control produces repetition and redundancy. It controls through comparison with pre-established models, and is unable to control the effectiveness of the final solution as well as allowing new solutions to emerge. Controlling through redundancy wastes resources and cannot really control quality.

Control in organisations using functional differentiation, and hence working with the distribution of latencies, turns traditional approaches around. It is not exercised by redundancy but has the instruments to influence what will happen in advance without needing to anticipate it. Through the decisions about structure and resources influencing the distribution of competencies awareness is created, because the assignment of concrete matters orients their development in certain directions. However, even before the individual matters are worked on, the qualifications of persons influence the way the work will be done. The possibility of acquiring further experience also influences productivity. These structures provide opportunities for effective measures of control before the actual work begins.

Management has several options for influencing the ways in which work is done, especially through providing tools used in everyday work. Guidelines are amongst these tools. Others include organisational charts and plans for the distribution of tasks. These tools enable the decision makers to select those persons who are able to contribute to the handling of individual matters with their special knowledge.

Furthermore, management can arrange a structuring plan for the competencies, which can then provide the basis for a filing plan. In this way a filing plan will indicate the structure of the competencies and allow the records to be organised accordingly.

These and other instruments are now in use in contemporary administrations. However, they are just plans, and as such present decisions concerning the organisational structure, whilst serving to control the operations. From the outside they

might be interpreted as depicting models of collaboration, and some analyses for modelling workflows use them this way. However, they are based on the same principles as the guidelines and they serve not descriptive but organising purposes. That means that these plans express expectations. They draw attention to what is problematic in the practical work, and attempt to indicate better solutions.

The purpose of this planning, however, is not to provide a model of anticipated future reality. The plans reorganise the expectations of present and prepare for fruitful effects for the future. By later comparing the plan with the actual realisation, information is provided about how things actually function. Plan and outcomes are means of understanding reality, and making use of it. These plans, which were established in advance, can be confronted with the reality because reality left its traces in the records. The planning of the filing plan can be compared with the actual register of existing files, with the resulting confrontation providing considerable information about reality. The comparison produces observable facts, which would not otherwise have been visible.

The records show how the plans worked, and where the differences are. Further planning can take account of these results and fine tune the goals. Hence the records serve as means of using the difference between planning and realisation at different levels, from the actual work on the matters, up to the organisation structure, and even the coherence of the different units of the entire administration can be analysed with their help.

Besides the organisational charts and plans, records play an important role in the construction of functional differentiation in the analogue environment. They can be viewed as a sort of self-produced inventory of events. In this capacity they can serve as instruments for observation between differing functions and areas of specialisation. They respect the gap between both but allow one to observe it.

Records enable the actual construction of shared responsibilities by making use of the possibility of constructing individual working plans for each problem, such that the problems are divided into the distributed solutions of component problems involving the planned integration of other professional qualifications. Shared responsibilities can be supplemented by shared mutual latencies integrating different functions for the control of co-operative time during the construction and the progress of the process.

Through the signs and marks the processes maintain their own history, and are able to reference it in planning their own future. In this way records provide the means for internal use of time through the stability of the difference between the before and after of an activity. After the entire process is finished, this same stability ensures the possibility of reconstructing what happened in the constellations perceived externally from the context of the whole process. Records as inventories of events show the reasons and consequences of actions, and as traces of activities they provide means for their reconstruction.

On account of their character as traces, records are a special type of source. They do not tell what they can tell. They do not present their information in the form of

verbal textuality. They offer themselves for interpretation and understanding allowing the use of the method of reconstruction.

Reconstruction opens the ways to an overwhelming amount of information, which could never be written down. As such, within the process they serve its self-construction while being produced as a sort of automated minutes and logbook for the elementary events. Externally, and after the process is finished, they provide the opportunity to produce information in a way which is especially reliable. This technique of reconstruction works rather prosaically in non-electronic environments. Therefore it is seldom a subject of reflection. When electronic forms are used, however, reconstruction presents special problems. The main problem is the provision of means for memory and latency, which present quite new conditions for electronic records.

Here a new integration of archival skills in administrative organisations might present remedies, because the professional skills of archivists consist of creating stable reference points to unchangeable events and making them accessible for interpretation independent of the support or media used for the originating communication context.

The management of records in the archival repository guarantees latency as long as they are not used and the open accessibility, achieved with the archival processing, enables memory whenever needed. These might be the special skills needed for electronic decision making processes.

4.2 Needs for stability and functions of archives in electronic environments

Memory and latency, both necessary for the construction of collaborative decision making processes, need stability for their references. Latency cannot be managed and allowed to occur if the possibility of recalling what should be forgotten is endangered.

Therefore memory as something that is created when needed tends to be replaced by efforts of continuity if the identity with the original and unchangeable event or subject, be it in the past or a separated area, is not guaranteed for every future moment when it is needed as a reference. Both, memory and latency, need trust in the functioning of the methods and tools. As long as time or some functional equivalent in the sense of reference to events as unchangeable anchors is available, no insecurity will disturb the processes.

Whilst in oral committee based decision making openness of the discussion is ensured by external boundaries created through the fixity of writing that is entrusted to the responsible care of secretaries providing secrecy, in written processes the registry ensured the openness of the collaborative developments of solution to common problems by providing the logistics for the interrelation of expectation and perception. The fixity of the written marks not only ensured the closing of the process towards the excluded environment, ensuring the inclusion of all participants, but it also provided

unchangeable reference points representing past events that are offered as stable foundations for consecutive actions.

Both forms of processes are closed to the outside and therefore can afford to be open ended. They are self-controlled and constructed using their own history. Whilst this history has to be kept in mind and works smoothly as long as consensus is not questioned during the oral debate, in the written process memory can be reconstructed out of the self-produced traces whenever it is needed.

The written traces, the hooks and marks, the disposals and indications of what had been done, deliver stable reference of the past activities and need no repetition. So the model of the collaborative decision making process in both forms consists mainly of using reference to its own history by uncontested reference points in the past that allow connectivity to emerge as needed. These reference points consist of all those actions which marked decisive steps in the growing of the process by adding something new to it and thus bringing it forth.

They are stable because they are past and therefore unchangeable. The fundamental construction principle of collaborative decision making processes is their autonomy and self-reference. This principle does not depend on certain communication media and so for the use of electronic media similar functions have to be provided.

Electronic notes and letters, e-mail exchanges, tables and charts behave differently from what was learnt in the paper world or in the oral communication, having at the same time some interesting similarities. Oral messages follow each other but vanish after being uttered. They are perceived as actions indented to convey a meaning and following one another in a linear sequence, leaving behind nothing but perhaps different impressions and understandings by different listeners.

On paper different remarks in the margin of the text can be seen simultaneously and can be attributed to a sequence of actions in time. They are normally put down and perceived individually. The support grows older and itself adopts signs of ageing. The character and space of the material support are integrated into the interpretation of the message that the reader tries to understand.

In contrast to other communications electronic writings neither vanish once sent out nor do they grow older or relate to certain moments in time by themselves without external log information as did paper writing, even without dating. In electronic forms copies and versions may exist without indicating this character of being a copy, and their creation time is no longer identifiable without an external time stamp. Electronic files are flat, in the sense that everything added or altered is synchronised to the preceding and no time span to something added before or after can be distinguished. This timelessness of electronic records prevents them from being historic. They are always up to date and that is what they are needed for. They allow forgetting what was before and do not worry about what will come later. However, this oblivion is absolute and does not allow recall of what was replaced or erased, without even showing that something was erased.

The inherent history of a paper based document is a central source for evaluating its trustworthiness. Attempts at endowing electronic records with the capability of demonstrating their own trustworthiness and capturing their own development, that means of behaving like paper documents try to work against this loss of time. However, it is just what constitutes the special usefulness of electronic recordings.

Electronic records are not documents in the paper sense. They can be seen as representatives of evolving communication processes more similar to oral communication. Instead of making the writings themselves historic artefacts, and thus depriving them of their usefulness, an alternative might be to extract traces of the events in their development out of all other electronic communications, stabilise them and thus make the events themselves reconstructable with a reliable time stamp instead of using their traces on the paper for this purpose.

Here archival techniques may already play an important role inside the processes. Archives must not require stable documents to be transferred into their custody before they are able to fulfil their tasks. Instead, they can offer techniques which help to fix those writings necessary for stable reference points inside the processes.

The core archival techniques consist of creating reliable linking possibilities to events fixed in time by providing their representatives in unchanged form for interpretation and reference. Archivists are accustomed to providing access to material tangible traces and to allowing them to be used as reliable sources about something which happened in the past and is no longer there. The developments of archival science in recent decades proved their deeper roots in functionally based methods.

These methods may today be the bases for a new form of support for autonomous self-referential decision making processes that work like non trivial machines and thus the successors of records managers in electronic environments follow the secretaries of the boards who ensured the functioning of the open discussion by looking after the writing and after them the registries which delivered the logistics using the papers in the form of action files.

Perhaps persons with adapted archival qualifications are the new knowledge officers observing the processes, delivering access to memory and guaranteeing latency, while the actual process management and its logistics and collaborative time management, based on electronic media, does not need registries in the old sense. However, these knowledge officers will have very different tasks compared to records managers. While records management as well as the planning of systems for electronic communication are organisational tasks supporting the actual decision making, knowledge management is concerned with providing and opening access to sources and with delivering tools for their interpretation and understanding.

Archives have developed their methods for the preparation of records to be usable as sources mainly for history research. The methods needed to open paper records for access by the public, not knowing in advance what their questions will be may be the same which help the processes to emerge without external influence by providing them with traces of their own past events.

The archival methods consist of three main elements based on thorough analyses of records and their surrounding contexts in the administrative tasks from which they originated. These elements are appraisal as the choice of the representative events and the corresponding traces, description as the identification of the activities or purposes that led to the creation of the traces, and preservation for providing unchanged information about the originating context by keeping the traces unchanged or making their original form reconstructable.

Perhaps the new rise of archival science which can be observed world wide is more closely connected with the debates on knowledge management than archivists are conscious of. A functional archival theory, freed from the handling of material items and concentrating on targets and methods, can concentrate on the underlying functions. It might develop generalised methods of providing access to and enabling interpretation of traces resulting from past actions in whatever form they are left over. This supports the one side of handling the own time, the past, inside open collaborative processes.

Knowledge management on the other side develops methods and techniques for coping with the increasing need of useful and timely information as it occurs in situations of decision making concerning the future steps which are planned to be undertaken. Both are complementary, and together they describe a new concept which sees the whole timeline, and thus can respect the function of time as creator of stable reference points for the present activities.

Archival theory and knowledge management combined replace information theory as the theory about bits and bytes by a concept of networks of practice. It seems that in these new approaches archivists can play a prominent role. Archival methods may stabilise the reference points and knowledge management may allow making use of them. The archival approach ensures flexibility in understanding relevant events and knowledge management provides the techniques for using memory and latency as needed.

During the 19th century standards of writing increased, notably throughout the western world, allowing for greater capacity in understanding the world and for acting in more complex structures. The defeat of illiteracy occurred at considerable cost, however. All forms of oral communication became stigmatised as obsolete, and hence the skills needed to use them in an instrumental and technical way disappeared.

This meant that practical techniques for exploiting the differing effects of oral and written communication remained unexplored, and reasons for using one or the other were never systematised. The lack of such techniques, and an accompanying theory explaining why the different effects are produced, becomes evident now that a third form, electronic communication, has entered the scene. And the loss is felt, as it seems that abilities in handling oral communication in purposeful ways would be useful for coping with timeless electronic communications.

Whilst electronic communication has some characteristics similar to oral communication, especially volatility, it can also behave like traditional writing when it

can be re-read in different situations and can be deliberately transmitted to third parties without the author's intention. With such new techniques ability in the efficient use of each medium is needed more than ever, something which demands a thorough understanding of the effects of each on the message to be transmitted, as well as on its subsequent interpretation.

Oral utterances have other effects than written messages, and the deliberate use of oral communication has always aimed at achieving these effects, such as the control of who listens, and the volatility which does not create traces and does not bind its speaker to the content in a legally fixed way. Particularly in organisational situations in which collaboration and teamwork is important, oral communication is irreplaceable because of its effects on the openness of the exchange of opinions and on the creation of cohesion.

The administrative shift from the predominance of oral decision making to that of writing during the 16th century cannot be regarded as simply a byproduct of historical progress. Rather, it represents the adoption of a new medium providing functionalities required for new forms of work. In particular, the need for precision in presenting complicated inter-relations, as well as the ability to set aside the communication, forget it, and refer to it again whenever necessary, required the stability of a support like paper.

However, electronic writings cannot be set aside or hidden away and later referred to, because they do not tolerate that their forgetting may be forgotten. They do not allow latency, and memory therefore tends to be reduced to enduring presence.

But then no new aspect can replace a former one, nothing may be forgotten, memory just is storage, and everything contributes to a constantly and rapidly growing amount of actuality, which is soon no longer manageable, and creates the impression of information overload.

4.2.1 Characteristics of digital recordings

Digital media have widely been accepted for communication in networks. Nobody who has once tried e-mail, independent of age, would deliberately refrain from it again. It offers new functionalities for efficient and fast communication. No logistics are necessary, such as for a paper letter which needs to be transported. However, it can be stored and re-read later.

At the same time it separates the text from its author differently from a telephone call, which needs instant reaction, and therefore electronic communication can concentrate on the subject without being impolite. Furthermore, by integrating a received message into the answer it creates an inter related chain and avoids explicit references, pretending unchanged citation, which, however, is not controllable by the recipient. The message can be forwarded and sent around deliberately and in this way many more copies are produced than ever were in paper-based environments. However, these communications also tend to be less controllable by their authors.

Electronic messages normally are stored together and deleted according to certain delays.

Electronic documents produced with word processors, spread-sheets, presentations, or reports form databases which may be exchanged as attachments to electronic messages. They can, however, also be available to different persons on the same server who add their changes as needed. A login protocol or a set of metadata may allow the changes to be followed, however, these metadata are software-dependent and not part of the document itself.

Digital recordings are introduced because of these new characteristics, which present changes with regard to all of the effects wanted when paper was introduced into collaborative decision making. Electronic records are not stable, and the expression of an intention, or its comparison to a reaction, is not what they support. They can be stored or erased without any effort and without leaving any traces behind. They can be copied and sent at will. Or they can suddenly disappear if a disk has a mechanical error, and if it is indecipherable to a new generation of software.

Written decision making processes accumulate their own history for their own purposes of reference. Electronic records do not accumulate their own history by past events leaving their traces on their surface and accordingly indicating their trajectory. They are needed for these effects of timelessness. Electronic records have content, but no characteristics.

Traditionally the handling of writing meant the handling of things. Locking away the papers was a reliable method of preventing them from being viewed by unauthorised parties and of ensuring oblivion. The envelope of a letter does not prevent it from being opened. It is more that the opening leaves behind traces or the plausibility of its theft that makes unauthorised reading unlikely.

Any recording in physical form is linked to the material which serves as its support. Now, writing and its support are separate, and writing is freed from the time bound character of the material, even if it is considerably more dependent on the functioning of the material world. Electronic features such as digital signatures try to achieve an effect of stability or closure, however, they cannot create traces and therefore they try to prevent alterations from occurring at all, which is a completely different approach from identifying changes by the traces they had left on the material artefacts.

Oral cultures had different means of handling content and assessing its correctness. They were accustomed to the immaterial and short lived character of uttered messages. When writing appeared they were afraid of losing their memory [Havelock (1982)]. Retention was achieved by repetition, facilitated by the use of formulary expressions. The words might change slightly during repetitions, but that simply adapted the message even better to the changing needs of memory. If a story is not told anymore it will fall to oblivion. If records on paper are to be destroyed a decision is necessary. Indeed, changing needs for memory related to special written recordings often initiates their destruction. It is sufficient to think of destruction of records during revolutions or

wars in history [Brown (1997)]. In contrast, if electronic records are concerned, a decision is needed if they should be kept. If they are neglected they cannot be read and used after short delays. This not only turns the decision around, but also indicates that additional decisions are necessary, consuming time and resources.

The Canadian archivist Hugh Taylor introduced the notion of conceptual orality to characterise electronic recordings. This term takes into account the volatility of records in electronic form as opposed to the traditional stability of writing on material supports. Electronic records nevertheless also have characteristics of tangible writing, since they can be stored, something not possible with oral utterances.

Electronic media can offer both characteristics for the same recordings. No conversion between both forms is any longer necessary to react in a volatile form to writing or to capture the fluidity of exchanged communications and to stabilise it. Differences between the conventional use of speaking or writing and electronic recordings concern, in essence, the behaviour of recordings in time, depending on stability and volatility. Hence they impact on the capacity for constructing collaborative decision making processes, and their special forms and effects need to be analysed carefully.

Recordings in electronic form all have the double character of fixed writing and volatile oral communication. On the other hand they can only be either verbal texts or images. The volatile character of texts seems to be circumvented by the conversion to images, often in PDF format, which, however, also only consist of bits and bytes and does not show any traces if altered and can be copied at will. The PDF image supports the thinking in terms of microfilm copies without there being any original [Levy (2000), p. 27]. The PDF image captures nothing but the appearance of the text in a certain hardware and software environment, whilst the text itself may very well develop differently.

A new bifurcation is introduced into the toolbox for communications. Something, which in the analogue world was experienced as a unit, consisting of written text in a special layout and form perhaps together with marks in the margin, becomes divided into two contradictory sides. A new paradox is created and demands strategies for handling it. Electronic writings cannot be perceived as both at the same time a text that can be worked on and as a visual presentation, freezing it, whilst writings on paper, in contrast, cannot be thought of other than as the unit of text and layout together, always offering the possibility of adding marks.

Volatile oral communication has very important visual aspects in the appearance of the gestures and mimics of the speaker, which support the intention of the transmitted message, confirming or even contradicting its verbalised text. The visual parts of the utterance also may connect the message to preceding utterances and offer supplementary information about what its author intended.

The written message, too, makes use of visual communication. The materiality of paper, the layout and division into paragraphs, the punctuation and the case sensitivity are visual supports for the understanding of the intention of the message. In the written

decision making process texts finally become reduced to objects of communication, instead of their means, giving way to mere layout and visual communication. In any case, however, text and visual surroundings still belong together. In both forms of communication, oral and conventional writing, the visual aspect plays an essential role for the understanding of the meaning.

In electronic communication, for the first time, texts are separated from their visual appearance. Whilst the text can be repeatedly read, in contrast to oral messages, it is not sure that the second time the text has the same form as before. It can be transformed into any form whatever, using any alphabet and font size desired, or to an image. In contrast, however, to the layout of a paper document electronic images are not supposed to be altered by any additional mark or sign. They cannot be supplemented by marginalia or check marks in a comfortable and persistent manner, as can be done on paper. A similar effect was used with microfilm reproduction. The photographic reproduction stabilises the appearance of the reproduced document at the moment when the photo is taken. This allows one, later on, to identify traces of ageing or damages on the original, which occurred after the reproduction, by comparing it to its image. Images on tangible physical supports are embedded in contexts provided by the material and its own time boundness. Electronic images, on the other hand, are isolated items lacking connection to material support. Traces left on the material cannot show anything about what might have happened to the files.

Document management systems often use optical storage to prevent the images from changing. However, these systems cannot provide means of retracing and analysing changes which have occurred, because alterations do not leave traces as they did on paper and they cannot control a change in the representation of the document owed to a different version of the software.

The same document on a physically unchangeable disc may be reproduced in different ways on the screens of different computer systems. Thus reliance on unchanged stages has to rely on efficient technical procedures and assume the absence of any deviations in a rigid way not necessary in the paper environment. When traces are inevitably left on tangible presentations of texts or documents changes are not made impossible, but are de-legitimised and their prevention from occurring worked on a social level.

With digital recordings the prevention from changes is attempted to be achieved in a technical way. If the technique cannot be trusted then it will not produce the results wanted [Smith (2000)]. All images are frozen movements, while the text is constantly evolving without stabilisation. The next version can replace the preceding one without leaving visible traces on any surface, binding, paper quality, or otherwise. Both digital forms, text and image, are like snapshots.

Electronic media can provide the function of writing text with the ability to alter it whenever desired. However, it has great difficulty in capturing the intention of doing something with this text, whether in regard to change of wording, to the performance of another operation through text, or even simply to action without text. On paper,

notes can be jotted down for organising upcoming activities. They are not meant for eternity.

Ephemeral notes, written down on paper, cannot be reproduced in electronic form. Their loss shows that ephemera can be important. Electronic records created and used in ways similar to paper based documents, regardless of their volatility, miss this important function of paper of being able to show expectations and the accomplishment of tasks through direct evidence. They are not able to assume an ephemeral character. However, they do produce the same effect of double contingency when read like normal texts and oral messages, because that is a social effect of communication which cannot be eliminated through technical procedures or attributes like the digital signature. Even certified texts with digital signatures have to be interpreted to be understood, and their consequences can be very different, depending on the awareness and interests of the reader. It seems that new techniques for the use of electronic forms need to be developed with this in mind. Paper based communication offers many more ways of communication than just the writing down of texts. Whilst electronic writing cannot offer the same forms as conventional writing, it offers new and different functionalities, which allow new ways of communication.

The openness of records for the use as sources freezes the electronic recordings, because they have to be used repeatedly as reference for subsequent, and perhaps different, interpretations. So one strategy may consist of creating an openness, which at the same time respects the needs of the processes to develop autonomously.

Dividing each process into its elementary events, and then preparing them for reference first inside the process can accomplish this, and then by making it transparent and preserving it for later sights from the outside, after the process as a whole has been finished. For this purpose electronic reconstructability will be essential as a different, yet concomitant, function of the actual decision making.

4.2.2 Reconstruction versus storage

The distinction between functionally separated spheres, for instance between decision making by the competent staff and the control of the process by the registry, creates a gap which cannot be bridged by direct communication, but both can observe the other. The registry cannot and must not react to an event inside the process, it cannot write a disposal or draft the answer after a contribution had come in. However, the participants of the process can refer to the records prepared by the registry during the control of the processes. As the records contain unintentionally left over traces of preceding events they can be used as sources, and are interpreted to learn about what happened before.

Knowledge concerning the own process and its past events is created in the course of the process just as and when it is needed. The technique used for this knowledge creation is the virtual reconstruction relying on the traces and the plausibility of certain inter-relations. Reconstruction can be viewed as a special method for understanding

and using anything observed as a source for information. As a method of choice for knowledge creation, reconstruction is the opposite to storage of information. The main differences are:

(1) The creation of a distance as a prerequisite. What still endures cannot be reconstructed. Only those actions which are finished or cannot be reached for continuation can deliver phenomena which can be used as sources;

(2) It is initiated when needed, hence it is user driven;

(3) It needs special methods and techniques on the part of the user for the identification of particular needs and for the formulation of hypotheses including the ways to verify them;

(4) It allows access to more information than storage can ever provide;

(5) And it is a critical method, which allows the evaluation of reliability through the user depending on his or her own estimation instead of external approval or mapping.

The integrated construction of plausibility makes reconstruction a most useful way to access information, because it delivers both verbal texts as well as contexts and explanations, and therefore allows one to estimate authenticity and reliability when it is needed. Information gained in this way is produced by the users themselves, who therefore know how far they can trust it and for what purposes it can be used.

The electronic paradox of constant change leaving no traces offers the possibility of working with renewable recordings which can be combined and compared in every way imaginable. This helps in keeping track of what really happens, and in adapting the writings to the development of what they reflect.

A data file can be updated whenever new information is entered. A manuscript can be re-worded as often as desired. If stability is required, however, it appears as the opposite.

With paper, stability is guaranteed by the material nature of the support which fixes a signature under a cheque to the text and numbers that it supports. Seals can show who approved the content of a legal document. Ageing or alteration can occur with traces being left, showing what happened to the writing. All this is no longer available for electronic writings.

Electronic records represent both timelessness and inherent evolution, something which could not be imagined before. The use of electronic records as sources does not need to wait until the actions planned and organised with their help are done. Opening them as soon as they are produced for internal recall will stabilise them so that can be kept even after the process itself had finished.

Both, internal reference and external access need the same techniques being able to provide stabilised traces. That means, that quite explicitly all exchange of messages and attachments, all jointly worked on databases or text files, if they represent a decisive addition to a running process, can be made evident together with the name of

the person and the date of changes or sending as information about the communication event. Stabilising and opening this individual complex as one single communication operation for gathering knowledge about it and its predecessors or consequences does not prevent the communication event itself from further connections as it would be the case in the world of tangible recordings.

In practice today e-mails accumulated in the account of a staff member mix up all processes together with non-process oriented communication in which the member took part. E-mail software might instead perhaps be able to offer different identities usable at the same time for the different processes in which a person is involved, and thus store the e-mails according to the processes they belong to together with an easy to use structuring tool for the projects and the according identities.

The interpretation of electronic records for internal or external purposes needs sources which represent frozen moments indissolubly bound to time. The main problem is that all achievements must be planned with the help of functional differentiation as a replacement for past, because the difference between past and future is no longer available for digital recordings.

The difference between the actual growth on the one side, and the creation of traces that can be used as sources during the operations on the other, is an essential element both for the construction of decision making processes themselves, as for any later reference. However, this can only be constructed as a social functional difference, not as a physical or technical one, even if special techniques will be needed for it. The social functional difference, achieved with specialised techniques is what is offered by archives as service for the construction of decision making processes.

Because archives have been traditionally used to provide left over traces from collaborative decision making for the reconstruction of past events and interactions, especially for historical research, whilst keeping them unchanged over time, they have developed methods and theories which can be useful for the new challenges. They have experience with the preparation of leftover traces for use as sources and for interpretation.

History as a science consists in the interpretation of the past as the basis for the collective memory of society. It knows how to work on new questions arising from new needs to react to political or other developments which present new questions concerning the roots and the reasons of present phenomena.

The same sources can be suddenly seen in a different light and thus convey very different information. Sources are something different compared to information storage. Accessing information requires more than just reading. Sources must first be understood, and therefore they require a different presentation. “Efficient communication relies not on how much can be said, but on how much can be left unsaid – and even unread – in the background.” [Brown, Guguid (2002), p. 205]

4.3 Archival Functions in Digital Environments

Archival methods developed during the last hundred years out of practical experiences with recordings of all times, left over by administrative organisms, with the aim of opening them for use by the public. Archival holdings consist of the traces of decision making processes left behind during the actual development of these processes.

These processes may be very obvious, or hidden behind the documents and charters which are the end products of the decision making. Their traces are interesting for the users of archives because they convey more or less intensively how they came into existence. In distinction from library materials, archives are not produced for third parties, or for posterity. This is what makes the material interesting. They are offered for new uses, not intended by their creators.

Only during the last years have archivists been becoming worried about the conservation of their own present time for future generations. They tend to fear to lose their position as curators and custodians of the past and present time for future generations. Yet this perspective can well lead to making them irrelevant for the present.

Archives have a lot of services to offer for the public of the present times, the most important of which being the ability to deliver to the public fixed and trustworthy reference points for the own activities by creating an unchangeable nature for traces from the past, and that means transparency of public administration or very other organised activities. Archives create the past - or a functional equivalent for it – in the sense of unchangeable and unreachable, yet accessible and understandable events for the purposes of present users. Archives offer to society the complementary potential to choose between recall and oblivion, and they thus allow the use of memory as well as latency to cope with ever greater time spans and complexity in the social interaction. Archives are often supposed to be places where memory is preserved. However, what appears to be preservation of memory is, in fact, the possibility of creating it.

Archives make history available in present times in a technical sense, which means that history is present as activities. The activities are represented by their initiatives and achievements, in other words history is present in archives as a network of relations between events in time, which can be reconstructed by their traces. Archives provide the sources necessary for the production of memory, but leave it up to the users as to what they want to know and how they actually accomplish this. In this sense archives are facilitators, not initiators.

4.3.1 Meanings of the core archival competencies

Archival professional skills will in future be useful outside the archival institutions for the construction of the processes themselves without, however, making archives as

repositories were the public can access administrative and other records irrelevant. Because archives have developed techniques for making records available for access, this is a key to maintaining the division between actual use and growth of the recordings on the one side, and their closure and quality as source on the other.

The techniques used and developed by archivists to make records available for secondary uses consist of the three key elements: appraisal, description, and preservation.

4.3.1.1 Appraisal

Appraisal selects those parts of the whole which ensure their usability as source, description makes recordings available for third parties and preservation designs, manages and maintains the physical and technical framework for guaranteeing unaltered recallability. These techniques are independent of the 30 years rule about access by the public. They are indeed needed inside the administration itself because they can create stability of reference points without which processes cannot emerge in electronic environments.

The use of these methods inside the processes does not question the separation of administrations and archives, which provides open sources for external observers. It just integrates archival qualification into the work of the administrations.

Archival appraisal is the technique to select what can serve as reference point for further reference. The action of selection stabilises the events by attributing new value for the new purpose of retracing what happened. It identifies those parts of the whole which are representative or noteworthy, and selects them for being preserved as a model of decisive events.

This means that before archival processing starts all traces first have to be analysed to understand their purpose and their relevance for creation and original use. They are viewed and analysed as representatives of actions. Those parts are retained which provide an impression of what was done and how it was achieved; other records, which convey information of interest which cannot be found elsewhere can supplement these.

The appraisal process is the first step in converting actions into potential sources. The pressure on the administration to decide whether they are still needed or not is an effect of the activity of appraisal, which turns the perspective around by viewing the records within the context of their creation. The activities which caused the records to emerge are the subject of observation and investigation, and therefore they must be finished, because of its built in effects of integrating any observer as long as they are still working.

The question at hand is whether this approach, which until now has been applied by archives when the processes are finished and the files are no longer needed, could be usefully applied during the processes themselves to provide them with self-created and left behind sources for reference during their self-construction. However, this sort

of archival perspective can be offered to the process only as a method of providing reference to relevant events and thus as a support, and it can be supported by decisions inside the process about enduring need of certain e-mails or other recordings for a certain case. Such evaluations also occur in the traditional paper environment when a person decides to write a memo about a telephone call and subsequently files it, or when certain emails are printed out and filed whilst others are not.

It could even be imagined that both perspectives co-exist. The events needed for reference may be views frozen in records, databanks, or images, which are still evolving in other contexts for different functions. These frozen views must not be thought of as merely visible representations, as images or printout. There can also be other methods of making them available for use as sources and as possible reference points. This is a preservation issue. But before preservation methods can be applied, the possible sources or references have to be identified with the methods of appraisal.

Appraisal inside an organisation and applied in a parallel structure outside a network of decision making processes offers the external observation and its results as a service for the process and its self-construction. It concentrates on identification and selection of those events which were constitutive for a certain process. As in the paper world, that implies a two fold activity.

The decision makers have to decide that a certain event is finished and that the next one can happen, as it can be seen on paper records with marks indicating that the respective operation of a disposal list is done. This event may consist of getting the approval for a certain wording by a specialist, it may be the collection of supplementary information, or a telephone call delivering new aspects of the case.

The electronic records may be an e-mail exchange, a database extract, or the addition of changes to a document. When these operations are finished the next step can be started, being the reformulation of a draft, the recopying of the changed text into a letter, or the sending out of an attachment. The decisive steps for the process might be filtered out from a common server if they all are identifiable by the same process ID and a personal ID, constituted just for this case and all recordings resulting from these steps might be recopied for the knowledge officers, while the decision makers also keep what they need for their continuing work. However, at any time they can receive authentic copies, freed from double citation in e-mails or multiple versions and structured according to their growth from the knowledge officer inside the context of preceding and following events and of the whole network of process bound communications that which released for organisation wide consultation.

In such a scenario the knowledge officer disposes of a mirror of all process bound communications and constantly analyses the relevance of single communication operations for the continuation of the process according to evaluation marks of the decision makers. Equipped with software tools for the comparison of texts, charts, tables, and others, for storage and management of files and structures, he would be able to eliminate true doubles and identify collections of information gathered during the decision making and eventually useful for other tasks.

This work might be supported by drafting and updating selection models based on standardised structures of the communication, derived from the analyses of the main responsibility and on the singularity or duplication of individual cases.

The selection of relevant electronic records which can deliver authentic reference points for the processes eliminates what is not necessary. However, this elimination condenses the information capacity of the rest for its secondary use as sources. The action of appraisal, comprising the analyses, as well as the actual selection and destruction of the unneeded parts, sets a term for the further development by turning around the purpose of the records from working tools to sources.

The actual elimination of the rest is a necessary part of appraisal because it makes the decisions effective. It demonstrates that everything which had been appraised could have been destroyed as ephemeral, and meanwhile irrelevant for its primary purpose. What was kept effectively can serve the new purposes.

This action of appraisal adds a new quality to the records given supplemented information. It needs, however, a documentation of the appraisal action indicating the questions and answers that led to the final decision and of what was not kept and why. This supplementary information allows the users, which means the decision makers, to understand the attributed values and to use them for their own work. It is not necessary to set value standards for the appraisal. The main requirements are criteria which are understandable by third parties who can then view the records through their own lens.

4.3.1.2 Description

The analyses made before the appraisal decisions also guide the choice of methods for description. Its methods, too, depend on the internal structure and the contexts of the recordings. Archival description produces finding aids which offer different research strategies. As records present more or less intensively the activities from which they emerged, and even if those activities are not very strongly represented, for instance in series of e-mail or minutes, they nevertheless were collected for the business' purposes, and thus in some way were structured by them.

Therefore the records bear traces of these purposes in their structures. Organising them in their original contexts makes the structures evident and thus delivers information in nonverbalised form. Digital presentations of the description of records with structured online finding aids offer combined research strategies including hyperlink navigation, full text retrieval or browsing through the full text of the finding aid.

The structured presentation offers the chance of investigation leading to the discovery of new, unknown or completely forgotten results. The aim of description is to enable the user to find relevant sources for open questions. It consists therefore of a combination of building up a structure for the finding aid and of formulating titles for individual descriptive units, both representing the original purposes for the creation and the use of the records.

Archival description reduced to the description of single paper files presents similarities to cataloguing books and often document management systems try to learn from library methods. There are, however, important differences between catalogues of single items such as books, articles, or documents on the one hand, and archival finding aids on the other. Items in catalogues are listed with a description which identifies them as precisely as possible.

Libraries use special standards for making the respective descriptions of the same units in different institutions look the same, thus enabling the same item to be identified in different places so that the user can identify the book cited in a publication as a copy of the same in his own library. Items are listed and they are brought together in a certain arrangement; for instance, in the alphabetical order of authors. Their sorting occurs according to external patterns. Classification schemes in libraries are constructed according to areas of knowledge or anticipated use. These schemes exist in advance, and items are integrated without having any influence on the scheme itself. This is the most adequate way of making books and other publications accessible.

The archival arrangement designs the structure scheme of a finding aid out of the special conditions of each record group. The archives bear the criteria for their arrangement in themselves and the classification scheme of each of them illustrates their internal relationships which came into existence along with the items, and archival description attempts at representing how they belong together.

The structure of finding aids thus shows the internal relations in the records group or collection. There cannot be an abstract classification scheme for them. The structure as such conveys information to the users in a very dense form without wording. It represents the entire body of activities, and demonstrates how it was divided into its parts in the course of practical work.

The structure of an archival fonds is the result of organisation, rather than classification. It has the entire body of records in mind and subdivides it into separate spheres according to the actual work during which the records emerged. Whilst these spheres may in general correspond to organisational structures, in many cases they do not.

The structure of a fonds reflects indeed the inconsistencies among three different levels inside an organisation: the organisational structure with the distribution of responsibilities, the actual network of tasks with the communication structures resulting from them during the running processes, and the filing structures used by the filing office, a registry or the secretary.

All three might have been different without the work itself being disturbed. In contrast the differences between the three structures allow for a greater degree of complexity. The decision making processes as temporary units that need and use all three control it, and thus represent temporally limited combinations of them. The internal structures of the paperwork, therefore, follow their own patterns, which have to be analysed and understood before the archival processing can begin. Through the

archival method of structuring and describing the collection all three levels can be revealed, and they can then be observed by users in their actual working through their effects on the structure of the records.

The units in archival finding aids are combined items which do not exist for themselves but refer to the chains and networks of operations which produced them. The less that records are used as messages for third parties and the more they are used for the internal organisation and construction of processes, the more they lack independent meaning. The form of the processes they supported, and their reflection, defines the external limits of the units in the filing system.

Records cannot be understood if they are not seen as representing something other than themselves. Therefore titles of the units in archival finding aids indicate, if possible, the action from which they emerged. In the German archival tradition, which was strongly influenced by the use of action files in the agencies, the title indicates the intention or the reason for the creation of the records, which means the purposes for which they were needed and the actions from which they emerged.

The finding aids that combine non-verbal presentation of the network of actions and the verbal descriptions of residues of collaborative events encourage a specific method of investigative research, and open new paths to knowledge. Their main purpose is to enable the discovery of potential sources in unknown areas, and thus to help recall what was left to oblivion, in the sense that also the action of forgetting was forgotten.

With these inventories, however, reconstruction is possible. The traditional discovery of archival sources through the use of finding aids advances from the top to the bottom by inference, and its main advantage, is direct access to interesting areas by excluding, on each level of the arrangement scheme, broad non-relevant areas. The same method of inference and investigation, which is used to interpret records, can be applied to access them and to find previously unknown information.

Archival finding aids transmit dense non-verbalised information. The arrangement itself contains clues and information for those who study it. The formulation of the title and the additional indication of the current dates carry informational potential, which is not specifically expressed but which can nevertheless be detected. Finding aids are inventories of reconstructable, interconnected, and unchangeable actions prepared for interpretation.

On-line finding aids are the consequent further development of paper finding aids[7]. In their electronic form, they provide even better support for the investigation of activities than on paper. Electronic finding aids offer navigation tools, and tools for internal orientation and external links to higher level guides or to cumulative indexes or search engines.

[7] An Example of such approaches to on-line presentation is schown by the description system MIDOSA (www.midosa.de). The American standard Encoded Archival Description EAD is an internationally implemented effective tool for structuring descriptive information (http://www.loc.gov/ead/).

They can also offer supplementary information related to single units or to arrangement groups in texts, which are normally hidden but which can be opened with a mouse click on a button. The supplementary information may contain verbal explanations of the processing method or decisions on appraisal and disposal. These on-line finding aids facilitate the same strategy for determining relevant items as paper finding aids, but with enhanced effectiveness that means that they use with increased efficiency the method of non verbal presentation.

Archival description adopts a similar external stance towards its subject, as does appraisal. It first analyses the situation, needing to understand how the units which are perceived were created. This enables it to understand the internal relations, from which the appropriate arrangement scheme can be designed, and each item placed where it belongs, because at this place it reveals best its context. Again, the analysis terminates further development of the actual process, because it cannot be connected to internal operations. The application of this strategy within decision making processes would again help to create an unchangeable stability of events by identifying them and making them available inside their network and contexts. The structures represent the inter-relations between the single events, while their indicators or names represent the activity together with the date precisely enough to be used as reference.

Such an approach closes the events by making them available as sources for further observation, while ensuring their unchangeability. Inventories created in this manner can be imagined as evolving together with the process, and thus following its own construction and growing with it. It can be imagined that such a description, not to be confounded with lists produced for records management, can be applied in electronic communication systems alongside the actual decision making.

4.3.1.3 Preservation

The third strategic element for opening records as sources is preservation. Preservation strategies have consequences for the practical fate of archives; however, these strategies need a theoretical foundation according to the formulation of the aims and the combinations of methods, and they need a lot of archival and technical knowledge.

Preservation is an entire body of theory and practices and part of archival science. It needs the preceding stabilising decisions of appraisal and it must consider the requirements of the intrinsic value. Concerning electronic records the situation is complicated by them being unable to become past and closed if they are not appraised. Every activity regarding them before appraisal, even migration or other techniques of longevity, contributes to their further development, and hence becomes integrated into the processes which produce them.

Therefore it cannot offer a stable focus for reference, and self-organised processes cannot emerge nor can they be used for investigations for purposes of external sights. Preservation consists both of professional and technical strategies, and the tools for

these. It assumes the completion of appraisal and description, and hence is concerned with longevity and persistent access to archival material, not just records as such, and their informational potential. If the function of appraisal is to replace the originating whole by a representative model, and description presents the internal structure as an investigative tool, the function of preservation is to maintain the integrity of the full informational potential which was the result of the archival processing.

The informational potential of paper records resides both in the texts, the marks and marginalia as well as in the covers, or the paper quality, a special ink or handwriting. The entire appearance serves the interpretation of contexts and meanings and therefore has to remain visible. Nevertheless the aim concerns not the objects as such, but rather their informational quality, and therefore in the paper world the conversion to microfilm may be a method of preservation without keeping the originals.

Preservation, just as do the other archival techniques, respects the original appearance as being the most important carrier of the informational potential, which accounts for the choice of something for archival care. However, different ways of preserving this informational potential may be found.

The use of microfilm reproductions instead of paper records can show how the replacement of the original by an image might even enhance the informational potential in comparison with the original. The image needs the effort of reconstruction which might produce a more authentic impression than the original which was perhaps used often and bares traces of multiple reading difficult to distinguish from original traces of work with the records.

The use of microfilm for preservation, as well as for replacing endangered or damaged originals, is a well established practice in archives. Microfilming freely applies the method of reconstruction, without, however, ever explicitly drawing attention to it. The filmed image openly expresses its quality as a copy. Nevertheless, it also makes reference to the original, and thus provides the opportunity of reconstructing it.

The image displays its dependent character and does not forward itself as a replacement for the original. Thus it represents both itself as a copy, as well as the action of taking a copy which is implied by its very existence. The point of this apparently trivial observation is very obvious if a ruler is placed beside the object when the picture is taken. This references the external environment and encourages the observer not to isolate the image from its purpose, but rather to understand its proper nature as distinct from, but functionally connected to, the original.

The difference between original and copy is clear, and the tools for bridging the difference are delivered at once. In spite of the reduced format the original dimensions can be mentally reconstructed and used for inference. The dimensions are unconsciously reconstructed simply by viewing the image, without having to rebuild it physically. The information potential of the original situation is preserved intact, and although the original itself is not accessible the information potential remains based on

the evidence, on what can be seen in regard to the creation and use of the records. Microfilming works because the resulting image presents itself as a reproduction. Therefore it is not a forgery. A facsimile or replica, on the other hand, is always incomplete, even if it bears a striking resemblance to the original, because it does not disclose its true nature. Therefore a facsimile is not a means of preservation. This is also true for electronic copies. As Margaret Hedstrom has shown, it is impossible to make a completely identical electronic copy of an electronic document [Hedstrom (1997)][8].

Electronic copies cannot refer to their true nature, because as a result of their timelessness there is no original or copy, since a copy always comes up after the original. Migrated data do not reveal by themselves that they might not be originally produced but simply copied, because also copying data is producing them. The notion of copy or original is not valuable anymore. Therefore every migration effort has to choose which quality of the data should be kept and which can be lost. In so doing, the copying creates replicas which cannot display their nature as copies but are new originals.

Reconstructability can restrain from making copies, replica, or from migration of data, and it can even better do without the original. The self-referential presentation of the image, which displays its nature as a representation is obvious in the paper environment. The material appearance of the supports makes the differences between original and replica obvious, even if they are sometimes difficult to identify.

This obviousness is lost when electronic forms are used. The digital image or the migrated copy cannot be regarded as the equivalent of microfilm images, even if both are reproductions. Severe changes in the functionality of the digital images compared to its analogue homologue are initiated, produced by the separation from the material support and its effect of timelessness.

Two functionally equivalent methods for the preservation of access to information potentials are either the preservation of the original unchanged in its appearance at the time when archives took over the responsibility for it in its context and visible appearance as original, or the possibility of reconstructing this appearance completely. Both help to stabilise the original's capacity of serving as sources for explanations and information.

Even if the originating event cannot be preserved its informational potential conveyed by its residues can be saved through the preservation of reconstructability. This can provide the basis for archival strategies for stabilising the informational potential of electronic records, even without the need to keep them untouched, which would contradict their decisive characteristics.

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[8] In this article the author asks how much functionality has to be preserved, and what can be regarded as an acceptable information loss. Documentation standards for migration processes should help future users to assess "how the document that they are viewing at one point in time deviates from its first and subsequent instantiations." (p. 290)

The ideal reconstruction of a former registry structure by the archivists, or re-establishment of the original order, which are often taken to be the aims of archival work within the profession, may be a means of making its function understood. However, it is not an aim in itself. Similarly, the original functionality of electronic record systems or of record management systems may not be required to be kept intact. What is important to see is, rather, what happened, and to understand why it happened.

Therefore it is just the original functionality which provides information potential for archival purposes. It is not the aim to re-use but rather to understand it, and to see its purpose and use, whilst instead the re-use would again change it and thus corrupt its quality as a source. The original function, however, cannot be captured through textual description, because any text about it is simply an interpretation. Therefore adopted new strategies that provide understanding without using it have to be designed. They may provide the possibility to try out a chain of typical operations and to see snapshots of different stages to be better able to imagine what happened, but all this without touching and changing the archived materials.

Different practical methods of providing for reconstruction are emerging. A good example is the integration of the received messages in e-mails which presents the reason for the own message without verbalising it. This is a feature which all e-mail software offers and is used with great confidence because it is easy and efficient without talking.

The Project “Archives of the Future” for the preservation of electronic records, started by the National Archives of the US NARA [Thibodeau (2001)] is based on reconstruction as main preservation technique. Using the separation of form and content, describing the first in XML, seems to be a very efficient tool for guaranteeing an unchanged status and thus ensuring stability. In addition to this preservation technique which implies reconstruction on demand, the project takes the appearance on the screen as the original.

This is a convincing suggestion because the representation of the data on the screen is what people saw and what they reacted to. Such approaches are important steps to practical solutions confirming the theoretically founded aims of archival processing which are to deliver authentic and reliable information potentials.

Electronic records will probably have different formats and structures from those which paper records have displayed during their evolution since the Middle Ages. Yet the basic approach will still be the same in regard to archival strategies. This means that analysis will always come first.

Only if the records are understood within the contexts in which they emerged from collaborative work can they be made available for reference. This analysis, however, terminates any further development of the records and their continuing use by converting them into sources for investigation in their own right. The question, therefore, is how to identify the right moment when the development can and should be frozen and made reconstructable in whatever way. Criteria for answers can be

found in the user's need for information, and especially for reference, during the conceptualisation of further work. These criteria mark the difference between the application of archival methods during and after the decision making processes.

During the process itself the criteria take into account the need of the process to refer to those events which occurred while it was developing and which contributed to its advancement. They select these events, present them in such a way that they are visible and addressable by further steps, and also in a form which provides persistent access to their unchanged informational potential. These operations need special skills derived from archival methodologies, yet oriented towards the support of current business.

This application of archival methods during the processes is quite different from what has been, until now, understood as records management. It is more like a form of knowledge management, helping to create knowledge about points of reference in the processes' own past, and to assist them in the planning of further steps.

It is not records, which are arranged and retrieved, but rather the closed events which constitute processes. The attempt to transfer a model of records management or registries derived from the paper world into electronic environments fails when it should enable the perception of those events which made the records emerge. If the constitutive events suddenly make use of other means of communication, such as provided to a large extent and in great variety within electronic networks, no records in the form expected by the records management emerge, and hence there are none to be managed.

The archival approach during the process is needed for making use of functional differentiation as a means of preserving and providing unchangeable reference points, which without this changing perspective is normally not available for electronic writings.

Yet the main goal is the construction of the difference of the two perspectives in such a way that the management of internal sources for self-referential knowledge cannot be integrated into the actual decision making. Instead it must be even more clearly distinguishable from the decision making itself than is the case in the traditional environment with paper recordings. By considering the function of the secretary taking the minutes, or of the registry organising the files and comparing task lists and check marks, this new concept takes over the function of differentiation, and thus provides services for the management of sources and of the knowledge creating capacities.

The traditional archival repositories as independent agencies centralising the records of one group of agencies inside government for use by the public are not at all outdated with this concept of integration of archival skills in the form of knowledge management into the government work. In contrast, both need each other. If no referenceable traces remain from communicative operations the processes of decision making have no basis for their own development and they cannot open themselves up to provide transparency of governments' actions. Again, through appraisal,

description, and preservation past, or its functional equivalent stability is created. The three methodological strategies integrate knowledge management and make past actions visible for outside investigations. Just as today's archives can analyse the different forms of files and see how they developed and were applied in which contexts, the electronics archives can see which forms of frozen events emerge from the actual work needs, and analyse their congruency or differences in comparison to the organisational structures and distribution of competencies.

They thus make the traces available to insight by third parties. Without really specifically intending to do so, archives, separated from the administration yet combined to it through responsibility and competency, thus provide the framework for accountability and authenticity when they create access to their holdings.

Archival competence enables advice to be given, and makes available the experiences collected in the records. However, if archivists become involved in records management and the creation of records, they lose that external perspective which can provide stability for the use both within as well as after the processes. Only processes allowed to decide by themselves about their operational as well as their informational needs are interesting for external investigations. The archival functions within the processes ensure the availability of procedural information, yet without storing it. Traces are created which can be interpreted according to the actual needs.

The opening of archives for indefinite access effects their operational closure as the other side of the paradox of processes. Whoever observes the process from a neutral position, without interfering, sees it as being operationally closed. Archives create stable sources by making them available to the public. This is what makes them irreplaceable in regard to electronic business processes. They can offer what electronic media cannot: both the operational closing of events and the creation of stability which makes them available for reference.

After a matter is closed further operations can no longer react to single events within the process, since these are integral parts of the whole process as a developing unit. However, now the process as a whole can stimulate reactions. A solution can be accepted or rejected. A new process can be initiated on the basis of its outcomes or its procedures. The quality of the procedure can be examined, but it can no longer be changed.

The entire operational network of a process can now be referred to as a single unit, and as such it is able to initiate connecting operations. The closed matter becomes part of a network of processes. This network can be the subject of inspection on another level, and the entire work of an agency can thus be confronted with the expectations implicit in organisational structures and guidelines. This confrontation delivers information which can be used to assess the need for reorganisation, for example, or for measures to enhance the effectiveness of the design of the organisation.

Electronic document management systems or electronic archives are often viewed as storage devices for memory. They are supposed to preserve documents in their original state for as long as possible in order to retain them in the collective mind so

that they can be used for future reference. Such a view of storage anticipates later needs, and attempts to prepare for them in the light of the difficulties involved with retrieving documents today.

This approach suggests that it is possible to transpose to electronic media the method of preserving papers to prevent unwanted changes, without thinking of the effect of oblivion, which is a necessary counterpart of storage. In storing isolated electronic documents the information about contexts is lost, which is given in the tangible world for instance by a certain sequence in a file, by marginalia or other visible signs. Therefore technical provisions are required for purposes that cannot be reached this way. They ought to be constructed in such a way that they can be absolutely trusted to be able to replace those methods in the conventional world, which can be used to examine the fate of the documents and to establish for oneself the trustworthiness of their representation.

The historical perspective presents a methodological example of how observation from a distance can provide new or better information and knowledge. This may present a solution for the frequent complaints about an insufficient supply of information. Archives can function as tools for the creation of the dissociation and distance required for critical reflection, and for gaining new knowledge. They can achieve this goal, without the long periods of time usually required, through functional differentiation.

During the past hundred years archival professional theory has prepared the ground for such an application by focusing attention on understanding records as mirrors of the development of decision making processes and their communication needs. Even in regard to paper records, archives provided distance and thus prepared for reconstructability.

4.3.2 Archival science and the theoretical basis for new strategies

Archival science is a rather young discipline with old roots. It developed out of the interest to know why archives were created and how they were used irrespective of time and organisational circumstances. It is a sort of hermeneutic discipline that first tries to understand and than provides the theoretical basis for action and the development of tools. Its predecessor were auxiliary sciences for history, needed for the critics of sources, like diplomatics. Diplomatics as a special discipline was built up, when the historical science emerged and it was concerned with finding out whether documents of a past period, namely the middle ages, were trustworthy or not. When the monks of the middle ages produced stable records, they were intended for future use. Ephemeral writings were made on re-usable wax tablets, whiping of privious notes. For documents meant as permanent expensive parchment was used [Clanchy (1983), p. 145], and from time to time even this was reused after erasing the first text. Later generations, however, did not always fall into line with the distinctions between ephemeral and permanet value.

Historical research is much more interested in what was not written down or what was not consciously transmitted. After the reformation the legal system which had been dominated by the church and the validity of old legal documents collapsed. The integrity of legacy began to be examined in order to detect forgeries which in former times were sometimes simply a means of updating texts to reflect changed reality [Menne-Haritz (1998)]. Proof was needed to establish credibility. The form of the communication and the conditions of its production were examined; legal examination was supposed to establish or prove ancient rights.

The borderline between two different social systems was difficult to cross in the case of legal proofs. An account of former circumstances was required, and here diplomatics emerged as a discipline which developed methods and techniques for this purpose [Duranti (1998)]. The new discipline acted like an external observer with no personal interests in the matters at hand. As such it was able to recognise unarticulated goals and purposes. This separation and the methods associated with it were later adopted by historical research and were further elaborated and generalised by archival science.

On this theoretical basis archives in the 19th century were able to become a kind of observation station. They looked at processes with which they did not interfere, and in relation to which they could therefore remain neutral and provide access for their understanding and interpretation from an uninterested perspective.

Since the end of the 19th century the professionalism of archivists has developed on the basis of this impartiality. An important step in the development of an adequate theory for explaining the effects of the applied methods was the introduction of the idea of organic development, which influenced several areas of science towards the end of the 19th century as a precursor of systems theory into the analyses of records.

The introduction of these ideas in the emerging archival science began with the instructions for the organisation and description of archival records published by the three Dutch archive directors Muller, Feith and Fruin. They stated; “An archival collection is an organic whole, a living organism, which grows, takes shape, and undergoes changes in accordance with fixed rules. If the functions of the body change, the nature of the archival collection changes likewise.” [Muller, Feith and Fruin (1968), p. 19]. This meant that rules for the compilation, set-up, and development of an archival body could not be determined externally. Archival analysis could only study the organism and ascertain the conditions under which it was formed. Central to the professional identity was the distinction between organic archival bodies on the one hand and collections on the other. Collections were defined as not growing organically, but being driven by the interests of their collector.

The Dutch regulations were officially put into use in Sweden in 1903 and introduced in Denmark in 1907. They influenced the British archives theorist Hilary Jenkinson’s statements in his “Manual of Archival Administration” of 1922, as well as Eugenio Casanova’s “Archivistica”, which was published in 1928 in Italy. The regulations were internationally accepted and translated into many languages and were

still the central topic of the International Congress on Archives in 1996 in Beijing. In the twenties and thirties Adolf Brenneke, Deputy Director of the State Archives of Prussia, developed in his lectures on archival science at the Institute for Archival Science in Berlin the concept of an organic entity further to describe registries and file structures [Brenneke (1953)]. He considered the Dutch approach was too inflexible to actually provide, in the structure of the fonds and of the corresponding finding aids, a representation of the conditions in which archival records were actually created. He wanted to be able to accept deviations from internal rules and see them as interesting signs.

Inconsistencies can provide information regarding the conditions under which files were constructed. Functions, organisation, and record office divisions change quickly in modern offices. When creating archival holdings a synthesis of fluid conditions must be achieved. The goal is the creation of an archival fonds, not the improvement of a registry.

Brenneke wanted to make the conditions of records creation understandable through identification of external, formal characteristics within the files. He pointed out that the character of a registry as an organic body did not mean it was supposed to be reconstructed in the archives, but rather that it should be made understandable, which included the ways it came to have its actual shape.

Therefore analysis became the most important part of archival work. He opposed logical standardisation and defended the analytical approach against the use of schema and standard structures with the words; “Let us not take our standards from the sphere of reason, from logical thinking, but from the sphere of the organism, from organic thinking.” Internal structures analysed within the holdings serve precisely this purpose. This methodological approach, as developed in the thirties, proved to be ahead of its time. It led to the acceptance of differences amongst ‘archival bodies’, which was indeed part of the concept. It acknowledged the existence of self-regulation in the business process in the agencies independently of external influences, and respected the process as a structuring element of its traces within networks of records. No ‘archival body’, no set of files from one administration can be the same as another one. Archives as mirrors of daily work were accepted in forms as varied as life. For Brenneke this was just what the principle of provenance meant.

After the Second World War Johannes Papritz, in his lectures at the Archives School in Marburg, strengthened this theoretical basis in archival science through the introduction and development of structural analysis as a prerequisite of all archival processing [Papritz (1998)]. In 1969 he established a typology of records and file forms in his work ‘Archival Science’.

A major component of the archival profession’s tool kit now included criteria for analysis of conditions under which administrative documents were produced. Probably because of his personal experience in the use of content based description of archival records as political instruments in Eastern Europe during the war, Papritz radicalised the analytical approach and reinforced its neutrality.

The new analytical method defined types of records as resulting from organically developing processes. Along with the typology of file forms, he developed a set of tools to enable the appropriate processing of files for each type. Decision making processes became the focus for the ensuing archival records processing.

At the same time the idea of archives as constituting the memory of state or national governments (as it is often heard during celebrations) persisted, despite the inherent contradictions of this concept, which conveys the idea that documents are the central issue of archival concern. This idea is connected especially with Heinrich Otto Meisner who, like Adolf Brenneke, had served as an instructor at the former institute for archival science in the 1930s, and also at the new institute in Berlin after the war.

Meisner developed this approach in three consecutive editions of his 'Aktenkunde' or 'Science of Record Forms and Creation', which appeared with minor changes under different titles in 1935, 1952, and 1969. In this work the author developed a document-orientated position which did not take processes into consideration [Meisner (1935)]. In the late 1960's Meisner, who lived in East Germany after 1949, advocated using the term 'documentation' as the long sought after general term to cover the subject of both library and archives activity [Meisner (1969), p. 52]. The texts as containers of important information were his main concern "because, in the end, every document and, especially, every draft has the function of a mnemonic aid, since: Scripta manent." [Meisner (1969), p. 27]

Coming from diplomatics and the study of single isolated charters, he attributed greatest significance to verbal messages, not understanding the potential of non-verbal indicators. Isolated documents as things and artefacts were what he found interesting. The differences between a document and a published book were supposed to lie mainly in the document's characteristics of the purpose of legal transaction [Meisner (1935), p. 263]. Both types of writing, however, seemed to him similar in reading. Decision making processes vanished into the background. Their ephemeral character was acknowledged and accepted, but not analysed and understood. Only their written results, such as the confirmation of laws and legal documents, were recognised as worth preserving.

The influence of organic thinking was nevertheless also evident in this argumentation. Thus archival holdings were regarded as natural growths, not as artificially compiled like collections. But in contrast to the previously described position their growth itself was not an object of archival awareness and analyse. Thus the temporal dimension and the importance of a gap disappeared. Continuity was regarded as more important for the ensurance of memory than distance and reconstruction.

The function and advantage of creating distance was lost to this point of view, in which the function of archives was reduced to the continuing preservation of information. This view of the function of archives, which focuses on individual documents and their verbal messages, confirms the latency of business processes and is therefore unable to understand and control it. The processes are vanished and cannot

be seen any more. From this perspective, archiving is reduced to storage of texts and contents.

The interest in business processes as described above instead uses records in context for offering the reconstructability of events. Transferred to the world of electronic records the difference is that of migrating data or reconstructing the informational potential whenever the archives are used. Electronic provisions for reconstruction ensure the same effect offered by physical evidence in paper environments. The orientation towards processes needs new and other tools which archival science with its long experiences and internal debates is well prepared to deliver.

The main task for archivists is to decide. This can only be done on the basis of an exact analysis. Rules and guidelines may not be sufficient. To handle new situations high qualifications and consummate skills are required to enable the adoption of a strategic approach. Archival science faces the challenging task of developing more concrete analytical tools and sets of strategies which can be applied in concrete situations. Based on the professional aim of preserving reconstructability, the different areas of specialisation and problem solving can be combined in a new professional paradigm, reinforcing those traditional principles which have withstood the test of modernisation. Archival services for administrative business processes cover three different areas.

(1) They make traces available for inspection by third parties. This enables reconstructability, which may be used for the construction of memory and for the identification of its own genesis. This is a service which has greater relevance within society, but which can also be applied in administrative co-operative techniques for their own purposes;

(2) They ensure stability of those events needed for reference, especially for the construction of memory, so that their interpretation can change according to perspective, whilst maintaining consistency of reference to an identical past. The same events can be used for different explications of developments and processes which led to current social and working conditions;

(3) This stability is guaranteed through the construction of a sphere of observation separate from the sphere of use and growth of the records, providing for their unaltered form as a functional equivalent for the past, and as a focus for reference.

Archives offer traces as sources and can make information available which was not deliberately stored. Together with the decision making processes they form a whole which constitutes the administration. Together they represent the two sides of a paradox. This means that they cannot both be in the focus of observation at the same time, and that their internal operations are invisible to each other. Nevertheless, they can work together, and they depend on the exchange of their respective results. This inter-dependency is what unites them, while their different functions with regard to the same subjects divide them along a clearly defined line [Menne-Haritz (2001)].

Whilst the decision making process must be operationally closed, archives provide transparency for third parties. As long as the problems develop in the decision making processes, archives provide stability through reconstructability. Whilst processes are dependent on forgetting ephemeral operations in order to clear the way for new solutions, archives free them of their past, but preserve it for insight and allow it to be recalled.

Archives themselves work with the paradox of preservation and access as two sides of the same thing. Archival processing is the opposite of problem solving, being its latency. Whilst directing the route to the future, a look backward is disruptive, yet the steps are made one by one and evolve out of each other. It is not possible to go forward while looking back. Nevertheless, the starting point determines the direction, and progress cannot be noted without comparison. Both, target and initial basis, define the movement. Planning and controlling rely on the comparison between targets and real achievements. The route forward needs both views, backwards and forwards, but each in its own appropriate time.

Emerging discussions regarding knowledge management provide the opportunity to conceive new approaches to information management oriented towards users, which involve methods and tools for identifying informational needs and fulfilling them through trustworthy relevant information. Archives, with their ability to allow the reconstruction of past events, can be seen as an important contribution to such strategies. Their methods show how sources can be prepared and made available for research. This is complementary to knowledge management strategies.

Knowledge management as it is often conceived today, meaning storage of explicit information or even finding incentives to make people formulate what they know, corresponds to the tunnel design of information technology [Brown, Duguid (2002), p. 3] which creates as many problems as it solves. Fewer words may be more. Here archival science can show why it is so, and archival professional qualifications seem to be the necessary complementation to make knowledge management a successful strategy.

4.3.3 Archives and Knowledge Management as complementary functions

The term ‘knowledge management’ represents an interesting change in the concept of the handling of information. Instead of focusing on storage or delivery of information, it is concerned with needs and use on the part of the recipient. Therefore it turns information management around, and presents another approach which seeks to understand the need for information and to work out strategies to gain it.

In this sense knowledge management is not the storage and retrieval of existing knowledge, but instead refers to the management and control of the difference between knowing and not knowing and thus, it is about the creation of new and unknown knowledge.

Electronic decision making processes require knowledge about its own past and they obtain it in its own writings when they use them as sources. The knowledge cannot be worked out by others and presented as text. Instead the sources have to be available and accessible with all their information potentials.

Stabilised traces enable the reconstruction of events under the light of the actual present question. The reference to its own history closes the decision making process to outside influences. At the same time, however, decision making processes are extremely sensitive from an informational perspective, because they cannot rely on external information directly, but only upon their own selections of it, including the evaluation of relevance of observations for their own purposes.

It is the need to act, grounded in the responsibilities, that stimulates curiosity and guides the process of self-determined collection of information by each participant. In its oral form the process can access information introduced by the members and assess its value for the community. This is why, in the case of the old collegial boards, older and more experienced personnel were selected as members, and professional qualifications were less of an issue.

In the later written process, on the other hand, the course can be interrupted, and information can be introduced that was meanwhile acquired from external sources. The integration of this information occurs through the communication operation of a member, for instance by formulating a memorandum or simply voicing observations during the deliberation.

In both cases the process itself discovers the need to know and then starts to collect what it can find. Then it is formed in such a way that it fits the needs of the common process, whether it be in the form of a memorandum or of an amendment to an existing draft. The knowledge is created within the process, starting from sources likewise self-selected.

Because a decision making process is operationally closed it cannot react to a communication operation which started from the outside for the purpose of submitting further information. Either the senders of this new information are integrated into the process, in which case they are also integrated into the finding of the solution, or they remain outside but can be observed. The operation of starting a communication cannot reach the process because the process as such has no means of responding to it. The process is not initiated by information brought to it but by the question about whether something might be necessary to happen.

Whilst decision making processes are not the best means suitable for collecting information, they are quite able to establish their own vantage points, attentively observing the environment. Thus they remain autonomous in regard to the relevance of what they observe, just as they are autonomous in deciding what the next steps should be. The functioning of such processes ensures that they obtain information which they require for their purposes, and that they do not need to invest resources in the collection of irrelevant information.

Decision making requires information to such an extent that administration is sometimes completely defined by the treatment of information, and record systems appear as information systems. However, this is not a case of pure collecting and storage of information. The processes establish effective mechanisms for identifying and collecting what is relevant, because it is required for the preparation of action. They also create information on their own, through the observation and selection of relevant phenomena for further operations.

The ways in which decision making processes treat information as something to be created, and not as something which can be retrieved from storage, is a result of the autonomous design of the process. The inherent reasons for the need of information presents the acquisition of information as an operation which can be supported and controlled from both viewpoints: that of the need to understand; as well as that of providing sources.

Within the process the participants require techniques for helping them identify their own informational needs, and for formulating it in a way which can be answered. The formulation of the question in terms of the professional skills provided by the personal is the most important step in finding an appropriate solution.

The techniques include the discovery of sources and the methods of interpreting them in a reliable way, as well as distinguishing between hypotheses, trustworthy messages, and proved facts derived from circumstantial evidence. These techniques are the main ingredients of professional qualifications, complemented by experience, and are integrated into the process through the awareness of the individual participants.

Outside the process, and while it is occurring, the acquisition of information can be supported by the preparation of potential sources. These include databanks as well as libraries and the own records. Nothing, which is collected from the outside, is information as such, but only a potential source of information. Different forms of this activity of preparing information can be conceived, but all have to respect the autonomy of the process in determining the quality of the information.

Knowledge in this context turns out to be definable only by the user, not by a provider. What can be provided are only potential sources. The potential sources are to be distinguished by the way in which they allow investigation, and by the way they have to be searched and interpreted.

This depends on the initial reasons for their creation. Either they were intended as verbal messages or they were created for organisational purposes. Even what is in the minds of experienced colleagues may be potential information for a certain process, and can be accessed through observing their actions or by co-operating with them.

This knowledge, represented by skills, expertise, and experiences, is actually the target of knowledge management strategies as user-focused strategy, which does not aim at storing knowledge for later use, but concentrates rather on the users gaining and creating knowledge by themselves when it is needed. Such a strictly user-oriented concept of knowledge management is suited for the working of operationally closed

yet informationally sensitive decision making processes. The concept of knowledge is currently under consideration, and there is a possibility of giving it a new meaning, which can lead to improvements in handling it on a practical level [Kirsch (2000)]. Central to some new debates about knowledge management, however, is the distinction of tacit and explicit knowledge with the assumption that knowledge needs to be made explicit to be shared inside a community.

The assumption of a main difference between implicit and explicit knowledge calls for a better understanding of what it means to make something explicit. Does this involve storing knowledge and making it available for others? What happens if knowledge is made explicit? What are the effective means of transporting knowledge from one person to another, or from one organisational context to the next?

First of all, it is obvious that explicit knowledge is not especially trustworthy. The message 'I trust you', along with its articulation, becomes a subject of distrust and discussion. The explicit utterance does not transmit it as reality, but as an individual selection of information put forward for reaction.

What is articulated implicitly refers to what is not said and initiates the question of why just this message is sent out. Signs and gestures, which indicate trust, on the other hand, can be perceived and understood. Trustworthiness is a product of the observer's perceptions, and not of the sender of the message. It is worked out autonomously as a personal perception and interpretation of the situation.

The observer generates knowledge about the others' behaviour and its meaning, and it is this knowledge which guides the reactions. The non-verbal communication which accompanies oral deliberations contributes to the creation of trust. It relies on the characteristics of perception as opposed to those of messages and leaves it to the observer to decide.

Knowledge is generated by the observing recipient because it is needed in responding to the actions of the other participants, and because any influence on the outcome of the meeting is only possible by responding or reacting.

Not all of the knowledge needed can be gained by personal observation. This is why scientific texts evaluate proposals, hypotheses, and conclusions. Precise wording is a central tool in the scientific communication system, allowing its advancement through critics. New findings are explained and described so that they can be known by others and thus become part of the body of scientific knowledge.

The publication of the new insights is not simply the transmission of content to others. Its main effect is to enable its evaluation from different perspectives. What is published can be criticised by others. Writing is needed to make something more precise and to identify the subject matter in an exact way. During the process of criticism it may be reformulated. There may be some aspects which become clearer, or some results which may be rejected completely as preliminary or as lacking sufficient proof. Thus publication does not primarily serve the storage or the memory of the new findings, but instead presents them in a way which allows changes if necessary. Within

the scientific communication, written publication is the means of critique, not of storage. However, findings which are no longer criticised can then be adopted outside the scientific system in popular descriptions.

For example, they can be introduced into manuals for professional training, or presented in popular accounts. These accounts are accepted as scientifically proved until the next paradigm shift occurs which turns the old results around and leads to new views of the world [Kuhn (1970)]. Such paradigm shifts result from the ability of the scientific system to criticise its own findings by using the means of writing and publishing. Just as in deliberations, the non-appearance of further writings on the topic may, for an outside observer, identify those findings on which consensus, even if temporary, has been reached.

Knowledge existing outside the scientific system is normally regarded as pre-scientific and less reliable, because it is not integrated into the scientific process of criticism and approval. However, when considering the function of the scientific system in producing an established basis for further joint developments, it can be seen that only those elements which are insufficient and require revision are subjected to scientific criticism.

Besides articulated observations and argumentation, knowledge that is uncontested and not in need of scientific evaluation is used in everyday life. It may even be easier to use. This covers all forms of implicit knowledge. Compared to written and published knowledge it is even more interesting for the undisturbed functioning of everyday practical work, because it does not present claims for argument, since this would distract from doing the right things.

Explicit knowledge invites objections, but not action in the way it suggests. Every utterance or written text is understood as a message. Since it is part of a communication event this is why it initiates further communication but not action. The simplicity of implicit knowledge, on the contrary, has an ensuring function for co-operative actions. Because it is not articulated it is not discussed, and hence it can be transmitted in an even more reliable and effective way. The means for its distribution is observation by the one who needs the knowledge and not articulation by the one who seems to have it. Thus instead of asking persons to make their knowledge explicit, those who need it ought to be allowed to make their own observations. This can be supported by the creation of awareness through the assignment of tasks for autonomous fulfilment as an efficient way of ensuring the perception of useful details and one way to do it might be by the investigation of records.

This difference between explicit and implicit does not make it easy to find strategies useful for knowledge management. Knowledge cannot be transmitted in explicit form. It does not even need to be explicit to be adopted by others. In regard to the transfer of knowledge in implicit form between persons based on the principle of perception, there are a number of methods to choose from:

(1) Knowledge can be gained through experience and observation. An important way of enabling people to acquire knowledge is to facilitate spheres of personal

experiences. Explanations received after observing someone doing something are confronted with reality and are tested for their validity. This creates knowledge regarding trustworthiness and carries implications.

(2) Knowledge can be transferred by looking at the ways other persons do their work, trying to copy it, talking about the difficulties, or comparing it to others. Explicit theory explains what can be seen. It guides the views, and thus new insights can be gained which cannot be found in the literature. But theory without this confrontation with practice remains merely a part of the scientific debate, and cannot initiate practical changes.

(3) Finally, knowledge can in an extremely effective manner be generated by preparing a presentation, by finding a decision together with others, or by explaining a problem to others. The need to articulate one's own questions or thoughts leads to the precision of ideas. Such articulation creates knowledge not so much for those who listen, but rather for those who speak or write.

All these approaches to gaining knowledge account for how those who need knowledge can acquire it or generate it for themselves. They need special skills and a set of tools prepared for their use, on the one hand, and quick and easy access to knowledge sources on the other. Through these distinctions a holistic, user centred concept of knowledge management can be conceived. The methods of gaining knowledge are derived from the need to act, focusing on the understanding of the concrete situation.

The strategy of making knowledge explicit can make its use much more complicated than before. If instead of the content of knowledge the methods of gaining knowledge, the tools and skills, are made explicit, this can improve practical work, because it allows their application and further development to be controlled. New findings in the social sciences support this approach. By making habits explicit governments and other institutions make them changeable, and thus controllable [Jansen (2000)]. Disfunctional myths, traditions, and implicit guidelines may lose much of their influence once they are made explicit. The technique for understanding any situation is to observe it within the network of its contexts. And that is what archival work can deliver.

Archival processing opens up the contexts and structures and provides access to them. Archives make observation possible whilst knowledge management can provide the techniques of interpretation and validation of the findings. Observation, in contrast to interference, remains outside the observed object. Therefore it is possible to understand what happens.

Observation as a way of obtaining information means that the actors can be seen together with the initiators and the consequences of their actions. It helps in understanding what they are doing or why, with a thoroughness which is not available to the actors themselves. It can see a certain activity, which also could have happened in a different way, as result of a choice, whilst for the actor it was the one and only possible way to act or react.

Everything observed can be seen as a result of selections, and can be placed within the context of other possible choices. This holds both for the selection of aims as well as of the methods of interaction. Comparison can be made with other selections, and therefore inference, which creates the knowledge about the reasons, is possible.

Observation from a neutral position thus leads to the knowledge of what happened and prepares the reaction to it. It first reconstructs the whole virtually, and then allows the selection of its own way of reaction. Observation is neutral as analysis. Action based on the findings is then partial and follows what was decided to be right way deliberately excluding others.

Knowledge gained in this way, however, not only loses its value as soon as the problem is solved. It is also irreplaceable before the specific action happens, and moreover it is completely new and cannot be found in publications or knowledge databases. This form of knowledge has an ephemeral character with a built in temporal dimension. The attribute of ephemerality, however, only pertains to its short period of relevance. It does not apply to its essential relevance for the solution of problems.

The ephemeral character identifies this knowledge as one carrying an expiration date. This means that already during its creation its purposeful oblivion must be possible. Without controlled oblivion it may obstruct further openness of acquaintance with knowledge required for new conditions of different matters. The future perception of occasions for acting may be narrowed, and thus important differences may be obscured if the once needed and then outdated knowledge is not allowed to be forgotten. The details of the present matter may hinder the perception of future situations.

However, even if its content is no longer relevant the way in which the knowledge about this matter was gained may be useful for further investigations. That concerns experiences gained in this case, which should remain available for future reference, whilst the concrete conditions no longer have relevance for the further work. Knowledge created during the solution of one problem may have different uses in the future. Yet if it is used as a sort of standard for future cases it may obstruct the perception of significant distinctions. So its usefulness must be evaluated again for any new situation.

After the matter is finished, strategies for purposeful forgetting are necessary in order to prevent the predominance of past time, which is blind to innovations. These strategies must at the same time allow the recall of former experiences when they are useful as examples to learn from, or for an evaluation of the applied methods.

With archival strategies combining oblivion and accessibility, the matters remain available as integral units of activity networks without overloading them with information. Archival strategies provide the possibility of observing past actions again from a neutral position, and thus seeing the contexts of expectations and results.

The closed matters become sources of knowledge themselves, just as the circumstances of the original problems which were perceived and questioned at the beginning of the matter. This change from open matters to sources of new knowledge

is part of the archival management of potential sources. Functional differentiation implies forgetting within the communication system of original purpose, as well as access for other purposes.

Records as a form of sources are challenging to use, because they require the individual formulation of questions, as well as the selection of relevant information. When they are used, however, they provide authentic, reliable, and concentrated insight. This authenticity and reliability is produced by the knowledge being gained by the persons themselves, which does away with the need to believe someone else.

This autonomy of the knowledge user as creator of the needed knowledge by himself, selecting the sources needed for a special question and assessing himself their reliability or the plausibility of the answers they give needs the uninterested provision of the sources by professionals with their special skills which enable access to the full informational potential of the sources. Here is the reason for the new links between archival qualifications and knowledge management as two mutually complementing strategies supporting the building of self-referential decision making processes.

Knowledge management needs the creation of sources through application of the archival perspective. On the one hand, knowledge management consists of the skills and techniques used to identify one's own informational needs and to formulate the right questions. On the other hand, however, it also requires the preparation of potential sources. Archival appraisal has selected them as representative. Description shows the ways to access them. And preservation ensures that their persistent information potential is maintained unchanged once the responsibility for the archival treatment is assumed.

Archiving in this sense creates oblivion by removing from the reach of decision functions everything which is in danger to be altered by new uses and thus lose its original potential of information on preceding actions. As a result of archiving, it is considered as a source of new knowledge and provides a stable address for reference. The gap of functional differentiation thus ensures temporary oblivion, which frees the mind for new experiences.

This service of the archival perspective for knowledge management can be compared to the function of secretaries during the oral debates in the early committee based decision making. By noting those parts of the discussion that brought the process forward, that means the beginning and the end and some decisive new contributions to the problem solution, they stabilised these moments by creating a sort of deposit of the debate which itself was not disturbed by their fixity, because the minutes remained an external observation.

However the difference is that the oral debate could not use the written observations as sources on its own history, as they were the results of external note taking and not the own traces. The past of the process was only kept in the combined individual memories of the participants. However compared to this older situation the traces of new electronic processes can be composed of the contributions themselves similar to the automatically generated minutes of the written process in the action files,

if they are fixed in time outside the process, that means appraised, described and preserved, while further developing inside it.

Knowledge management as the management of the difference between knowing and not knowing controls the constant shift between the two. It needs archives ensuring stability as a basis for providing flexibility, which cannot be realised without comparison with stable reference points. The sources remain the same while they may be interpreted in different ways.

Knowledge management respects inconsistencies and development in the body of knowledge, indicates what can be regarded as certain, and what is still open and in need of evaluation. What is even more important, however, is that it provides the means and tools for formulating the right questions and the methods for identifying and interpreting sources in a critical manner. It provides techniques which allow one to estimate which sources can be believed, and where further investigations into the circumstances of production and storage are required. Knowledge management provides techniques for the preparation of plans for future events. It needs archives as the complimentary function of basing expectations on experiences and learning.

New business processes in electronic environments have extended knowledge needs, but the knowledge creation has the same main characteristics as those which could be observed in collegial boards at the end of the middle ages. For the collaborative decision making used to solve problems different techniques are necessary from those for production processes, which aim at producing predefined outcomes.

Regardless of the media they use for their internal communication, the processes are characterised by the open end, together with the operationally closed form created by the internal reference to their own history. No other form of collaborative decision making can be perceived in the digital environment.

With its incidence, however, it seems to be probable that focus will turn back to the events which construct the processes, and away from the recordings. This can be described as ‘conceptual orality’, or it is a step forward to a new and greater awareness of events as the constitutive elements of each communication.

The digitisation of communication brings the operations of communicating, understanding, and reacting into the foreground of perception, and thus combines on a new level what had been separated through the introduction of conventional writing in analogue form on paper. Knowledge management seems to be a kind of reaction to a generalised higher emphasis on action rather than on wordings. In opening business process that are supported electronically archival techniques and knowledge management can support each other in interesting, new ways.

These developments expand the idea of archives and make it clear that storage of paper has never been an aim in itself. Archives are not storage facilities. Instead, they use storage as an instrument for their actual performance of opening administrative co-operation for the construction of the memory and common self-consciousness of society by everybody. Just as the old registry was not set up just for the storage for

records, but always had tasks to fulfil endorsing the decision making processes for which they needed the records, archives deliver services needed for oblivion and recall for which the storage and preservation of electronic records over time is instrumental.

For future administration it appears important to respect more explicitly than before the character of decision making processes as self-organised communication systems, and to provide the appropriate framework within which they can develop their full functionality.

Part of this will involve the construction of stable reference points through functional differentiation by the integration of the archival methods of appraisal, description, and preservation along with the processes, in a way adapted to the special needs of internal reference within the process. These processes will afterwards be available by their traces for access by society after archival institutions have appraised, described and preserved their entire framework, and thus created an archival fonds as a representative model of the original work.

The timelessness of electronic records is balanced by stability delivered with archival processing techniques opening sources for interpretation, and by knowledge management ensuring continuing adequate use for the needs of autonomous processes. The techniques of memory and latency create useful stable references, and the techniques of gaining knowledge out of them ensure the availability of reliable information. The world of electronic decision making processes needs archives even more than the paper world did. However, archives will be asked to design new services on the basis of their professional competencies developed through their long and comprehensive experiences with any forms of organisational communications and their traces.

BIBLIOGRAPHY

Bearman, David and Trant, Jennifer (1998). 'Authenticity of Digital Resources. Towards a Statement of Requirements in the Research', *D-Lib Magazine*, 4/6, URL: http://www.dlib.org/dlib/june98/06bearman.html

Bearman, David (1994). 'Toward a Reference Model for Business Acceptable Communications' *Pittsburgh*.
URL:http://web.archive.org/web/20000303001909/www.sis.pitt.edu/~nhprc/prog6-5.html

Bearman, David (1999). 'Reality and Chimeras in the Preservation of Electronic Records' *D-Lib Magazine*, 5/4,
URL: www.dlib.org./dlib/april99/bearman/04bearman.html

Bloch, Marc (1953). 'The Historian's Craft', Vintage Books: New York.

Brecht, Arnold and Glaser, Comstock (1940) 'The Art and Technique of Administration in German Ministries', Harvard University Press: Cambridge, Mass.

Brenneke, Adolf (1956). 'Archivkunde. Ein Beitrag zur Theorie und Geschichte des Europäischen Archivwesens', comp. by Leesch, Wolfgang, Leipzig.

Brown, John Seely, Guguid, Paul (2002). 'The Social Life of Information, Harvard Business School Press: Boston

Brown, Richard (1997). 'Death of a Renaissance Record-Keeper', *Archivaria,* 44, 1-43.

Brübach, Nils (1998). 'Johannes Papritz und die deutsche Archivwissenschaft', preface to Papritz, Johannes (1998) 'Archivwissenschaft', Archivschule Marburg: Marburg.

Clanchy, Michael T. (1993). 'From Memory to Written Record. England 1066-1307', Blackwell Publishers: Oxford.

Cook, Terry (1984). 'From Information to Knowledge: An Intellectual Paradigm for Archives', *Archivaria,* 19, 28-49.

Crozier, Michel (1963). 'Le Phénomène Bureaucratique', Paris.

Cunningham, Adrian (1999). 'Dynamic Descriptions: Australian Strategies for the Intellectual Control of Records and Record Keeping Systems. Naar een nieuw paradigma in de archivistiek' *Jaarboek,* 1, 133-142.

Drews, Bill (1919). 'Grundzüge einer Verwaltungsreform, Amtliche Ausgabe', Ministry of Interior: Berlin.

Duff, Wendy (1996). 'Ensuring the Preservation of Reliable Evidence' *Archivaria,* 42, 28-42.

Duff, Wendy (1998). 'Harnessing the power of warrant', The *American Archivist*, 61, 88-105.

Duranti, Luciana (1998). 'Diplomatics. New Uses for an Old Science', Scracrow: Lanham, Md.

Encoded Archival Description (2002). Tag library, version 2002, prepared and maintained by the Encoded Archival Description Working Group of the Society of American Archivists and the Network Development and MARC Standards Office of the Library of Congress, Society of American Archivists: Chicago.

Elias, Norbert (1988). 'An Essay on Time', unpublished, translated to German: Über die Zeit, Suhrkamp: Frankfurt.

Foerster, Heinz von (1982). 'Observing Systems', Intersystems Publications: Seaside, CA.

Foerster, Heinz von (1984). 'Principles of Self-Organisation in a Socio-Managerial Context', *Self-Organisation and the Management of Social Systems*, Springer: Berlin e.a, 2-24.

Geary, Patrick J. (1994). 'Phantoms of Remembrance. Memory and Oblivion at the End of the First Millennium', Princeton University Press: Princeton.

Gilliland-Swetland, Anne J. (2000). 'Enduring Paradigm; New Opportunities', *The Value of the Archival Perspective in the Digital Environment*, Council on Library and Information Resources: Washington, D.C,
URL: www.clir.org/pubs/reports/pub89/contents.html.

Gilliland-Swetland, Anne J. and Eppard, Philip B. (2000). 'Preserving the Authenticity of Contingent Digital Objects. The InterPARES Project' *D-Lib Magazine* 6/7 and 8.
URL: http://www.dlib.org/dlib/july00/eppard/07eppard.html

Groß, Lothar (1933). 'Die Geschichte der Deutschen Reichshofkanzlei von 1559 bis 1806', Wien.

Goody, Jack (1987). 'The Interface between the Written and the Oral', Cambridge University Press: New York.

Goody, Jack (2000). 'The Power of the Written Tradition', Smithsonian Institution: Washington.

Hattenhauer, Hans (1993). 'Geschichte des Beamtentums' Köln.

Havelock, Eric A. (1982). 'The Literate Revolution in Greece and Its Cultural Consequences', Princeton University Press: Princeton, NJ.

Hedstrom, Margaret (1991). 'Understanding Electronic Incunabula: A Framework for Research on Electronic records' *The American Archivist,* 54, 334-354.

Hedstrom, Margaret (1997). 'Research Issues in Migration and Long-Term Preservation', *Archives and Museum Informatics* 11, 3/4, 287-291.

Hedstrom, Margaret (1997). 'Building Record Keeping Systems: Archivists You Are Not Alone on the Wild Frontier', *Archivaria* 44, 44-71.

Hedstrom, Margaret and Montgomery, Sheon (1998). 'Digital Preservation Needs and

Requirements in RLG Member Institutions, A study commissioned by the Research Libraries Group', URL: http://www.rlg.org/preserv/ digpres.html.

Hilberg, Raul (2001). 'Sources of Holocaust Research. Analysis', Ivan R. Dee: Chicago.

Hintze, Otto (1911). ‚Ratsstube und Kammergericht in Brandenburg während des 16. Jahrhunderts', *Forschungen zur Brandenburgischen und Preußischen Geschichte,* 24, 1-84.

Hollan, James D., Hutchins, Edwin, and Kirsh, David (1999). 'Distributed Cognition: A New Foundation for Human-Computer Interaction Research'
URL: http://hci.ucsd.edu/lab/publications/1995-1999.htm.

Kirsch, David (2000). 'A Few Thoughts on Cognitive Overload', *Intellectica*. URL: http://icl-server.ucsd.edu/~kirsh/Articles/Overload/published.html

Knodt, Eva M. (1995). 'Foreword' *Luhmann, Niklas, Social Systems*, Stanford University Press, Stanford, CA, pp. ix –xxxvi.

Kuhn, Thomas S. (1970). 'The structure of Scientific Revolutions', University of Chicago Press: London.

Le Goff, Jacques. (1992). 'History and Memory', Columbia University Press: New York and Oxford.

Levy, David M. (2000). 'Where's Waldo? Reflections on Copies and Authenticity in a Digital Environment', *Authenticity in a Digital Environment*, Council on Library and Information resources(CLIR), Washington, DC, pp. 24-31.

Luhmann, Niklas (1995). 'Social Systems', Stanford University Press, Stanford, CA.

Luhmann, Niklas (1998). 'Observations on Modernity', Stanford University Press, Stanford, CA.

Luhmann, Niklas (2000). 'Art as a Social System', Stanford University Press, Stanford, CA.

Lynch, Clifford. (2000). 'Authenticity and Integrity in the Digital Environment: An Exploratory Analysis of the Central Role of Trust, Authenticity in a Digital Environment', Council on Library and Information Resources (CLIR), Washington, DC, pp. 32-50.

March, James G. (1994). 'A Primer on Decision making', Free Press: New York

March, James G, Schulz, Martin and Zhou, Xueguang (2000). 'The Dynamics of Rules: Change in Written Organizational Codes', Stanford University Press, Stanford, CA.

McKemmish, Sue e.a. (1999). 'Describing Records in Context in the Continuum: The Australian Recordkeeping Metadata Schema', *Archivaria*, 48, 3-43.

Meisner, Heinrich Otto (1935).'Aktenkunde', Berlin.

Menne-Haritz, Angelika and Brübach, Nils (1997). ‚The Intrinsic Value of Archive

and Library Material. List of criteria for imaging and textual conversion for preservation. Results of a DFG project', Archivschule Marburg (URL: http://www.uni-marburg.de/archivschule/intrinsengl.html).

Menne-Haritz, Angelika (1998). 'Die Diplomatik, die Archivwissenschaft und die elektronischen Aufzeichnungen', *Archiv für Diplomatik* 44, 337-376.

Menne-Haritz, Angelika (1999). 'Geschäftsprozesse in der Öffentlichen Verwaltung. Grundlagen für ein Referenzmodell für Elektronische Bürosysteme', v.Decker: Heidelberg.

Menne-Haritz, Angelika (2000). 'Access - the Reformulation of an Archival Paradigm', *Archival Sciences,* 1/ 1, 57-82.

Menne-Haritz, Angelika (2000). 'Appraisal and Disposal of Electronic Records and the Principle of Provenance: Appraisal for Access - not for Oblivion, *DLM-Experts-meeting. National Archives of Finland*, Helsinki.
URL: www.narc.fi/dlm/96.htm.

Miller, Thea (1997). 'The German Registratur'. Faculty of Graduate Studies School of Library, Archival and Information Studies: University of British Columbia, Vancouver.

Miller, Thea. (2003). 'The German Registry: The evolution of a Recordkeeping Model', *Archival Science,* 3/1, 43-63.

Moore, Reagon e.a. (2000). 'Collection-Based Persistent Digital Archives', *D-Lib Magazine,* 6, 3 and 4.
URL: http://www.dlib.org/dlib/march00/moore/03moore-pt1.html

Morgan, Gareth (1997). 'Imaginization. New Mindsets for Seeing, Organizing and Managing', Sage Publications: San Francisco, CA.

Muller, Samuel, Feith, Johann Adrian, Fruin, Robert (2003). 'Manual for the Arrangement and Description of Archives', with a new introduction by Ketelaar, Eric, Thomassen, Theo and Horsman, Peter, Society of American Archivists: Chicago.

Ong, Walter J. (1982). 'Orality and Literacy. The Technologizing of the World', Methuen: London.

Papritz, Johannes (1998). 'Archivwissenschaft', 2nd ed., Archivschule Marburg: Marburg.

Petrucci, Armando (1995). 'Writers and readers in Medieval Italy. Studies in the History of Written Culture', Yale University Press: New Haven.

Pitti, Daniel V. (1999). 'Encoded Archival Description: An Introduction and Overview', D-Lib Magazine 5/11, URL: http://www.dlib.org/dlib/november 99/11pitti.html November 99/11pitti.html.

Reinermann, Heinrich (1992). 'Verwaltungsorganisatorische Probleme und Lösungsansätze zur papierlosen Bearbeitung der Geschäftsvorfälle - Die GGO I im Lichte elektronische Bürosysteme', Ministry of Interior: Bonn.

Rothenberg, Jeff (1999), 'Avoiding Technological Quicksand: Finding Viable Technical Foundation for Digital Preservation', Council on Library and Information Resources: Washington, DC.

Rothenberg, Jeff (2000). 'Preserving Authentic Digital Information', *Authenticity in a Digital Environment*, Council on Library and Information Resources, Washington, DC, pp. 51-68.

Schatz, Rudolf (1961) ,Behördenschriftgut - Aktenbildung, Aktenverwaltung, Archivierung', Boppard.

Schellenberg, Theodore R. (1956). 'The Appraisal of Modern Public Records', *National Archives Bulletin,* 8, National Archives and Records Service, Washington, DC.

Schellenberg, Theodore R. (1956). ,Modern Archives. Principles and Techniques', University of Chicago Press, Chicago.

Simon, Herbert A. (1997). 'Administrative Behaviour. A study on Decision making Processes in Administrative Organisations', 4th ed., Free Press: New York.

Smith, Abby (2000). 'Authenticity in Perspective', *Authenticity in a Digital Environment*, Council on Library and Information Resources (CLIR), Washington, DC, pp. 69-75. URL: www.clir.org/pubs/reports/pub92.pdf.

Taylor, Hugh (1993). 'Transformation in the Archives: Technological Adjustment or Paradigm Shift?' *Canadian Archival Studies and the Rediscovery of Provenance*, ed. by Tom Nesmith, Scarecrow: Lanham, Md.

Thibodeau, Kenneth (2001). 'Building the Archives of the Future. Advances in Preserving Electronic Records at the National Archives and Records Administration', *D-Lib Magazine*, 7/2,
URL: http://www.dlib.org/dlib/february01/thibodeau/02thibodeau.html

Upward, Frank, and Sue McKemmish (1994), Somewhere Beyond Custody. *Archives and Manuscripts* 22, 136-149.

Weber, Hartmut, and Dörr, Marianne (1997). 'Digitisation as a Method of Preservation?' Library and Information Resources (CLIR), Washington, DC.

Weber, Hartmut. (1998). 'Preservation of Archival Holdings and Unique Library Materials' *World Information Report*, Unesco, pp. 338-348.

Weber, Max (1972). 'Wirtschaft und Gesellschaft', 5.ed, Mohr: Tübingen.

Weeks, Dennis and Hoogestraat, Jane (1998). 'Memory and the Verbal Arts. Essays on the Thought of Walter Ong', Associated Press: London.

Wunder, Bernd (1986). 'Geschichte der Bürokratie in Deutschland', Suhrkamp: Frankfurt.

Yates, JoAnne (1989). 'Control through Communication. The Rise of System in American Management', Johns Hopkin University Press: Baltimore.

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