

SECTION V

**Program Management/  
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CHAPTER NINE

**Diplomatics, Weberian Bureaucracy, and the  
Management of Electronic Records  
in Europe and America**



CHAPTER TEN

**New Models for  
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## CHAPTER NINE

# **Diplomatics, Weberian Bureaucracy, and the Management of Electronic Records in Europe and America\***

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During the past several years, as archivists worldwide have begun to struggle with the problems of managing electronic records, two traditions of archival theory and organizational practice which remain very strong in Europe have become prominent features of the solutions being developed there. In this chapter, these theoretical influences on archival practice are explored and the way in which they are shaping European approaches to the challenges of electronic records are examined. The significance of European theory and practice for electronic records management in American is then considered.

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## THE EUROPEAN ARCHIVAL TRADITION

During the late Middle Ages, a radical change in administrative practice swept Europe. The written documents of important transactions of the court became recognized as the "official" record and as evidence of an "act."<sup>1</sup> Having achieved this legitimacy, and ultimately affirmed it in the emerging court systems established to defend the legitimacy of the state, the document as a evidence immediately became subject to forgery and other fraudulent use. It became critical to the legitimacy of the established order that methods were developed to distinguish between authentic and original records and forgeries or copies. One of these methods, the science of document analysis known as diplomatics, became a central element in the training of all European archivists in the nineteenth century after the fall of the ancien regimes when the historical, rather than administrative, use of these archives became important.<sup>2</sup>

Also during the nineteenth century, a dramatic and thorough revolution in the organization of collective activity in society took place throughout Europe as public and private institutions took on the bureaucratic forms which still predominate in organizations today. In bureaucracies, as Max Weber revealed in his classic analysis of this quintessentially modern form of organization, the autonomy of the individual as employee is subjugated to the office, and each office, or role, is performed without respect to the personal position of either the office holder or the client.<sup>3</sup> This impersonal consistency is maintained by policies and procedures and by the role of written records in all formal transactions. With the progressive adoption of this form of organization in the mid-nineteenth century came the northern European tradition of the registry office with its *Aktenplan* and the respect with which southern Europe treated "original order."<sup>4</sup>

The twin pillars of diplomatics and the documentation practices of bureaucratic institutions, especially those with

registry offices, support training and practice in European archives as the twentieth century comes to a close. However, they are being challenged by potentially radical changes in both the nature of records and the structure of organizations brought on by the so-called electronic information revolution. The response of European archivists to the electronic information revolution has been distinctively colored by their training in diplomatics and by the nature of their bureaucracies.

### **THE NATURE OF THE CHALLENGES POSED BY ELECTRONIC RECORDS**

The electronic information revolution presents two fundamental challenges to archivists. First, it threatens to transform the relatively stable framework of bureaucratic organizations and to replace it by a type of organizational structure which is, at present, inchoate. Second, it is leading to new practices of communication and to new forms of records whose outlines are equally unclear. Each of these tendencies challenges contemporary archival practice and forces us to re-examine archival theory.

Although it is overly simplistic to assert that technology determines the shape of society, we cannot deny that technologies may have a profound impact on social structures. We need only point to the role of irrigation in the emergence of agrarian civilizations, the stirrup and gun powder in the rise and fall of the feudal system, or printing in the spread of literacy and reformation, to see how significant these effects can be. Bureaucratic structures were designed as strategies for organizational management of far-flung enterprises, and methods of organizational recordkeeping such as the registry office were especially designed to support standardized action across the distance of time and space.<sup>5</sup> The telephone, automobile and airplane each successively reduced the effect of distance, and communication time as isolating factors in the modern world. But the electronic information revolution is reducing these distances in a way that undermines the structure

of bureaucratic organizations, a structure designed primarily to overcome the threat that time and distance posed to exerting coordinated and consistent organizational control.<sup>6</sup>

Bureaucratic organizations evolved to assert their authority across what were then vast distances in space and time. Through them, Chinese, and later European, governments could control remote districts and even colonies through written procedures uniformly applied. Bureaucrats were trained to follow procedures, to document their transactions on the same forms, and to submit reports to a central office for unified bookkeeping. Correspondence was managed in the same way from office to office, using common classification schemes developed to reflect organizational policy and practices for approval and recording of communications that were identical from one place in the organization to another.<sup>7</sup>

The advent of the telephone at the turn of the twentieth century introduced the first electronic challenge to this form of bureaucracy by providing a means for people to communicate across and beyond the organization, and at great distances in space, without leaving a documentary trail. Archivists were unable to document telephonic communication because it acquired the social protection of a private conversation even when devoted to organizational business. In response, organizations generally bar official actions from taking place solely by telephone or insist on the parallel creation of a written record. The electronic information revolution revisits the site of these battles, but it carries the seeds of a more thorough revolution in organizational behavior than was introduced by the telephone.

The electronic information revolution does not consist of the introduction of a single, free-standing piece of communications technology like the telephone, but rather of the re-creation of the organization and its activity in an electronic form which is technologically accessible twenty-four hours a day, from anywhere in the world, and without respect to the organizational role of the user. The challenge to the contemporary

organization is to harness this potentially anarchistic technology for the benefit of the organization. The methods at hand are the same tools that have been used to regulate organizations forever -- organizational policy and the technology itself. The issue is whether the potential of the technology to make the organization more responsive, more flexible, more accessible, and more tactical can be unleashed without also making the organization more reactive and less strategic.

As the technologies of the electronic information revolution become widespread, administrators look forward to having direct access to information previously summarized for them by subordinates; to being able to directly discuss this information with anyone in the company or outside at any time regardless of where the person with whom they are communicating is located; and to being able to make analytic decisions (with supportive tools) and order changes in organizational behavior based on them to take effect immediately. Production managers look forward to dispersed, multi-skilled design teams responding to customer demand with new designs that can directly drive automated production facilities, creating "just in-time" inventories of new designs with dramatically reduced lead times. Workers throughout the organization see the same technologies as a means of knowing as much as their bosses know, being able to contribute usefully to decision making, and being able to respond rapidly and directly to challenges from any source.<sup>8</sup> They also see it as freeing them from having to be in a particular place to do their work and of freeing their clients from having to "come to the office" to have the work done for them. For each of these employees, access to information becomes a source of power that is more important than place in the hierarchy itself. These kinds of changes, long predicted by social scientists familiar with the electronic information revolution, and heralded with glee by many of the leading figures who introduced this revolution, are now being discovered empirically.<sup>9</sup>

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The organization is, however, not without defenses. After all, it employs those who would use the technology to further such democratizing ends. But it would seem from studies to date that, both in Europe and in the United States, these technologies are having the effect of flattening organizations. It is demonstrably reducing the control exercised by central authority over transactions themselves and the recordkeeping about them.<sup>10</sup> Before examining these effects more closely, I will turn to the second challenge presented by the electronic information revolution.

The form of documents in any society reflects the meeting of a particular technology of recording and the generic cultural need to differentiate documents semiotically for rapid decoding. Those who know scrolls or clay tablets have no more trouble distinguishing at a glance whether they are viewing a proclamation or a record of commercial transactions than we, trained in our culture, have in distinguishing a page from a daybook from a legal brief or a utility bill. These distinctions among forms of recorded information based on their content are useful in complex societies and play a substantial role in archival theory and practice, especially in Europe.<sup>11</sup>

But the forms of documents are also undergoing rapid and unpredictable development at the present time as a consequence of the introduction of electronic means of communication. One obvious discontinuity is that electronic records cannot be seen except as they are re-presented under software control. To date most software has been designed to present electronic records in familiar guises so the changes are not as pronounced as they certainly will be in thirty years when a generation raised on these tools of communication invents entirely new forms rather than simply modifying the older ones that we have brought forward from the age of paper-based communications. Nevertheless, the changes in forms of records are pronounced enough to reveal three trends in the evolution of new forms of documentation that could profoundly effect archival practice.

The first is that instantaneous but asynchronous communication (it does not matter if the recipients of your communication are present when it is received, they will answer as soon as they return), has the effect within organizations of reducing the length and complexity of individual communications. Instead of writing a full report on an incident or analyzing the entire situation in detail and sending a report up the organizational hierarchy after a week or more, the pattern of communication consists of an exchange of statements and questions which do not supply any object referents or contextual clues. Indeed, it has been commented frequently that, in organizations using electronic mail communications, the written documentation is taking on the character of oral communication, especially of conversation.<sup>12</sup> As a consequence, the content of an electronic document is less likely to reference its context.

The second is that the speed at which underlying information upon which organizational decision making is based changes in organizations which have implemented electronic communications.<sup>13</sup> The premium that is placed on up-to-date information has led to greater integration between information systems, which in turn makes possible the creation of "dynamic" documents which change their content in response to the information environment in which they are (re)constructed. To date we have seen only such limited applications of this concept as the graph or spreadsheet which reconfigures itself based on the state of a remote database, but we will soon see such dynamic pointers, linked to artificial intelligence rules, redefining activities based on new policies, procedures, designs, or objectives.

The third development is the advent of the multimedia, "compound document" which again is in its infancy. To date we are seeing only linear textual documents with limited amounts of bit-mapped raster image and graphics, but capabilities to exchange non-linear "hyper-documents" and texts with voice annotation are very close to realization.<sup>14</sup> Within

the decade we will probably see compound documents which make it possible to export manufactured goods as information (driving manufacturing facilities located near the point-of-sale) and to direct medical, environmental, or military intervention by remote devices. These kinds of documents will require us to fundamentally rethink diplomacy since they will not simply *record* the effects of actions, but *be* the effectors of action.

These three trends in patterns of communication interact and are extended by such developments as the introduction of "intelligent" systems capable of executing organizational policies without human intervention. Such systems now routinely buy and sell most of the stocks on the stock market and determine organizational responses to natural and human-made disasters. In the future, information "objects" which monitor the information environment in which they operate in order to perceive and act on changes in the information landscape will be commonplace. How archivists respond to such developments will depend on how the organizations in which they are employed deploy information technology and on how they use their training as archivists.

## APPROACHES TO ELECTRONIC RECORDS MANAGEMENT

The fundamental problem in the management of electronic records is to identify the functional provenance of records (e.g., the business purpose for which they were created), so as to be able to carry out organizational retention policy. We cannot see electronic records except under software control, but the functional provenance of records may be *explicitly recorded as data* within the record by the record creator or system, *implicit in the system design* and revealed by analysis or by documentation which reveals the structural relations between data instances, or *discovered by links to the originating activity*, which is represented by the source of the records, or more exactly by knowledge of the transaction communication

path. Each of these three loci of functional provenance information (data content, data structure, and data context) provides documentation of what I have elsewhere called "evidential historicity" and can be contributed either by individual employees, the bureaucratic system or the underlying technology.<sup>15</sup>

Europeans are deploying solutions to the challenges posed by electronic records management that differ in emphasis from those being experimented with in the United States. In Europe, they are depending more on individual employees and the bureaucratic system to provide functional provenance as explicit data while in the U.S. we are relying more heavily on technology to provide information about structure and communications paths.<sup>16</sup> This impression reflects my observations at several recent meetings in Europe on electronic records management and in the working sessions of the United Nations ACCIS working group on electronic records management guidelines.<sup>17</sup>

It has become clear to me that German-speaking Europeans generally believe employees can be instructed to classify the business function of electronic records as they have paper-based information. At a meeting of experts held in Marburg in October 1991, German archivists were unanimous in their belief that traditional classification methods could be applied to electronic records. Archivists from the province of Baden-Württemberg and from the Bundesarchiv concurred that all future records would be "documents," all documents would be classified, and that classified records in any format could be managed by registry office practices.<sup>18</sup> At the Macerata conference in May 1991, Christoph Graf, the national archivist of Switzerland, also asserted that workers can and must assign classifications to records in the electronic office.

It does logically follow that if electronic records are documents, if classifications must be assigned to documents prior to sending them, and if the classification reflects the functional provenance and contextual significance of the record, then

records will be associated with their correct provenance through classification by their creators. But will electronic records be documents in the sense of being software independent and having boundaries within which their data is contained? Will organizations continue to relate to the outside world through organizational structures which correlate placement of an employee in the organization to his or her function? Will classifications based on bureaucratic forms be adequate to reconstruct relations between transactions and between data in records and their information environment? And can users correctly classify transactions generating electronic documents?

At the Macerata meeting, which was influenced by Italian participation, emphasis was placed on understanding the bureaucratic pathways along which communications flow. It was assumed that certain kinds of transactions would take place in specifiable ways between communicating bureaucracies or even between departments within an organization. It was also assumed that the business source of the transactions could thereby be identified by archivists using methods of systems analysis to document such flows and characterizing the resulting transactions by the form of record they produced.<sup>19</sup>

In the United States, where no tradition of classifying official communications according to provenance and business purpose exists and where communication between organizations does not necessarily take place between the heads of the respective departments or units, a consensus is developing around more technological, rather than managerial, strategies. We are trying to assert archival authority into the systems acquisition and planning process in order to assure that archival requirements are embodied in acquired software. We are trying to insinuate ourselves into standards-setting efforts to incorporate certain requirements into procurement regulations. And some researchers are exploring ways to automatically mark or tag the provenance and business purpose of documents through recognition of their form and their telecommu-

nication source (automatically generated extended headers providing business function).<sup>20</sup>

In part, Americans are seeking technological solutions because in our context we have reason to doubt the ability of organizational policy to constrain new technologies. In general, Europeans have greater confidence that organizational policy can adequately control the implementation of electronic systems and the way in which they are deployed.

Swedish archivists reported that the "solution" to controlling electronic records is to assure that the systems, and what they are intended for, are registered in the national metadata-base. The Deputy Archivist of Sweden has noted that under Swedish law all systems designs had to be filed with the archives and that the archives approved all potential capabilities of systems to generate records. Thus, he argues, the systems cannot be used to create unanticipated kinds of records!<sup>21</sup> Likewise, German archivists assured their colleagues that no new technologies which threatened to transform the nature of records could be acquired by their bureaucracies unless they were previously approved by the archives. The Swedes, along with their German colleagues, were certain that policy prevented any person within the system from using software capabilities to create a kind of record for which there was no prior warrant or from deleting or changing records once they had been sent. Thus, in controlling records from databases, for example, the Swedes are content to capture the contents of the database and the regulations about what kinds of queries may be put to it. In effect they document in national, publicly available, metadatabases the diplomatic forms of records.

An unarticulated assumption of the Swedish confidence that the specific purposes of records for particular business processes can be defined up front, often in legislation, and regulated by active metadata systems, is that particular, and limited, functions in hierarchical bureaucracies are assigned to specific offices and only to those offices. Without assuming such a co-location of function and office, I proposed to the UN

ACCIS panel that the control of electronic records would need to begin identification of the business application from which the record was generated and of which it is evidence. The concept of a business application in that framework consciously had less than a one-to-one correlation with either the concept of software application or a particular office or locus within an organization. My suggestion, which is hard to carry out in practice, is that archivists intervene in software implementation so as to create a user interface layer which presents functionality to users in terms of the business processes sanctioned by the organization. This is a technological solution intended to replicate the correlation between business functions and permissible forms of documentation which the Europeans report still exists in fact in their organizations. If they are right, they are fortunate indeed; what is interesting here is that we are both forced to conclude that the correlation between the nature of the activity and the record of that activity is critical (indeed it is the essence of the concept of provenance), whether or not that activity is located in a particular organizational/bureaucratic structure.

Assuming that the full capabilities of systems will be used regardless of how they are intended to be employed, we in the U.S. are struggling with how to capture the actual transactions against databases in a machine- and software-independent format so they can be reconstructed along with the other transactions that constituted a single business activity.<sup>22</sup> Again the emphasis is on the automatic capture of the actual transactions from systems rather than relying on staff. When we look at metadata systems it is less as a means of documenting or regulating how systems are intended to be used than as a method of providing access to the public or building documentation libraries for use in controlling their future migration.<sup>23</sup>

In the United States most archivists assume that they must go with the flow as technology transforms the organization. We assume that the latest technical capabilities will be imple-

mented and that their programmatic uses cannot be predicted, to say nothing of restricted. Assuming that guidance cannot assure that individuals in organizations label documents correctly, or even that information resides in non-dynamic "document" systems, the UN ACCIS panel report which I drafted proposes to identify those business processes whose records are archival, and to employ automatic methods for linking records to the business process which created them. The links, possibly in the form of headers, would then be exploited in the management of the data.<sup>24</sup>

It is extremely interesting, therefore, to examine Canadian tactics which represent a middle ground between the two strategies in part because their organizations share some of the characteristics of the traditional European bureaucracy and of the American office.<sup>25</sup> The IMOSA (Information Management and Office Systems Architecture) project of the National Archives of Canada, the Treasury Board (Canada's governmental regulator and oversight agency) and the Canadian Office Workplace Study Center reveals its dual policy/technology roots in its title and its co-sponsorship. Consciously two-pronged throughout, the IMOSA approach looks on the one hand towards defining the "corporate memory requirements" and emphasizing the need for guidance on the "corporate rules of the road" in the use of electronic systems, and on the other hand towards writing a specification that it hopes will become a procurement standard for office front-end and rear-end systems. The technological solution itself reveals a duality since it both shapes the interface so that users identify the activity context in which they are working when they select software functions and asks users to explicitly label corporate files based on imposition of registry office principles.

## **ORGANIZATIONAL CULTURE AND RECORDS MANAGEMENT IN EUROPE AND THE UNITED STATES**

As I encountered differences in electronic records management practices in Europe and the United States, I initially attributed them to historical differences between the American and European labor market and the structure of United States and European firms. These differences between United States and European organizations have been portrayed as differences in the degree of role-formalizing and hierarchical relationships and the degree of mobility of the work force.<sup>26</sup>

On further examination, I still believe that the degree of career mobility of employees within and between organizations is an ecological variable that helps to explain the difference between the ways that American organizations are confronting the challenges of electronic records and the approaches taken by their European counterparts. Employees can be expected to remain in a single organization in Europe for almost twice as long as in the United States. Movements between jobs within a company are also much more frequent in the U.S. than in Europe. It seems common sense that an employee who is going to remain with the company for only a short time would be hired, oriented to the firm for a day or two, and told to get on with the job. Very few procedures would be explained and the networks of contacts with whom the individual is supposed to work in order to perform the job would include all the people with whom that employee was in contact before accepting the new post. In these organizations, methods of work are strongly influenced by the personal styles and work history of the employees who are judged by results rather than by adherence to organizational practices.

Overall the American professional employee has less than two years to learn the requirements of his or her job and the procedures of the company while Europeans have well over three. However, the trends in both Europe and the United States over the past century have been towards greater mobil-

ity and less longevity in the firm, and it would appear that they are continuing unabated. While traditional organizations are still more common in Europe today, because employees stay with the firm and even in the same job for a long time, I would expect to see procedures for records management breaking down if mobility alone was the basis for behavior. New employees in European organizations, for example, would be less likely to be oriented to the classification systems for document identification and filing used throughout the firm.

Impressionistic accounts also suggest that European organizations exercise control more hierarchically than American organizations of the same kind. Mid-level personnel in American organizations appear to enjoy substantially greater autonomy than their European counterparts, especially when it comes to requesting authority for specific actions (almost always delegated in a very general way in the United States) or reporting on actions taken (which takes place considerably less formally in the United States and involves "filing" of fewer reports). But sociological studies do not reveal systematic differences in the numbers of levels in the hierarchy of firms in the same businesses in the U.S. and abroad.

Nevertheless, when electronic information systems are introduced into American and European organizational environments, with their different traditions, they appear to exacerbate the tendencies of each organization. Distributed, results-oriented units within American organizations have embraced new technologies and used them to further reduce hierarchy and corporate procedural constraints. Technologies have been acquired in order to enhance the ability of individuals throughout the organization to do their jobs rather than in order to further corporate control or norms. European organizations have been much more hesitant to introduce these technologies, and when they do so usually develop substantial administrative controls surrounding their use. Can these differences be explained in a way that helps us to understand

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them and base electronic records management strategies on them?

Sociologists are finding that organizations worldwide are becoming more similar and yet the behavior of people within these organizations is retaining its cultural uniqueness.<sup>27</sup> Organizational culture, or how people behave in organizations, is being studied to understand differences like those between record making and recordkeeping practices of organizations in Europe and the United States. Scholars of organizational culture now seem to accept a social-psychological analysis of the differences between organizations, based largely on empirical research by Geert Hofstede.<sup>28</sup> This organizational culture research predicts three patterns which should be apparent in European and North American organizations, and I am impressed that they correlate closely with my observations on international contrasts between archivists in their approaches to electronic records.

Hofstede's research identifies four dimensions of organizational culture of which the degree of "power distance" and "uncertainty avoidance" are the two dimensions most relevant to my analysis. A matrix of two measures for each factor (large power distance/small power distance; strong uncertainty avoidance/weak uncertainty avoidance) yields four distinctive styles of bureaucracy. Richard Mead dubs these: *Full Bureaucracy* (characterized by wide power distance and strong need to avoid uncertainty); *Market Bureaucracy* (characterized by narrow power distance and weak uncertainty avoidance); *Workflow Bureaucracy* (characterized by narrow power distance and strong need to avoid uncertainty); and *Personnel Bureaucracy* (characterized by wide power distance and weak need to avoid uncertainty).<sup>29</sup>

Using Hofstede's data, France and the Mediterranean and Latin countries fall into the category of *Full Bureaucracies* where functions are tightly distinguished, communication is mainly downward, and departments will communicate with each other through their highest levels. In such organizations

we would expect the fonds to reflect discrete functions and downward and outward communication to flow from the top.

The *Market Bureaucracies* include Scandinavia, the Netherlands and Anglo countries where communications are upward and downward and power is negotiated across organizational lines on the basis of personal relationships. In such organizations functions are not closely tied to place in the organization and communication flows in all directions up and down and outward from all points.

*Workflow Bureaucracies* include German-speaking countries and Finland where the emphasis is on regulating activity rather than relationships. In such organizations functions are closely tied to structure. Communication flows up and down and outward from many points, but only according to well-defined procedures.

*Personnel Bureaucracies*, not found in Europe or North America, are patriarchal authority structures with loose relations between workers at the same levels.

The pattern predicted by these studies of organizational culture is three different approaches to documentation rather than a simple Europe/America dichotomy. The location of the fracture lines is consistent with the differences in archival practices between Germanic and Romance Europe identified by Duchein.<sup>30</sup> In addition, it predicts that we should find commonalties between Anglo, Scandinavian, and Dutch practices. I have indeed identified some commonalties in the approach to electronic records management taken by archivists in these cultures, but some other differences between U.S. and Canadian, Dutch, or Scandinavian practice remain.

It may be that another dimension of the Hofstede analysis -- individualism -- is related to the differences between U.S. practices and those of Canadian, Scandinavian, and Dutch archivists. Archivists in these somewhat less individualistic corporate cultures show a greater faith in the effectiveness of ethical, constitutional, or legal proscriptions against the use of personal data than do American archivists. I suspect this is a

factor in their greater reliance on policy rather than technology to constrain misuse of data.<sup>31</sup> In any case, I believe it is extremely worthwhile to explore organizational cultural differences further in order both to understand historical archival practices and to predict what might be effective records management strategies in different contexts. Because different organizational cultures are found in different companies, not just in different countries, sensitivity to corporate culture variations may help us develop electronic records management practices which will work, even if we are only interested in one nation.

## CONCLUSIONS

There are two fundamental strategies that can be employed to assure the maintenance and retention of adequate documentation of organizational activity: policy and technology. In their purest forms the policy-oriented approach would define certain forms of documents and certain pathways of communication that are permissible, and dictate that employees in the organization must use the electronic information systems in these prescribed ways. The technological approach would also seek to capture certain forms of documents traveling by specified pathways but instead of requiring individuals to act in the corporate interest and to know the corporate rules, it would identify and capture such communications automatically and invisibly. Both approaches require that archivists understand which transactions are archivally important (based on analysis of organizational functions) and the forms of records they produce (based on diplomatics).

If American archivists are going to be forced by the nature of organizational culture in the U.S. to rely on technological intervention to safeguard electronic records of long-term value, they will need to use diplomatics-like principles to identify new forms of records. They will also need to use organizational analysis to model the archivally significant activities in which employees are engaged to apply rules to the seg-

regation and disposition of records based on provenance. As a consequence, the European tradition of diplomatics should find a growing applicability both in Europe and in the United States as the character of documents change.

I believe the European tradition has a great deal to offer even the most techno-centric approach. For example, I have suggested the potential power of automatic document type analysis using intelligent parsers and SGML coupled with rule-based retention schedules linked to business functions analysis documented in metadata. To implement this kind of automatic or quasi-automatic means of archival intervention will be to extend the reach of diplomatics and refine diplomatics as a method of analysis.

Organizational analysis will also play a growing role on both sides of the Atlantic as traditional organizations are further eroded. Archivists will need to rely more on the empirical analysis of organizations as systems, rather than normative descriptions, since the functional origin of transaction and the links between dispersed agents will be of greater importance as the organizational locus of the document creator becomes less significant in less hierarchical organizations. To identify the business context of transactions for an intelligent communications gateway will require identifying activities so as to base retention decisions on functional provenance and will require us to refine methods of representing formal and informal communications within post-hierarchical organizations. Finally, no matter how different the organizational cultures in the U.S. and Europe are, the organization will still need to exert some control through policy. Identification of the policy objectives in cultures where policy functions well to control electronic records can assist those of us who live in organizations with more anarchistic cultures to identify ends that will have to be achieved by alternative means.

## NOTES

- <sup>1</sup> M.T. Clancy, *From Memory to Written Record: England, 1066-1307* (Cambridge: Harvard University Press, 1979).
- <sup>2</sup> Luciana Duranti, "Diplomatics: New Uses for an Old Science," *Archivaria* (1988-1992), Part I, 28:7-27; Part II, 29:4-17; Part III, 30:4-20; Part IV, 31:10-25; Part V, 32:6-24; Part VI, 33:6-24.
- <sup>3</sup> Cf. Michael Lutzker, "Max Weber and the Analysis of Modern Bureaucratic Organization: Notes Towards a Theory of Appraisal," *American Archivist* 45 (Spring 1982): 119-130.
- <sup>4</sup> See Michel Duchein, "The History of European Archives and the Development of the European Archival Profession," *American Archivist* 55 (Winter 1992): 14-25, especially footnotes 12 through 16.
- <sup>5</sup> Alfred D. Chandler Jr., "The Emergence of Managerial Capitalism," *Business History Review* 58 (1984): 473-503. This article compares U.S. and Europe. See also his *Strategy and Structure: Chapters in the History of Industrial Enterprise* (Cambridge: MIT Press, 1962) and his *The Visible Hand: The Managerial Revolution in American Business* (Cambridge: Harvard University Press, 1980).
- <sup>6</sup> Harland Cleveland, "The Twilight of Hierarchy: Speculations on the Global Information Society," *Public Administration Review* 45 (1985): 185-195.
- <sup>7</sup> JoAnne Yates, *Control through Communication: The Rise of System in American Management* (Baltimore: Johns Hopkins University, 1989).
- <sup>8</sup> Tom Finholt, "The Erosion of Time, Geography, and Hierarchy: Sharing Information Through an Electronic Archive," in *Information Handling in Offices and Archives*, Angelika Menne-Haritz ed. (New York: K.G. Saur, 1993): 67-90. See also Shoshana Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988).
- <sup>9</sup> J.D. Eveland and T.K. Bikson, "Evolving Electronic Communications Network: An Empirical Assessment," *Office Technology and People* 3 (1987): 103-128.
- <sup>10</sup> United States Congress, House Committee on Government Operations, *Taking a Byte Out of History: The Archival Preservation of Federal Computer Records*, 101st Congress, 2d sess., H. Rept. 101-978.
- <sup>11</sup> David Bearman and Peter Sigmond, "Explorations of Form of Material Authority Files by Dutch Archivists," *American Archivist* 50 (1987): 249-253.

<sup>12</sup> Tora Bikson, "Research on Electronic Information Environments: Prospects and Problems" Paper delivered at the NHPRC-funded Working Meeting on Research Issues in Electronic Records, Washington, D.C., 24-25 January 1991.

<sup>13</sup> Charles W. Steinfield, "Computer Mediated Communications in the Organization: Using Electronic Mail at XEROX," in *Case Studies in Organizational Communications*, ed. Beverly D. Sypher (New York: Guilford Press, 1990): 282-294.

<sup>14</sup> Ron Weissman, "Virtual Documents on the Electronic Desktop: Hypermedia, Emerging Computer Environments and the Future of Information Management," *Management of Recorded Information: Converging Disciplines*, ed. Cynthia Durance (New York: K.G. Saur, 1990): 37-58.

<sup>15</sup> Aspects of this synthesis of the issues involved in electronic records management, particularly the relevance of the concepts of information located in data, in structure, and in context, are contained in David Bearman, "Information Technology Standards and Archives," *Janus* (1992.2): 161-166, reprinted in this volume as Chapter 7; and Bearman, "Archival Principles and the Electronic Office" in *Information Handling in Offices and Archives*, Angelika Menne-Haritz ed. (New York: K.G. Saur, 1993): 177-193, reprinted in this volume as Chapter 5.

<sup>16</sup> For strategies in the U.S., see National Historical Publications and Records Commission, *Electronic Records Issues: A Report to the Commission*, Commission Reports and Papers #4 (March 1990) and *Research Issues in Electronic Records* (1991); Richard J. Cox, ed., *Archival Administration in the Electronic Information Age: An Advanced Institute for Government Archivists* (Pittsburgh: University of Pittsburgh, August 1990); New York State Archives and Records Administration, *A Strategic Plan for Managing and Preserving Electronic Records in New York State* (Albany: August 1988).

<sup>17</sup> For reports on the meetings in Maastricht and Marburg, see: David Bearman, "Archives and Europe Without Boundaries," *Archives and Museum Informatics* 5:3 (Fall 1991): 6, and "Impact of Information Technologies and Information Handling on Offices and Archives," *Archives and Museum Informatics* 5:3 (Fall 1991): 9-11. For the work of the United Nations ACCIS committee, see United Nations, Advisory Committee for Co-ordination of Information Systems, *Management of Electronic Records: Issues and Guidelines* (New

York: UN, 1990), parts of which are reprinted in this volume as Chapter 3.

<sup>18</sup> Peter Bohl, "Archival Requirements for Future Documentation in Administration," in *Information Handling in Offices and Archives*, ed. Angelika Menne-Haritz (New York: K.G. Saur, 1993): 128-137; Wulf Buchmann offered similar informal comments at the Seminar of Impact of Information Technology and Information Handling on Offices and Archives, Marburg, Germany, 17-19 October 1991. His comments are reported in Bearman, *Archives and Museum Informatics* 5:3 (Fall 1991): 9-11.

<sup>19</sup> For an account of the specialists' meeting on the Impact of Electronic Records on Archival Theory, University of Macerata, 13-17 May 1991, see David Bearman, "Impact of Electronic Records on Archival Theory," *Archives and Museum Informatics* 5:2 (Summer 1991): 6-8.

<sup>20</sup> David Bearman, "An Introduction to CALS," *Archives and Museum Informatics* 5:4 (Winter 1991). My interest in this area was sparked in 1988 by an unpublished paper entitled "Formalizing the Figural: Aspects of a Foundation for Document Manipulation" by David M. Levy, Daniel C. Brotsky, and Kenneth R. Olson of Xerox Palo Alto Research Center and renewed later that year by Andreas Dengel and Gerhard Barth, "Document Description and Analysis by Cuts," *RIAO '88 Proceedings 2* (Cambridge: Massachusetts Institute of Technology, 1988): 940-952. Since then, several commercial software systems have combined scanning with parsing for visual clues to identify document features. See, for example, FastTag, as product of Avalanche Development Company, Boulder, Colorado.

<sup>21</sup> Claes Gränström, "Will Archival Theories Be Sufficient in the Future?," in *Information Handling in Offices and Archives*, ed. Angelika Menne-Haritz (New York: K.G. Saur, 1993): 159-167. See also his "Legal Problems of Access to Machine-readable Archives," *Archivum* 35 (1989). As Peter Bohl put it in "Archival Requirements for Future Documentation in Administration," "It is unrealistic to assume that government agencies will introduce processing methods which contradict legal requirements, the laws of administrative procedure, only to keep up with modern trends," an assumption that could be totally reversed and retain its validity in the United States.

<sup>22</sup> The World Bank has been engaged since about 1990 in a series of projects to use the models of business processes developed as part of its strategic information systems planning efforts to identify business

transactions of continuing value to the organization, and with this information to devise methods for capturing such transactions for archival retention. Reflections on this and the UN ACCIS panel debates are contained in Richard Barry, "Getting it Right: Managing Organizations in a Runaway Electronic Information Age," in *Information Handling in Offices and Archives*, ed. Angelika Menne-Haritz (New York: K.G. Saur, 1993): 27-55.

<sup>23</sup> Charles Robb, "IRM in Kentucky State Government, *Archives and Museum Informatics* 5:4 (Winter 1991): 2-4.

<sup>24</sup> I was recently informed of a similar emphasis on automatic markup by the Office of Records Management at the National Archives which is exploring the possibility of defining elements in Document Type Definitions in SGML to assure business functional source labeling of information throughout its life-cycle.

<sup>25</sup> "IMOSA, Information Management and Office Systems Advancement: Overview Document," November 1991; "The IMOSA Project: Phase 1 Report," Department of Communications, Canadian Workplace Automation Research Centre, Laval and National Archives of Canada, Government Records Branch, Hull, 1991; Dale Ethier Consulting Inc., "IMOSA Project: Functional Requirements -- Corporate Information Management," 5 November 1991; Treasury Board, Office Systems Standards Working Group, "Information Management in Office Systems: Issues and Directions," draft, September 1990; Communications Canada, Canadian Workplace Automation Research Centre, "Identification of Government-wide Information Management Issues and Concerns," draft, May 1991.

<sup>26</sup> A. Laurent, "The Cultural Diversity of Western Conceptions of Management," *International Studies of Management and Organization* 13 (Spring-Summer 1983): 75-96; and Nigel Nicholson and Michael West, *Managerial Job Change: Men and Women in Transition* (Cambridge: Cambridge University Press, 1988).

<sup>27</sup> John Child, "Culture, Contingency and Capitalism in Cross-National Study of Organizations," in *Research in Organizational Behavior*, vol. 3, ed. L.L. Cummings and Bill Shaw (Greenwich, Connecticut: JAI Press, 1981): 303-356.

<sup>28</sup> Geert Hofstede, *Culture's Consequences: International Differences in Work Related Values* (Beverly Hills, California: Sage, 1980); subsequently adopted as a framework in Nancy Adler, *International Dimensions of Organizational Behavior*, 2nd ed. (Boston: PWS Kent Publications, 1991).

<sup>29</sup> Richard Mead, *Cross Cultural Management Communication* (New York: John Wiley & Sons, 1990).

<sup>30</sup> Duchein, "The History of European Archives and the Development of the Archival Profession."

<sup>31</sup> Geert Hofstede, "Cultural Relativity of Organizational Practices and Theories," *Journal of International Business Studies* 24 (Fall 1983): 75. Also, in his *Culture's Consequences*, pp. 213-260, Hofstede ranks Sweden, the Netherlands, and Canada between 71 and 80 on the individualism scale, Great Britain and Australia between 81 and 90; and the U.S. alone (and on the extreme) at 91.