Principles, Methods, and Instruments for the Creation, Preservation, and Use of Archival Records in the Digital Environment

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A b s t r a c t

This paper focuses on the need for a systematic redefinition of the archival methods and tools required for building electronic recordkeeping systems. The analysis, which has been developed for archival education in Italy, is carried out through an examination of the historical evolution of the main functions for records creation (classification and the registry system) and the evaluation of their effectiveness in the newly developed and technologically advanced records systems. Special attention is given to the risks posed by new Italian and European rules on electronic records. These rules are based on the use of digital signature as the only guarantee for a record's reliability and authencity. It is argued, however, that the digital organization of the records, even if updated and improved, cannot be efficient if it ignores the traditional functional requirements for recordkeeping.

R e c e n t   I n t e r e s t   i n   t h e   P r o d u c t i o n   a n d   M a n a g e m e n t   o f   R e c o r d s

T his essay begins with a consideration of traditional principles and concepts and their validation in archival methodology and practice in order to present analytic and reflective materials that will clarify the soundness of the existing instruments developed for the creation of records. It will then seek to confirm their validity in the new technical realm and offer

a fairly complete panorama of the functions that need to be developed for the management of complete and reliable records in the digital environment[1].

It is increasingly necessary (and urgent) to confer with disciplines operating in related or connected sectors. Thus, this is also a good occasion to consider problems of terminology referring to the principle objects of the records system, in particular in the domain of archives and its constitutive elements. It is also good to renew an examination and evaluation of the main methods which, until now, have guaranteed appropriate and accurate management of the records system (classification of records, protocol registry, retention schedule, procedures, rules, and products for their definition and successive maintenance, etc.). The essay will also consider the evolution underway in a sector destined to be strongly affected by information and communication technology.[2]

The Italian archival profession has been engaged in research in and verification of the relationship of recently established legal requirements in Italy to the technical conditions, defined and developed over time in the international arena, with specific reference to the quality and efficacy of traditional tools used for the organization of the creation of records. A central issue, for example, concerns the validity of archival classification to guarantee an orderly and coherent accumulation of records for the purpose of research and of preservation, but above all to support the functions exercised by government agencies and enterprises. In the course of the development of the rules mentioned above, there was a long discussion, on the means for maintaining the record-keeping system continuously updated, of effectively linking it to the administrative process of which it constitutes the residue and testimony.[3]

The particular interest of archivists in building records management programs and their consequent attention to the study of "archives in formation" constitutes a recent development, not only in Italy, but especially in the inter-

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[1] The essay has been prepared for educational purposes, to offer to the Italian archival community a systematic point of view of traditional concepts and tools to be developed in the electronic recordkeeping systems the Italian legislation has defined in 1998 for the entire public administration. For this reason, many terms, commonly used in the archival area, have been better analyzed and defined, particularly with reference to their role in a more technologically advanced environment.

[2] While the objective of the discussion is to analyze the principles, concepts, and tools, a simplified presentation, of an educational nature enables us to furnish—in the limited space of a journal presentation—a preview of the research, predictably, which, in any case, should be clearly and organically defined for the objective of offering a stable framework for organizing automated systems for records management. So let us revive, at this occasion, the definitions and observations already present in many archival manuals, which in the Italian tradition have always been aimed at guiding arrangement and description activities within the historical archives and, therefore, have not addressed specific requirements for guiding the record manager's activities, even in the sections dedicated to the analysis of recordkeeping activities.

[3] On this topic, see Maria Guercio, "Classificazione e archiviazione in ambiente digitale," in *Labirinti di carta. L'archivio comunale: organizzazione e gestione della documentazione a 100 anni dalla circolare Astengo. Modena, 28–30 gennaio 1998* (Roma, Ministero per i beni e le attività culturali, Direzione generale per gli archivi, 2001), 400-17, and Linda Giuva, "Gli strumenti archivistici per la gestione dei documenti: la registrazione di protocollo, la classificazione, i piani di conservazione," in *Rassegna degli Archivi di Stat* (1999), 128–39.

national arena.[4] Italian archival tradition has, in fact, been concerned for centuries with themes related to the creation of records in current archives, although to a lesser degree compared to the attention given in the last decades to the problems of the preservation and description of historical archives.[5]

Technological innovation and the necessity for safeguarding historical recorded memory to draw attention to the creation phase, the state of extreme degradation which characterizes current records and contemporary repositories, have produced a different professional concern (particularly among younger archivists), regarding a sector which offers many opportunities for work in the future, but also promises to involve various significant areas of professional activity, among which is the vital connection between the use of the technology in the creation and processing of contemporary records.[6] There can be no doubt that for the profession to avoid this challenge would entail for now and in the future, a renunciation of managing this area, which falls under its specific and exclusive competency, and an isolation in a sort of ivory tower, where it would be more and more threatened by the new professions of communications and information in the extent and impact of the function performed. The risks do not concern the professional nature of archival work which, in the context of the major transformation currently happening, can still change radically, so much as the very object of archival study: records, their specificity, their relationships, the format of their aggregations, the modalities of selection, and the periods of retention, the need for guaranteeing authenticity over time and of respecting the naturalness, fixity, and the necessity of the record links to the process of accumulation, which constitute the essential, if not exclusive, rationale for permanent preservation across time (for the use of the records creator in the first instance and thereafter for the needs of historical and scientific research). If we lack knowledge of the nature of records and, therefore, of the rationale and the means of maintaining the original structure of the archives over time; furthermore, if we do not possess the tools to establish and maintain organized collections of records as credible and authentic evidence of the workings of a collectivity, we will be condemned to fail in passing to future generations meaningful traces of our own history, as is often stressed by archivists all over the world. No longer left alone to deal with this preoccu-

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[4] Read what Luciana Duranti writes on this issue, describing the changes that have occurred at the international level in the introduction to the volume, *I documenti archivistici:La gestione dell'archivio da parte dell'ente produttore* (Rome: Ministero per i beni culturali e ambientali, Ufficio centrale per i beni archivistici, 1997), 1–13.

[5] In 1987, Paola Carucci drew attention to the absence of studies on records of the contemporary era in *Il documento contemporaneo: Diplomatica e criteri di edizione* (Rome: La Nuova Italia Scientifica, 1987), 27, with specific reference to the opportunity to develop analysis in the area of diplomatics research, a promising discipline for qualifying the archival functions in the fragmented contemporary records world.

[6] "The contemporary records challenge" is the current expression with which, for the last few years, our North American colleagues have attempted to define the emerging documentation of our era.

pation and the anxiety of not betraying a mission which goes beyond the defense of a professional interest, the large majority of archivists today perceive as an urgent priority the necessity of overseeing, with greater effort and conviction than in the past, a field of activity to which they have devoted only marginal and distracted attention in recent decades. There have been some important exceptions, as previously noted with reference to the Italian literature.[7]

The Italian system can already count on several significant milestones in this process, among them the referenced guidance on electronic recordkeeping systems, in whose development the archival administration has actively participated, relying on technically competent persons. Nonetheless, the presumption remains that we need to update archival theory to explain its principles, rigorously define its objectives and methodology, and analyze functions and specific activities, as well as develop adequate instruments to promote and guide the transformation of actual administration.

The Record

The concept of record is, naturally, the starting point of a process of testing, which is not at all destined to change the stature of the discipline, but only to strengthen its base in light of a broader reflection that takes into account the experience and the results produced in the environment of an active and informed international community.

In the past, archivists did not pay much attention to the theoretical definition of "record" as long as their work remained almost exclusively confined to the traditional world of paper media and, above all, to a time period from the middle ages to the modern and first contemporary age. Diplomatics constituted the discipline of reference and seemed adequate to furnish all the necessary baggage of principles, methodology, and analytical tools. Problems—along with a renewed scientific interest in addressing them—surfaced in their full complexity only when these tools had to be applied to records in the new contemporary world, with its fragmentation, but also with its richness. Particular problems emerged in the case of new records systems produced by an administrative machinery ever more articulated and pervasive, but at the same time inattentive to, or careless of, recordkeeping.

This is not the place to investigate the nature of the changes that have arisen in contemporary records creation, nor the reasons for the proliferation of archives that still characterizes it, in spite of repeated attempts to reduce and simplify

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[7] In Italy it is important to recall the effort of Oddo Bucci, Paola Carucci, Raffaele De Felice, Elio Lodolini, and Antonio Romiti; while in the international community the efforts in recent years of the Australian and Canadian archival communities were and are central in leading with the force, the energy, the enthusiasm which sometimes can be found only in young communities, rich in human resources and technological experience, a new phase of archival tradition focusing research directly on the creation of active records and of the development of systems of management and maintenance.

records creation made possible by the diffusion of technological innovations.[8] The phenomenon of the growth of diverse and barely controlled documentary products and the risk of information overload, due to the lack or inadequacy of rules for the acquisition and recognition of the creator's records constitute general facts at present and have rendered ever more urgent a new reflection on concepts that have seemed definitively established and sufficiently clear.

The first and most complete tentative undertaking in this direction was that completed in 1987 by Paola Carucci in the work, already cited, *Il documento contemporaneo.* In 1989 Luciana Duranti deepened this theoretical formulation, extending its boundaries to encompass electronic records. The basis for this has been the traditional definition of record used in general diplomatics: "A written evidence of a fact of juridical nature, compiled in conformance with a determined form, designed to make it trustworthy and to endow it with the force of proof."[9] Archivists, however, have always used the concept in a broader, global sense, which includes cases that are not necessarily strictly limited to the formal records generally considered and studied in the traditional discipline, and even less to only 'written' records; and, they have further analyzed and developed it to refine their understanding of the record's function in an archival framework. According to this broader, but still limited, point of view, which (as Alessandro Pratesi has appropriately noted) "tends to dilute the concept of record beyond the limits of a strict connection to the rigorously legal nature of its contents,"[10] maintaining a strict relationship to the function performed by the above stated definition, "record" can be defined as

> the representation of a legally relevant fact or act recorded on a *medium* and preserved by a physical or juridical person in the exercise of its functions (produced or acquired in one way or another in the course of a practical activity of a *creator*).

This definition requires certain brief clarifications, which, given the complexity of the problem, will naturally deserve a serious attempt at elaboration. First of all, the reference to the *act/fact* as the object of recorded representation does not (as has already been emphasized) have a strictly formal nature. In other words, it is not meant to be limiting, but to set up flexible guidelines for determining if a document (received, sent, or variously acquired) is effectively and functionally part of the record system of the producer.

The terminology used in archival texts is still more general: the record is identified simply in its quality as "instrument and residue" of the practical activ-

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[8] Cf. On this topic see Paola Carucci, "Evoluzione dei sistemi gestione delle fonti archivistiche: dalle metodologie tradizionali alle nuove tecnologie," in *Le carte della memoria: archivi e nuove tecnologie,* edited by Marcello Morelli and Mario Ricciardi (Bari: Editori Laterza, 1997), 239–59.

[9] Cesare Paoli, *Diplomatica* (Florence: G.C. Sansoni, 1942) 18.

[10] Alessandro Pratesi, *Genesi e forme del documento medievale* (Rome: Jouvence, 1979), 25.

ity of a physical or juridical person.[11] This connotation, by itself, is sufficient for someone concerned with the preservation or management of archives, whose responsibility is substantially that of reorganizing, describing, and preserving that which already constitutes the archives.[12] If instead, the identification of the record is a preliminary operation to the comprehensive management of document and work flow, it is indispensable to dispose of more stringent criteria of analysis and evaluation, in order to distinguish the diverse types of documentary materials that supply and increasingly encumber the information system of an entity (with costs and inefficiencies which cannot be underestimated), to elaborate procedures and the tools adequate to the organizational model, to structure the specific record system in a stable and credible manner, to start with criteria on the basis of which the records creator defines and regulates the development of its archives. Through the conjunction of these objectives, it is opportune to emphasize that the archival record:

- participates in the *execution of functions or practical activities,*
- requires the existence of a *physical medium* of inscription, of whatever nature (including electronic);
- is subject, for the purpose of its preservation, to the *decision* of the record creator to acquire it, recognizing its role within its records system;[13]
- presents, in the contemporary world, *forms* (or rather modalities of external and internal/logical representation of its contents) which are not necessarily predefined and whose control has significantly decreased in the last decades.

The medium tends to diminish in relevance, a process that derives first of all from technological innovation, (as Paola Carucci has brought to light),[14] and

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[11] Duranti, *I documenti archivistici,* 15.

[12] In the cited work of Paola Carucci dedicated to the contemporary record, interest in the critical analysis of records is substantially motivated by, if not concerned exclusively with, the necessities of the task of organization or of the activity of research. "For those concerned with contemporary archives," the author writes, "the study of individual records addresses the context of the study of the original reconstruction of the archives directed to the analysis of the relationships which exist between the institutional activity of the entity, the production of records, and the criteria of classification of records in the organization of the archives. The analysis of the form and substantial characteristics of records is indispensable to identify the series constituted by the registry, to bring individual records back to their original files, to understand the relationships among records referring to the same procedures but preserved in different series, as for example, sentences, legal case files and related repertories. . . . Diplomatics analysis of the contemporary record has, therefore, in comparison with that developed for older records, the objective of contributing to the history of the administration." *Il documento contemporaneo,* 30–31.

[13] This is intended to emphasize the fact that the appraisal of records for purposes of preservation is an operation which takes place (at least as first creator decision) in this earliest phase of the creation of the archives. See Maria Guercio, "La selezione dei documenti archivistici nel recente dibattito internazionale: evoluzione e continuità nella metodologia e nella prassi," *Archivi per la storia,* 11, no. 2 (1998): 43–64. On the specific problem of the definition of record in archival theory, see Trevor Livelton, *Archival Theory, Records and the Public,* (Lanham, Md.: Scarecrow Press and Society of American Archivists, 1996), in reference to Anglo-Saxon literature (Jenkinson and Schellenberg in particular).

[14] Carucci, *Il documento contemporaneo,* 99: "Elements such as the medium of inscription or the writing become relevant to the objectives of historical research only in particular cases."

one that has recently accelerated significantly with the diffusion of digital tools. Nevertheless, *virtual* records are not being produced—and, above all, are not being preserved. In fact, records are physical objects, defined in space and time, and it is through this very stability that administrative organizations of all times and geographic areas have devoted (and still devote) considerable resources to their preservation.

Naturally, the observations just made do not exhaust the theme of the nature of records, as will be explained later. In any case, they furnish certain elements of reflection that will be seen to be important when we come to establish the instruments and activities necessary for proper management of records. It is already possible, however, to analyze with more precision that the record, insofar as it stands for a fact, serves constitutive, probative, or instrumental purposes:

- It furnishes legally valid proof of an act, of a right.
- It constitutes the expression of interests and relationships.
- Therefore, it contributes in the present and the future to further decision making.

The principal role of the record is, in fact, that of rendering the act or fact, which is the subject of the record in its original administrative context, accessible and knowable across time and space. Organizations have developed techniques, competencies, and procedures for developing reliable documentary products in the form of objects that constitute such representations as surrogates of the acts or facts themselves. The credibility of records is strictly linked to the reliability of the system which produces and maintains them. Their physical quality and the means for their use and maintenance are significantly affected by technological development. Until now, however, their functional aspects have remained only marginally transformed by innovations in the tools of production and recording and by the physical media on which they are written. In any case, records must be maintained intact over time and uniquely identified in their context; that is, authentic, in order to guarantee the stability and objectivity of the legal contents which they represent.

The process of the development of documentary form as an instrument of fixity and knowability of an activity over time originated in Roman law, but was greatly advanced in the late Middle Ages. This arose from the necessity of social recognition and recognizability as the initial impulse towards the formalization of the act (in the specific case of a contract) according to a predefined structured model.[15] It will also be appropriate to explore further, among the other topics already mentioned, the theme of the capacity of the record to ensure, in a durable and certain mode, the knowability of the act, and the means which archivists have developed and used across the centuries to render trustworthy and maintain intact not only individual records, but also the administrative and

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[15] Cf. Victor Crescenzi, "Prime pagine per la storia del formalismo negoziale," *Initium. Revista catalana d'historia del dret* (1998, no 3), 275–382.

documentary context of their production and management, as the very condition for guaranteeing the credibility of records made or received.[16] In this first section, our attention is focused more on the study of the record and its components, or rather on the higher priority and always more central problem of the *form* of the record. This is a central problem because of the difficulty and necessity of finding an equilibrium between the fragmentation of the present and the general desire for regulating and coordination.

Constitutive Elements of the Record

The subject of the constitutive elements of the record has already been explored as a central problem of diplomatics, and it would merit a specific investigation by those who study the matter, concerning the contemporary, and, especially, electronic record.[17] As the main and recent research projects on the contemporary recordkeeping systems and on the permanent preservation of electronic records (such as InterPARES)[18] have already confirmed, the identification of the extrinsic and intrinsic elements of records produced by government agencies in the last decade, and even more in recent times, is an increasingly ever more complex and laborious activity, above all, because rapidly changing technologies require a continuous and close effort of analysis and evaluation in order to ascertain what contextual information and what parts of the documentary entity should be acquired in the records system, starting in the creation phase of the records, and according to what specific means and procedures, in order to ensure the proper preservation, over time, not only of individual records, but of the archives as a complex of records and their interrelations. This does not refer to the definition of specific record typologies, nor to the problem of the freedom of the form, understood under the Italian juridical system primarily as the freedom of using any kind of preservation medium,[19] but rather to the recognition of the essential elements which, leaving aside the specific provisions of positive law, archival tradition (often in complete agreement with the regulations) holds as crucial to establish at the moment of cre-

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[16] See Duranti, *I documenti archivistici,* 17–19, 44–45.

[17] See Luciana Duranti, *Diplomatics: New Uses for an Old Science* (Lanham, Md. and London: Society of American Archivists and Association of Canadian Archivists in association with Scarecrow Press Inc., 1998).

[18] See the InterPARES web site: <http://www.interpares.org>, specifically the final report of the Authenticity Task Force.

[19] The problem under consideration acquires a noteworthy relevance with reference to the requirements for admissibility of the electronic form of the record under the national judicial rules, and is already addressed in the President of the Republic Decree (dpr) 513/1997 and in the subsequent interpretive regulation approved with a Prime Minister Decree (dpcm) 8 February 1999. These regulations have been coordinated and harmonized in a general act, Testo Unico sul documento amministrativo, approved with the dpr 445/2000.

ation in order to identify the record in a unique manner, to fix with certainty the provenance, and also the date and the manner of its acquisition or creation.

At this point, it is useful to recall the results of the research conducted at the University of British Columbia on the topic of the integrity of electronic records and the identification and analysis of the constitutive elements of the record, whose function is justly indicated as expressed in a "relationship between the event, fact, or act and their circumstances and the persons involved . . ., and the relationship between this reality and the record itself. They are not simply juxtaposed, the one to the other, but tend to materialize and to form parts of the record corresponding to that which is represented: the administrative context . . . and the documentary context."[20] This topic was already dealt with in 1987 in *Il documento contemporaneo* by Paola Carucci, who at the time made an observation of major relevance, which opened a new and fertile field for archival studies.[21]

According to the results of the work at the University of British Columbia, the constitutive elements of the record, essential to its identification, should be present in the electronic profile of every entity that becomes part of the archives:

- the identity of the author in the form of the office and/or physical person responsible. This is often present in the attestation of the record and in the subscribed signatures, although it is not always necessary for the perfection of the record;[22]

[20] See, in particular, Luciana Duranti and Heather MacNeil, "The Protection of the Integrity of Electronic Records: An Overview of the UBC-MAS Research Project" *Archivaria* 42(Fall 1996) and Duranti, I *documenti archivistici,* 41–42.

[21] The work of Paola Carucci, presenting a great quantity of analytic elements which are still vital, should be updated in light of current transformations which have had an impact on the field of the production of records, either from the normative perspective or with reference to the diffusion of technological innovation. At the time of her work (1987), the author had explicitly excluded from her analysis the study of electronic records, considering that the introduction of informatics at the time was "a technological innovation whose effect on the creation of records and, consequently, on the creation of archives was such that it should be considered as a radical break in the system of communication." Today this exclusion no longer makes sense, as is demonstrated, by the active participation of Carucci herself in the discussion of electronic records and in the InterPARES research, which applies the methodology developed in the traditional disciplines of diplomatics and archival science in order to analyze the new records products created in the digital environment and to delineate rules for their preservation.

[22] In the Italian juridical system it suffices that the elements of the record guarantee, in an unequivocal manner, "the certain attribution of the same to whoever should be the author." (Constitutional Court, section I, sentence no. 7234 of 7 August 1996). Cf. on this subject G. Buonomo, "Atti e documenti in forma digitale. Prime note sul regolamento di attuazione dell'articolo 15, comma 2, della legge 15 marzo 1997, n. 59," in *Forum per le tecnologie dell'informazione, Le tecnologie per l'informazione e la comunicazione in Italia. Rapporto 1998,* (Milano, Franco Angeli, 1998). It is not only private writings that do not require the subscription as a legal requirement for existence, especially in the realm of bookkeeping (journal books and invoices, but also telegrams and copies of letters, as Paola Carucci noted, *Il documento contemporaneo,* 107). Although government bodies have in the past always required subscribed signatures in records, whether to citizens or to their own subordinates, the principle of the "certain reference of the record to its author" is, in fact, used to introduce technological innovation in the production of records, permitting, "for example"—writes Buonomo in the cited article—"the sending of notices of driving infractions to residences, or the creation of administrative certificates with mechanographical or automated tools." (p. 130) It is, however, possible that in the future we will proceed further along these lines through a more rapid process of automation of the production of records, linked to the too complex cryptographic public key infrastructure, introduced in Italy in law 513/1997, which seems destined to prove itself difficult to implement for purposes of the permanent preservation of digital memory, with other more limited systems which are equally capable of guaranteeing the integrity and authenticity of records.

- the identity of the addressee. In the case of a received or internal record, it is the records creator itself; the indication can be implicit in the case of very simple organizational structures;
- the legal content or text. In the case of contemporary records, this also often covers its specification, in summary form, as subject or title of the record;
- the date, understood as the determination of the time and place of the activity of the creation of a sent or internal record, and of the activity in which a received record is acquired.

The role of the medium as a physical means of making the record a persistent, that is, recognizable and identifiable, object has already been addressed. We do not need to analyze here, even at a summary level, the other extrinsic elements of the records, in accordance with the observations of Paola Carucci, noted above, which reveal their increasing irrelevance in the contemporary world.[23] Nevertheless, we still face, in this phase of technological transition and, therefore, of uncertainty concerning methods and practices, the necessity of verifying the role and the significance of the components that determine the physical configuration, apart from the conceptual and logical configuration, of the record object in the digital environment in order to develop appropriate recommendations and guidelines for permanent preservation. This is anything but a simple effort because of the difficulty of analyzing automated systems of highly diverse structures, functions, and methods of operation. It is also this problem that the main research projects in this area, like InterPARES, are focusing on, particularly in the preliminary phase of inventorying and analyzing new record types.[24]

Naturally other elements should be considered—and it will be appropriate to do so in the future—if they have, as is necessary, a general impact on systems which use information and communications technology for creating and managing records, and if they are relevant to archival studies in the area of the creation of current records. In the specific case of electronic records, for example, the UBC study previously referenced has already identified a specific functional element, the indication of the owner of the electronic address (the originator), which is always present in records produced and transmitted in electronic mail systems.[25]

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[23] Paola Carucci (*Il documento contemporaneo*, 99) emphasized the limited significance of the traditional distinction between intrinsic and extrinsic elements, "given that elements such as the writing material or the handwriting, which become relevant for purposes of historical research only in particular cases, and those which are reducible to special signs and to notes of chancery have over the course of the last two centuries followed a clearly delineated evolution which certainly makes them characteristics which would be arbitrarily qualified as 'extrinsic elements' or 'intrinsic elements' and which very often represent . . . the key to identify a record."

[24] See the case studies report of the InterPARES project at the project web site: <http://www.inter-pares.org>.

[25] The research also included in its objectives the interesting proposal of a schema of constitutive elements for electronic records, a kind of special diplomatics for records produced in digital environments, which would merit further study and verification.

Other elements—special signs in the language of diplomatics[26]—specifically refer instead to the documentary *context* and merit a renewed attention, especially when we want to develop a systematic analysis of contemporary records and of their new technological context of production.

These are elements which are expressed in an explicit manner in individual records and which are, only in relatively limited cases, the results of internal procedures of production; rather they constitute requirements for the perfection of the act represented, or they are needed to complete the record form; or again, in large part and above all, in the case of chancery notes, are cases which refer to successive phases in its redaction and completion. They concern the processing of records by offices for purposes of execution or for administrative or archival management. For example, the classification codes, the registration number, and the signature of the archivist play a crucial role, which treatises on general diplomatics hardly cover, but which constitute an important area of inquiry for archivists.[27] It is, in fact, through the annotations that the documentary context and, above all, the archival context of the creation and retention of records can be reconstructed: the procedures, rules, and concrete methods of organization of the archives, without which neither the identification and critical evaluation nor the work of reorganization and description would be possible; nor, in many cases, would historical research be able to find a basis for orientation or interpretation.

The Record and the Context of Production: The Archival Bond

Contrary to what experts in automated information systems often come to believe, records are not produced or preserved as isolated entities, a point that archival theory has emphasized for more than a century. The creation and accumulation of archival records is always the creation of the reciprocal relationships, since records take part in, are the results of, a flow of activity. The records system is thus constituted by a complex of interrelated records and includes within its essential components the ensemble of their relationships. Such relationships (the archival bond) are stable and not arbitrary (even if not necessarily unimodal in each component) insofar as they are consequences of the means of the creation and accumulation of records determined by the creator for organizational and functional reasons.

Every record is, therefore, an element in an ensemble of other records, or better, of recordkeeping structures, functional aggregations constructed by the creator in the course and for the conduct of its activity and, thus, set in a

[26] Alessandro Pratesi, *Elementi di diplomatica generale* (Bari: Adriatica Editrice, 1962), 60–61.

[27] On this subject, see, besides the frequently cited study of Paola Carucci, Luciana Duranti, *I documenti archivistici,* 42–44.

specific juridical/administrative and documentary/archival context, in the form of *files,* that is, of records related to the same affair or matter, or of *records series,* that is types of records which are homogeneous in form (for example, the series of minutes, of decisions, of circulars, or of ledgers).[28] In both cases records are linked by a fixed and necessary connection (a true and proper *bond*), which is nonetheless neither artificial nor arbitrary, insofar as resulting from the exercise of the primary and secondary functions of the producer. The linkage among records derives progressively from the common objective and from a single source, the practical activity in which they participate and of which they are the products, in the specific juridical/administrative and record keeping context.

On the basis of the considerations already laid out, the necessity of preserving the structure of the archives across time is evident to archivists. It is much less so for those who exercise other professions and who do not sufficiently understand the nature of records, or who underestimate their function. Since files and series reflect the aggregation of records in relation to the activity undertaken, this order should be maintained not only during the phase when the records are current, but also in the phase of preservation, whether through the identification of records selected for preservation or for purposes of research, in order to guarantee the possibility of meaningful future use.

The Characteristics of the Relationships among Records

For the reasons already cited, before analyzing and evaluating for purposes of automation the functionality of traditional tools for the management of records, the attributes which distinguish the archival records from other types of documents must be clear to whoever designs the recordkeeping system (whether automated or not) of the creator. Many authors have in the past explored the nature and the characteristics of the archival bond, recognizing it as an essential element of the archives. More than others, Giorgio Cencetti has devoted intellectual efforts to establish a solid and coherent basis to archival theory, specifically starting from the principle of the archival bond, having identified the essential characteristics of the "*necessity* of the bond linking papers" and on its *fixity,* which—in a well-known passage dedicated to *The theoretical foundations of archival doctrine*[29]—"manifests itself . . . in the complex of mutual relationships which connect individual records, not through the material means of folders and registries, but specifically in their character as records, and enables us to conceive the file and the series as *bodies* which are something

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[28] Series are also organized in files, but in this case they are series of archival aggregations and not series of records entities. In this context, the emphasis is on the fundamental organization of the archives, as an ensemble of files and registries, or of aggregations of records of the same form.

[29] Giorgio Cencetti, "Il fondamento teorico della dottrina archivistica" *Archivi* 6(1939): 7–13.

both more and different than the arithmetic sum of the individual components and only in function of which the individual components exist."

Cencetti's ideas are based on the principle that records are persistent objects (concretely determined in time and space) and that the reciprocal relationships that arise in the course of the accumulation of records are also persistent. From this assumption, which automation tends either not to recognize or to recast, are derived two essential particulars "of extraordinary value and importance"[30] that characterize archival aggregations and the records which constitute them, and which are at the very root of the production and preservation of archives: *impartiality and authenticity*. The impartiality of records is due especially to the fact that they are not accumulated in an extemporaneous manner, but as essential instruments of practical activity and for purposes of arrangement and use inherent to the administrative action which has brought them into being or preserved them. Authenticity is connected to the real need for self-documentation of the creator, which, in fact, organizes its own archival system in a manner that guarantees a production of records which are reliable and secure and retain these qualities both during active management and in the successive phases of handling and preservation.[31]

The importance of having a trustworthy records system and the necessity of preserving its authenticity over time have been specifically recognized and confirmed in the earlier UBC research project on the creation of records in the digital environment. Of particular interest are the project's observations on the techniques and methods for organizing the system of records creation relative to its degree of reliability and to the capacity for creating, acquiring, and accumulating authoritative and credible records. This means records whose provenance is guaranteed and whose creation and retention controlled, with particular reference to the procedures and rules which determine:

1. The capacity to produce and acquire records, for example, through the accurate management of the qualifying conditions and privileges;
2. The methods for the creation of records, controlling, for example, the form of the record; that is, the manner in which its constitutive ele-

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[30] Hilary Jenkinson, *A Manual of Archive Aadministration* (Oxford: The Clarendon Press, 1922), 12.

[31] Once the essential elements which define the nature of the archival record are identified, other qualities can be determined. Luciana Duranti (*I Documenti archistici.,* 18–19) takes up Jenkinson's ideas, adding to the characteristics "provided to archival records either from their physical nature or from their original connection, only and surely with facts, acts and their context" also *interdependence* (the record does not have value in isolation, but as the result of a practical activity carried out in the exercise of the functions of a physical or judicial person: is set from the start, by reason of its nature, *in relationship* to the other records of the same activity); the *uniqueness* (the record is unique, insofar as it can have no substitute in the sequence of records in which it belongs, even in the case of a copy: its role and its meaning derive from the *position* which it occupies); *naturalness* (the record has an organic and natural connection with other records because the process of accumulation serves the interests and the institutional goals of the records creator and, in consequence, to the start, the development, and the completion of a juridical connection: the order of record is determined *ab origine* and cannot be modified. It derives, that is, from the natural and necessary accumulation of records produced in the course of the activity).

ments are articulated. The form of the redaction, Alessandro Pratesi has written, "should correspond to precise standards—although they may vary according to the time, place, person, and content—appropriate for conferring on the record the desired degree of reliability, or rather that probative capacity which cannot in any manner be denied, at least to the point that it may not be proven false."[32]

The authenticity of a record, or rather the recognition that it has not been subject to manipulation, forgery, or substitution, entails guarantees of the maintenance of records across time and space (that is, their preservation and transmission) in terms of the provenance and integrity of records previously created. The topic of authenticity is at the center of the Italian new rule concerning the admissibility of electronic records. Its provisions, however, are almost exclusively concerned with the problem of signed subscriptions, and therefore of the use of the digital signature and time stamp.[33] The overriding question of the creation, acquisition, and maintenance of records according to logical, coherent, and functional criteria—which is the foundation that enables the requirement for authenticity and for its verification—is well addressed in the legislation, but considered mainly in terms of a management aspect. Among the negative consequences of this formulation, due, above all, to the lack of comprehension of the nature and function of records on the part of the technicians to whom this policy has been ordinarily and, until now, exclusively entrusted, it is appropriate to note:

- the excessive reliance on solutions which are solely technical, in particular on the use of the digital signature as a technique which guarantees the confidentiality and the security of the record system, let alone the provenance and the integrity of the individual records that are produced;
- the corresponding underestimation of the systematic aspects which include, above all, the establishment of the rules and procedures for the management of the records and the formation of the archives.

The preceding reflections lead to an initial response to the questions which confront a good part of the archival community today, especially those who are responsible for the management of current records. In order to determine the manner and the extent of automation of the recordkeeping function in a still uncertain phase of technological innovation, the first step is that of elaborating, with respect to the recordkeeping function, the rules and techniques governing the system of production and accumulation of records, and its architecture.

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[32] Pratesi, *Elementi di diplomatica generale,* 6.

[33] On this topic, see the provisions related to the productions of acts and records in digital form established by dpr 513/1997 and dcpm 8 February 1999.

The Management of Records

It is, naturally, necessary to clarify the role, the objectives, and the competency of the recordkeeping system. According to a definition developed primarily by the Anglo-Saxon archival community, which for decades has explored in more depth topics that elsewhere (as has been said) were ignored for a long time, concerning the production of active records within an organizational structure, records management is the function of general and systematic control (including management techniques and resources) exercised by every creator over its own records.[34]

The general purpose of a system of records management is that of providing the creator with the records necessary to support the efficient continuation of its activities, guaranteeing the recorded evidence, whether for internal purposes or for regulatory compliance. The specific objectives concern:

- the production and acquisition of reliable records for legal and technical purposes;
- the organization of the creation of records in an orderly and coherent manner linked to the functions performed;
- the transmission and preservation of authentic records;
- the speed and efficiency of retrieval in the context of the administrative activity carried out.[35]

One aspect that deserves attention is the relationship between the records management system and the efficiency of an organization's activity. Schellenberg wrote that a program for control over the creation of records cannot be effective if applied in an organization whose functions and activities are not conducted efficiently.[36] That is to say that the rationalization and simplification of procedures

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[34] L. Duranti, I documenti archivistici,1. See the introduction to the book by Luciana Duranti concerning a critical examination of the function identified as records management, with reference to its recent evolution in North America.

[35] The conduct of activities of records research for broader purposes (for example, for historical research) does not fall within the scope of the management of active records, which remains focused on supporting the concrete daily activities of the records creator, thereby ensuring the easy recall of records in the course of daily administrative activities. Historical research, consistent with what has been said in reference to the particular nature of archival records, is enabled through the original methods of the organization of the archives, which archival description essentially limits itself to reconstructing in critical form. Undoubtedly the possibility of research, whether of current or historical records, should be supported with the greatest possible dedication, through the use of effective methods and systems. We should not, however, lose sight of the primary objective of the creation and preservation of archival records; and it is equally important not to confuse it with the function of information retrieval used in library environments or in documentation centers, designed for the recall of informative content independently of the context of production and original use of the record. Specific retrieval mechanisms oriented towards the analysis of content are worth the effort of studying and following only for certain specific records typologies, those richer in general contents (for example, minutes, decisions, circulars, opinions, informational reports, etc.), such as the use of methods of terminological control for codifying systems of archival classification (for example, the creation of a thesaurus of the archival classification terms developed by the University of Padua for its classification plan).

[36] Theodore R. Schellenberg, *Modern Archives: Principles and Techniques.* (Chicago: University of Chicago Press, 1956), 44.

has no automatic effect, whether in terms of reorganization or (even less) automation, if it has an impact only on the production of records. This is because the rationality of a system of records management does not entail the rationality of decision-making processes, but only the rationality of the methods of production and maintenance. Nevertheless, it is obvious that a significant effort to automate the procedures and methods for records creation has as a likely consequence the redefinition of decision-making processes and of administrative procedures. At the same time, simplifying processes (accelerating the phases and the intermediate steps) entails a reduction and a qualification of the production of records.

The debate that has recently developed as a consequence of the policy directive introduced into Italian legal procedures relevant to innovation in matters of the production of records merits a brief consideration with particular attention to the problem raised—and (fortunately) lately refocused on the appropriate question of integration and not juxtaposition—of the relationship between the control of business procedures flow and the management of records. It is appropriate, therefore, to clarify specifically the two functions and to examine the necessity of sustaining each one in an autonomous environment, which manifests itself, for example, in distinctions in the policy on automation in this sector.[37]

The function of records management consists, as has already been seen, in the activity of creation, maintenance, and retrieval of archival records, that is, of the records produced by an entity in the exercise of its functions. It distinguishes itself clearly, whether in its purpose or in the identification of its tools and of its techniques, from the function of administrative organization and management of work flows, which comprise, among others, the control of management, the analysis of work loads, and the treatment of business procedures. There is a strict connection, nevertheless, because the definition, the updating, and the control of decision-making processes and of administrative responsibility have an impact on the actual production of records. To exercise a control on business procedures, in terms of streamlining and rationalization, obviously has inevitable and quite positive effects on the quantity and quality of records production, which should always be structured according to the principles appropriate to it, naturally revised in light of the changes brought about by the diffusion of advanced technology and by the strong innovative potential that derives from it.[38]

[37] In a still very recent history, information technology and organizational experts thought it possible to provide both functions in one and the same process of automation which utilized workflow management products. On this topic, see certain parts of the document, GEDOC (*Gestione elettronica dei documenti*), developed in 1997 by the Agency for information technology in government <www.protocollo.aipa.it>. A critical revision of this initiative took place, as appears among other places in the second report on GEDOC, published in 2000 on the same website. Without giving up the framework of a greater control over administrative flows with the objective of increasing the transparency and efficiency of administrative action, the necessity of developing modular integrated automation programs, which respect the specific characteristics of all functions while not renouncing the objectives of transformation and simplification, is becoming obvious.

[38] See Maria Guercio, *Classificazione e archiviazione in ambiente digitale.*

Before analyzing concretely the techniques available today in the digital environment for the creation of current records, it is appropriate to analyze the principal characteristics of the Italian model.

The Italian Model for Records Management

The treatment of records in Italy is based on a unitary definition of archives and a uniform method of management. It is a coherent system of principles, methods, and rules for the production, maintenance, and use of records, which is defined for government agencies in a recently updated national standard (dpr 428/1998).[39] It includes three phases of organization of records (active, semi-active, inactive). In contrast to many European systems (the French, Spanish, and British, for example) it does not actually provide a responsibility for an autonomous structure for intermediary archives, that is, through the maintenance of semi-active records by a third party.[40] The phases of organization of the records function established in the standard and in Italian archival practice include in particular:

- the management of active records (current archives), which comprises the activities of production or acquisition, organization, maintenance and use, and selection;[41]
- the management of semi-active records (records centers), which comprises the activities of transfer, identification and organization for the materials deposited, consultation, and selection;
- the management of inactive records (historical archives), which includes activities of selection for purposes of identifying those records that will be permanently preserved, arrangement and description, preservation, and consultation.

The partition of the archives into three phases is only a question of management and is based on convention. From the point of view of theory and of method, the archives "is simply the archives."[42] Archival functions and activities derive their rationale from the very nature of records, in their role as evidence of the practical activity of the records creator, contemporaneous with its accom-

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[39] Also this decree has been included in the *Testo Unico sul documento amministrativo (dpr 445/2000).*

[40] Cf. Maria Guercio, "La sfida delle quantita archivi intermedi e strategie di conservazione dei documenti archivistici" in *Per la storiografia italiana del XXI secolo.* (Rome: Ministero per i beni culturali e ambientali, Ufficion centrale per I beni archivsitici, 1998). It treats of an organizational hypothesis that the problem of externalization of services, or outsourcing has no effect, since in this last case the legal responsibility for the function delegated to a third party always remains that of the party which contracted for the creator.

[41] The activity of selection which is mentioned is, naturally, assigned to the double responsibility of the administrators and the archivists, as provided in archival legislation, recently updated by an act on the protection of cultural heritage (dlgs 490/1999).

[42] Cencetti, *Il fondamento teorico della dottrina archivistica,* 40.

plishment. The distinction between current, deposited, and historical archives in reality corresponds to the distinction between records maintained:

- by the records creator for its practical purposes,
- by another special purpose institution from the time when the creator's needs diminish. The assignment to a third party, (within the entity in the case of a separate archival unit or to an external organization for government papers, but in all cases managed by technical experts in the discipline who answer to an ethical code), is intended as a strong guarantee for the authenticity, integrity, and impartiality of the material preserved. To ensure an efficient functioning of the archival system throughout the world, the creation of dedicated services or specific archival programs within the records creator's organization to which the archival function is assigned is regarded as indispensable; but also, even more frequently, competency in the coordination and supervision of records management.

Today the attention of experts in organization and in the technologies of information and communication, as well as of archivists involved in projects for automation of public and private organizations, is naturally focused on the creation and management of active records. For some years, the records system, subject of appropriate automation initiatives, has in fact been considered a significant component, from the perspective of infrastructure, of the information system of an agency or a company, and a crucial support for the accomplishment of primary activities. However, the role and the systemic potential of the techniques in use for centuries in public and private records systems are not always appreciated in a balanced manner. For example, there is a tendency to give an excessive weight to protocol registers, which only have the function of identifying and certifying the existence and the provenance of a record.

Techniques for the Production and Management of Records

The records system of a creator comprises the methods and the rules which determine the regular accumulation of records produced or acquired, and permits the delineation of a coherent archival structure adequate for the administrative and informational needs of the creator in the following areas:

- control of provenance, definition of the procedures for production, acquisition, accumulation, and movement of records;
- organized and regular accumulation, which involves the same records function with respect to the activities from which the records result (creation and maintenance of the archival bond)

- secure preservation and transmission of integral and authentic records (elimination of risks of manipulation and dispersion)

A central theme, which the international community—particularly research institutions and projects—has discussed in a lively manner in recent years, concerns the definition of functional archival requirements on which systems for the maintenance of records should be based, either in the traditional or digital environment.[43] These include:

- the unique and positive identification of individual records (received or sent, in the case of paper records, also internal if the records are in digital form) which enter into the records system of the creator, through a registration procedure based on common definition of the identifying elements;
- identification and maintenance of criteria for organizing records and of the records relationships which are established on the basis of the actual progress of the activity (classification and filing);
- assignment and exercise of administrative responsibility for the accomplishment of the activity and for the retention of the records.

In the traditional environment, there are corresponding techniques for each of these activities: the protocol registry, the classification and preservation plan, the withdrawal cards, the schedule, the file plan, the conditions of transfer, the physical inventory of records centers, etc. These instruments are translated with ever greater frequency, especially in automation processes, into regulatory policies of the records function:

- standards for the receipt, acquisition, assignment, and sending of records;
- rules for protocol registration and for the unique identification of records not subject to the protocol;
- directives for classification, including the principles governing the creation of files and for their accumulation as archival series;
- control procedures for the movement of records and the processes involved;
- procedures for the successive transfer to records centers and historical archives of files concerning completed processes and materials no longer needed for routine administration;
- rules on the withdrawal of records;
- management of the terms of preservation of records, connected to the system of classification and of the procedures of selection and disposal; but above all,

[43] In addition to the frequently cited UBC research, the working group established by the University of Pittsburgh in the second half of the 1990s concerned itself with the functional requirements for "reliable recorded evidence of human activity in a computerized information world." See, in particular, David Bearman, *Electronic Evidence: Strategies for Managing Records in Contemporary Organizations* (Pittsburgh: Archives and Museum Informatics, 1994).

- general tools for determining the records policies of the creator and elaboration of general control instruments (regulation of the archives and management manual), capable of guaranteeing planning of specific activities and their continual updating.

What clearly emerges from this first list of tools and activities is that records management presents a progressively more complex dimension linked to methods of control integrated with decision making and administrative activity in general. Therefore, it requires the participation of expert professionals from different disciplines (experts in organization, experts in information and communications technologies, and archivists trained in electronic recordkeeping systems).[44] The role of archivists is vital in determining the means of organizing and ordering active records, which should, at the same time, be adequate both for the selected actions on the technical and organizational level, and for the specific functionality of the records produced. This means, for example, in relation to preservation over time, to selection, to transfer to records centers or historical archives, to retrieval according to specific criteria of the creator for carrying out its administrative functions, and to more general purposes of information research.

The Methods of Arrangement of Active Records: Historical Evolution

It is the creator who determines the basic criteria for organizing its current records. These diverse criteria depend on, to some degree, the nature of the records, but more so on the organizational structure and the complexity of the activities of the entity.

Originally and until the modern era, the production of records was limited in quantity and quality, corresponding to the simplicity of business procedures. A rather small number of administrative functions corresponded to a likewise limited and often predefined number of records procedures and of specific record forms. With the development of activities and the growth of bureaucracies in the modern era, the quantity of records produced increased and their quality became varied. Thus, methods and techniques were needed that would enable the orderly and rational organization of archival materials from

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[44] Groups that are active in the development and implementation of automated records systems need, more and more often, to include technicians who specialize in communication and organization services and in Information Techology: *experts in organization* with knowledge of the techniques of *business process reengineering* and of analysis and evaluation of the processes of structured organizations, feasibility studies and cost/benefit analyses, strategic planning, analysis of organizational and economic risks; and of *experts in information and communications technologies* with knowledge of contracting related to IT, the life cycle of applications software, architectures and techniques of services which use products in the areas of *record management* and *groupware,* in addition to techniques of planning and control, *business process reengineering* and project management. Archivists are rarely included, either in the Italian (and not only Italian) panorama of professions involved in developing records management systems, or through lack of understanding of the nature of the problem on the part of consulting companies and service bureaus which operate in this field.

the time of their creation (registration, classification by subject and function) in order to provide accurate, sufficient recorded support as evidence of the activities undertaken and of the decisions made, matching established objectives according to their priority (e.g., simplicity of the organization, ease of retrieval, integrity of preservation, etc.). But there is no single, predefined model, whether for the architecture of document flow or for the actual methods of arrangement, which may vary even within the same archives because of the typology and function of the established records and files and of the organizational structure.

Insofar as concerns specifically the "original disposition of records," in the ancient and medieval world they adopted criteria based on the state of transmission of the records (received, sent, or internal records) or rather criteria which differentiated them according to the role played with reference to the production of the definitive provisions or acts (records in the formal sense of representation of the final action of a legal affair [*Urkunden*] and preliminary records which correspond to a phase of the process [*Akten*], which originally were destined to be destroyed).[45]

The growth of the activities of the government structures and their creation in the modern era cannot, in any case, be managed and controlled—particularly in the case of administrative correspondence—exclusively by arranging the records primarily on the basis of the state of transmission of the records, eventually distinguished according to sender and/or place. Rather, it requires a continuing specialization, not only of administrative character, but also of the arrangement of records, for a functional preservation suited to the growing operational necessity of routines and for efficient retrieval of records. For example, we can begin to foresee aggregation on the basis of the legal nature of the act represented, or of its form (series of decisions, series of exhibits submitted

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[45] This distinction has been authoritatively upheld by Adolf Brenneke (*Archivistica: Contributo alla teoria ed alla storia archivistica europea,* text edited and integrated by Wolfgang Leesch, Italian translation by Renato Perrella, [Milan: Giuffrè, 1968], 28): "Records [*Urkunden*] are the oldest materials received in our German archives, coming almost exclusively from the medieval period. While in fact the record is accurately preserved, and therefore the final step of a legal affair, considered as documentation of particular relevance which proves the existence of a legal title, the preceding stages of this documentation, which have also found various modes of written expression (petitions, minutes, etc.), would ordinarily have been destroyed. Gradually, among others, correspondence [*Brief*] came to assume an ever increasing value, even if it was not always preserved. Naturally, the letter could, in certain cases, bring a legal affair to conclusion, or, at least, have this goal. From this particular type of letter, that is the letter for reasons of service, acts [*Akten*] were born. While simple letters consisted almost exclusively of received materials, acts comprise both received and sent writings, or internal acts." Similar considerations have been repeated successively by scholars who have been concerned with the history of archives, in particular by Filippo Valenti ("Riflessioni sulla natura e sulla struttura degli archivi" in *Rassegna degli Archivi di Stato* (1981) 15) who also distinguished, on the basis of the different nature of preserved records, in typologies of archives, the *sedimentary archives,* in which "the records of an activity spontaneously collect," and "*treasury archives*" intended as deliberate, systematic and orderly selections, always constructed for practical or operational reasons," formed principally of legal titles, including territorial, jurisdictional and estate policies within a system. Widespread in the Middle Ages, the archives which collects formally selected records coexists in the modern era with natural records collections accumulated in the natural course of administrative activities in chanceries and, thus, in all the numerous government apparatuses in what Robert-Henri Bautier called "special administrative archives" in "The Crucial Phase of the History of Archives" *Archivum* 18(1968):146.

in litigation, series of accounts, series of invoices, etc.) In the course of the sixteenth and seventeenth centuries,[46] a new method of organizing records was developed, especially in German countries, which concentrated on the function of the record with respect to the creator's activities: all papers related to the same subject, then to a given affair, a given activity, or a given procedure would be progressively united in distinct physical units, which would also quickly acquire a logical validity—files which in turn would be aggregated organically on the basis of their homogeneity. This system received significant impetus in the second half of the eighteenth century, and was largely spread throughout Europe in the Napoleonic era. The growing quantity of records produced and received resulted in a process of differentiation in methods of arrangement, and determined the necessity to develop adequately more coherent and rational tools and methods for the management, maintenance, and retrieval of records. They fixed, ever more broadly, the practice of keeping together in one single preservation unit registered to a specific affair or subject the drafts of sent records, internal records, and the originals of received records, including certain formal dispositive or probative records, which constituted legal evidence of property, rights, etc., related to the matter under consideration.

The accumulation of all sent and received records in chronological order or the creation of series of records homogeneous as to form are no longer universal criteria for the arrangement of archives; both are inadequate for handling large quantities of records. They have been replaced by a methodical, systematic arrangement based on subject and function: records began to be aggregated in files, in archival units which correspond to the objective of continuously reinforcing the links among records in relation to the activities carried out. Successive developments thus led to the development of a true and appropriate theory of archival classification, understood as a function "of reducing the multiplicity of affairs undertaken or in progress to a finite number of hierarchically arranged partitions such that the continuous increase in the archives is arranged according to . . . the development and the evolution of activity."[47] Classification, thus defined, represents the final stage in an evolution of tools for organizing records which, even in the records systems of the past, provided for (although at a rudimentary level) an organization of records that was simultaneously organic and rational because it was defined as a function of the activity carried out and of administrative needs for recordkeeping. Criteria for physical arrangement may vary and coexist. In contrast, the principle of functional arrangement of documents suited to the completion of administrative activities and the articulation of the attributes of the entity corresponds to general requirements.

[46] See especially Elio Lodolini, *Archivistica: Principi e problemi.* (Milan, Franco Angeli), 71–94.

[47] Raffaele De Felice, *L'archivio contemporaneo* (Rome: Nuova Italia Scientifica, 1988), 23.

The principles for organizing records developed over time by institutions for the management of active records are easily distinguished (arranged chronologically, by correspondent, by subject, by type of record, or according to responsibility for the procedure), and they are not necessarily unimodal, although a multiplicity of physical collocation entails the duplication of the records or the creation of cross references. It is possible to manage several copies of the same record according to different organizing principles, just as it is possible to combine several principles of research. In the case of an electronic archives, or of paper records managed electronically, the possibilities are quite varied, because automation makes it possible to multiply the connections and to obtain a different aggregation of records without added overhead or excessive redundancy. For example, this is the case with a series of files assigned to the suppliers of a company. They can be arranged alphabetically and eventually indexed by place or by type of merchandise involved, without needing to duplicate materials or establish complex indexes in advance. Nonetheless, this is an appropriate point to note, especially for experts in informatics who too often believe it is possible to solve every problem with technology, that no information can be efficiently retrieved if it has not beforehand been subject to adequate analysis and quality control. Besides, the principles of physical arrangement should no longer be confused with the possibility—today immensely increased—of the retrieval of materials according to very diverse criteria. Even less should we consider the general problem of arrangement and retrieval of information to be on a par with the topic of the classification of archives, which is not in fact an operation limited to the physical disposition of a group of records within a file. Classification in fact serves ever more numerous and complex functions in the records system, as will be shown below in greater depth, and above all serves to capture in time the concrete procedures of self-documentation that each subject has followed.

Among the tools that have been demonstrated historically to make an efficient organization of archives possible, is the protocol registry used together with classification, (already widespread at the end of the eighteenth century), with the purpose of identifying, in a unique and certain manner, the records received and sent by a records creator. An accurate assessment of the functions served either by the protocol registry, whose potential is overvalued today, or by classification plans is essential to verify their utility in the new technological context.

The Registration of Records: Origins and Evolution

The registration of records as an activity for identifying records in a legal/administrative context and in the recordkeeping context of a creator—that is, the protocol registry—derives its origin, and specific validity, from the ancient practice of registering the entire contents of records that establish rights. This continues to be practiced today, for example, in the case of the reg-

istration of certain records in the Court of Accounts or the Office of the Registrar.[48]

The registry system, fully developed in medieval chanceries such as that of the papacy, originally consisted of the entire transcription of definitive—but not all—records. In the course of time—in the face of the growth of the production of records and of specialization of systems of registration—it developed into the extraction and transcription only of the identifying elements of records, with the objective of securely controlling their maintenance within a records system and of furnishing proof of the existence of the record over time.

In current recordkeeping systems, the protocol registry is the activity that makes it possible to identify uniquely the (received, sent, or, if need be, internal) records of the creator, specifying the precise date of acquisition. The purpose of the protocol registry, as it has been defined over the course of time and especially from the beginning of the twentieth century, is to:

- guarantee certainty of rights and openness to the citizen and the creator; it serves, therefore, a relevant function in the public sector and has increased in importance in Italy among the means of managing documentary and administrative flows as a result of law 241/1990 on the openness of administrative procedures;
- identify records coming in and going out, assigning them a unique identification number and fixing the date when they became part of the records of the creator;
- define, thus, the chronological sequence of capture of received and sent records in the archival fonds and, consequently, the chronological order—if this is the principle adopted—within archival units of reference (files or series).

The protocol registry is the source of knowledge of the date a given record was received or sent, determined by an annual sequential number and (archival) date, the sender, the recipient, a synthesis of the contents (purpose), and the responsible office. "It constitutes–it has been said–an element of proof which confers the character of authenticity on the record."[49] It is not, as has been supposed, a retrieval tool, because it does not serve the purpose of identifying the relationships among records and the position of the individual record within the archival fonds. It is not a general purpose tool, because it excludes many categories of records, to begin with, internal records and those subject to particular registration (for example accountable officers' accounts, decisions, etc.). Albeit not exclusively, the origin of the act of registration is, above all, the legal need to give a record a more effective evidential value. In the national environment "the protocol registry maintained by a public office, which certifies the date of sending or receipt of private or gov-

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[48] E. Lodolini, *Archivistica,* 96, points out that complete transcription in Italy applies to "all records of public agencies which result in a permanent obligation of the treasury."

[49] Raffaele De Felice, *L'archivio contemporaneo.*

ernmental acts, has the nature of a *public act.*" (Penal Cassation, sect. V, 6 October 1987)[50]

In the digital environment the protocol registry tends to assume a function of identifying the particular records which belong in the archival fonds of the creator. An inadequate knowledge of archival methods for organizing current records, prevalent in the informatics sector, tends to attribute to the protocol register a series of competencies which completely transcend the specific purposes of this tool. The very term "electronic protocol register" (*protocollo informatico*), through which the recent Italian legislation (luckily changed in 2000 to the more correct term: "electronic recordkeeping system") concerning the electronic recordkeeping of active records has established new rules for the organization of records systems, has been deliberately used for its very ambiguity. It is a term which identified a specific procedure in the institutional practice of all Italian government agencies, at least since the royal decree 35/1900, but which now is also meant to include—in the already cited definition in the new acts (the dpr 428/1998 and 445/2000)—a much larger series of purposes than that of the traditional conception of the protocol: the creation, management, maintenance, and retrieval of active records through the use of automated tools, or rather, the entire series of activities and methods for the organization and preservation of current records.

The Classification and Filing of Records as a Method for Establishing and Organizing Records Systems

Archivists attribute a central role, above all, to classification—recently renewed through the use of information technology—in the planning and establishment of the records system. Classification is, in fact, an *instrument for organizing records* developed in the modern era to support the recordkeeping function of administrative apparatuses that are ever more complex and articulated. Classification determines the relationships among records (the archival bond) in the creation phase, correlated to the competencies of the entity, and with its administrative structure and concrete modes of operations.

The purpose of classification of an entity is, therefore, that of guiding the accumulation of records with modalities and rules which, above all, respect the specific functions of the creator. It is the method which enables:

- the determination, on the basis of predefined criteria, of the records which are part of the archival fonds;[51]

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[50] On this topic, see especially Antonio Romiti, *Le principali sentenze sul protocollo delle pubbliche amministrazioni* (Viareggio, 1995).

[51] It is not, in fact, the protocol registry that establishes the fact that a record belongs in the creator's archival fonds, because such registration concerns only certain types of records, those sent or received, those records, that is, which go beyond the confines of the entity such registration excludes, as indicated explicitly in the dpr 428/1998, internal records or those subject to specialized registration (article 4, paragraph 5). Classification not only identifies all records which fall within the archival fonds, but connects them to their specific administrative/recordkeeping context.

- the identification and maintenance of the archival relations which are established among records in the actual exercise of the functions of the creator;
- the retrieval of records from the archival units of arrangement;
- the facilitation of the functions of selections and preservation;
- the definition of dynamic methods of records management enabling periodic updating;
- the reconstruction of the historical evolution of the archival fonds across time, as a snapshot of the different articulations that the archival fonds underwent.

Because these objectives are interrelated, it is naturally necessary that the records management system includes not only a good framework for classification integrated with the retention schedule for the records, but also adequate procedures for its maintenance and updating.

Given that it is an instrument that depends strictly on the specific responsibilities of the creator, on its organizational structure, and on the chosen procedures for self-documentation of the appropriate activities, the classification plan cannot correspond to a single model. Actually, there is no specific theory which includes unimodal principles for the construction of classification systems for records.[52]

In any case, it is possible, as well as appropriate, to distinguish common principles that make it possible to plan coherent recordkeeping systems and guide organizations in this difficult and delicate labor. It is necessary in this area to distinguish the rules which apply to planning for the classification system from those rules which establish the specific applicable modalities, partly to support generalization.

Among the rules of the second type are, for example, the principle according to which:

- classification is systematic: all records (that is, all documents which participate actively in the affairs of the entity, independently of their physical media, and of their state and mode of transmission) are subject to classification, or, rather, to recognition, identification, and functional arrangement according to logical and consistent criteria within distinct archival units (files or series);
- a record may be simultaneously classified in several categories. In the traditional environment, this possibility entailed its duplication, while in the digital environment duplication is limited to the links between the record and its classification codes.

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[52] The royal decree (rd) 35/1900 provided some simple general rules for the construction of classification systems for headquarters agencies: a) they should establish a number of divisions corresponding to the principle subjects of the creator, b) every division should be subdivided into classes and every class into subclasses; c) every division should have one class for general affairs, for collective affairs (individual records addressed to several recipients), one miscellaneous division (only for records which do not have any other systematic classification and are residual with respect to the primary activities).

Concerning rules of the first type, however, for which a fuller sharing is desirable, at least in the public sector, we can affirm that classification

- is a schema of logical constructs, established in a uniform manner, corresponding to the functional needs (and not to continuously changing organizational structure) of the creator, generally articulated in a hierarchical structure in order to determine the basic units of aggregation of the archival fonds (the files) within which records are arranged according to the functions, activities, affairs, and/or subjects in which they participate;
- requires, as a precondition, a *general plan of classification*[53] as an ordered ensemble of abstract divisions subdivided into levels (for example, categories or headings, classes, and subclasses), and differentiated according to the primary and secondary functions of the creator;[54]
- is mapped to the organizational chart insofar as the elements of the plan are linked to the administrative structure competent for the functions and activities identified;
- establishes the principles for creating and organizing elementary archival units[55] (the files or record series through which records are aggregated according to type), on the basis of which records are organized;
- provides for distinguishing files of different nature according to their contents (of a general informative nature, procedural [i.e., referring to specific procedures], etc.) and their retention (permanent, annual, etc.).
- specifies the logical position of each record within the archival fonds and of its archival component or division, according to a principle corresponding to the modes of operation of the subject;
- connects the creation of records to the times and modes of their preservation through integrated classification and retention plans, enabling planning for space and technical and organizational mechanisms for the maintenance of the records across time;

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[53] The essential descriptive elements of a classification plan are (a) the classification elements (codes, titles of the elements, supplementary description, principles for organizing files, and for assigning responsibility in the case of elements at the bottom level); (b) the description of the files (identification or file number, dates of opening and closing, and file titles; this final element can be predefined for various elements of the plan in order to guide practice both in the phase of the creation of new files and in ensuring uniformity and coherence among offices, and in the same structure).

[54] The division of the classification system into functional areas of administration for secondary processes, which guarantees the maintenance of the subject and support of the primary processes (for example, accounting, property, personnel management, and automated information systems) can be very useful when applied in the public sector, enabling the sharing of the laborious task of constructing systems of classification for several subjects. On this subject, see L. Duranti, I d*ocumenti archivistici,* 61.

[55] An 'archival unit' consists of an ensemble of records aggregated together for functional reasons, in order to constitute an entity which cannot logically be subdivided: (a) insofar as it refers to an affair or a subject which develops over time and comes to either a definitive or periodic conclusion; or (b) because it comprises records of the same form which are aggregated either chronologically or functionally in distinct unities (for example, judgements assembled each trimester, circulars related to a given span of time and aggregated by country, etc.).

- contributes to the allocation of specific responsibility for the management of records (e.g., through the assignment of each basic division of the classification plan to a competent unit responsible for the proper maintenance and preservation of the record material produced within the assigned area of classification);
- enables the integrated management of hybrid records systems (i.e., paper and electronic);
- guarantees the connection between the records' purpose and the administrative goal of controlling practice, by making it possible to connect records management to the control of the flow of related processes, of the movement of files, of the restriction of information in relation to access standards and to the oversight of personal data, etc.

Although its function may not yet be entirely accepted and understood (given the confusion which tends to arise among classification, methods of arrangements, and functionality of research), one cannot doubt that the possibility of retrieval guaranteed by information systems for records management does not eliminate the necessity of classification as a primary and functional means for organizing records. Records are classified and, therefore, organized with the objective of serving the informational and legal needs of those who make use of the records for current processes.

In the digital environment, classification offers new possibilities including, among others:

- more rapid recall of information from records (especially if supported by indexes);
- diversification and specialization for record types which are richer in information (for example, through the creation of rule-based records repositories of decisions, minutes, opinions, general reports, etc.);
- pre-establishment of filing procedures, insofar as it remains possible and appropriate to provide a predefined, but still somewhat flexible, framework through which specific types of appropriate records arrangements can be organized for the structure of a highly articulate institution enjoying considerable autonomy;
- efficient integration with various administrative procedures (e.g., control of workflow, management of the assignment of tasks, statistical functions, etc.).

Furthermore, in the digital environment, the development of the classification plan for a fairly complex administrative structure entails the adoption of electronic procedures for identifying every record received. All interrelations among records should, in fact, be specified explicitly according to alphanumeric codes that indicate the assignment of every record to one or more files. Indeed, electronic records management that only covers a portion of received materials is not significant. It is no longer possible to maintain control over the creation and accumulation of records in the case of an electronic archives,

265

except through the registration of all the objects which constitute it, diminishing all modes of physical management of the materials (such as the manual insertion of a record within a paper file). It is also appropriate to articulate a common format for classification indexes; that is, alphabetic codes assigned to individual records in order to indicate virtually the relevant file within the context of each major division of the plan.

Now, more than in the past, it is necessary to establish procedures that regulate and describe, in a uniform and controlled manner, the modalities of external access and of internal use of the plan, assembling them in a single instrument, the management manual.[56]

A final series of considerations concerns the problem of the creation of archival units. As has been pointed out, records are invariably created and preserved in order to document activities and processes. The link between records creation and business activity is guaranteed at the point of the definition of principles of aggregation and organization of records in files (or archival units) related to each affair, activity, or subject.

It is the records creator's prerogative to determine (within the context of applicable legal rules and recordkeeping requirements specified in law) which actions should be documented and produce records, and the methods of organizing and managing the records, with particular reference to their assignment to files within the adopted classification scheme. In this context, the file constitutes the basic element of the records management system, defined through the classification scheme as an ensemble of records related to a given affair or subject. It is both a logical and physical unit in the case of paper records, but only logical in the case of electronic records. The classification plan only indicates the typology of files created under each heading, the nature, the system of control, the principles of retention (including, eventually, the opportunity or necessity of replacement or supplementary media), of preservation and selection, and the levels of access.

Thus configured, records classification serves a highly relevant organizing role, much more significant than that of the protocol registry to which, as has been emphasized, current policy erroneously attributes an excessive impor-

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[56] The management manual is an instrument which is widely used to guarantee the proper maintenance of records management in the various traditions. On this topic, see Luciana Duranti, I *documenti archivistici,* 183–89. It includes all rules and procedures, and also the information necessary for efficient handling of the records, including (a) an introductory guide to the records system of the creator; (b) general provisions of current standards; (c) procedures for creating and maintaining the archives, especially with respect to the creation of records (criteria for registration, classification system, general standards for correspondence management, and for files withdraw), for transfer to records centers and historical archives, for use and selection; (d) the assignment of responsibility for records management (structure and mandate); and (e) rules for use and reproduction of records in accordance with policies on access, management of personal data, and copyright. It is also a useful tool for training personnel newly assigned to records functions, or for use when the system is updated. There is a risk of making the system too rigid. The obligation to use the management manual and to publish it, insofar as that is compatible with the problems of confidentiality and security of the system, is established in Italy in the technical rule (dpcm 31 October 2000) for application of the electronic recordkeeping legislation.

tance, at least with reference to the archival organization. It is necessary to remember that there are very few classification systems which satisfy the requirements and have the appropriate characteristics, either because of the negligence of agencies in dealing with the problems of organizing their archival fonds, or because of the distractions, noted several times, of archivists who are busy in other, more rewarding areas. The primary reason, however, is the difficulty of the work of data gathering, analysis, and definition that a good system requires. In any case, it is indispensable to invest a sufficient quantity and quality of effort in this area in order to be able to withstand comparison with many existing computer applications. These applications which lack archival planning, are clearly inadequate for the processing and retrieval of recorded information, but nonetheless, appear promising because of their ease of use and, in all cases, seem more efficient given the state of abandon of many recordkeeping systems in both the public and the private sectors.

Conclusion: The Automation of Records Systems—A Strategic Task for the Renewal of the Archival Function

There is a major trend underway in many countries, and, above all, in Italy, in the effort to improve and bring innovations to government administration. The transformation process includes simplification of administrative systems, rationalization of organizational structure, and a growing attention to the results of public service, rather than to conformance with procedures. The technologies of information and communications have played (and will continue to play) a significant role in the direction and intensification of this evolution, principally by developing easy, rapid, and efficient modes of communication and exchange. In this context, the records system is considered simultaneously as an obstacle (if it remains unchanged) but also as a factor in the transformation to the extent that it is an essential service and a flexible network of connections between agencies and the public, susceptible to significant improvement through automation and change.

The urgency of pushing innovation through simplification and rationalization of the processes of the dormant system of public administration has pushed the Italian legislature, a little too quickly given the maturity of the technology and the available solutions, to introduce a series of rules aimed at transforming within a few years—before 31 December 2003—the records systems of all government agencies into completely automated systems covering both procedures and contents, thanks to the introduction of:
- electronic protocol registries,
- electronic systems of classification and filing,
- digital scanning of traditional records (according to a costs/benefits analysis), and

- creation and maintenance of records in electronic forms (by using digital signatures).

This development and related efforts concentrate exclusively on the management of active records, leaving to archivists alone, for the moment, concern for the concepts and methodology for the preservation of the new digital archives. The Italian community, like that of other countries, faces a difficult and crucial choice. It cannot follow those public servants who resist all change, but at the same time it is not disposed to share the thoughtlessness and indifference of many specialists in information technology concerning prospects for the future preservation of electronic records. On one hand, it has already assumed an active stance regarding the proper means of producing records in a digital environment—a prerequisite for the maintenance of reliable and authentic records. On the other hand, anxiously and in isolation, it questions its possible role in the custody of digital memory. This is a role which should be exercised immediately, when records are still in the active phase, and which requires:

- expertise and methodology
- a general policy and a clearly defined strategy
- operative strictures and recognized responsibility
- financial and human resources.

The methods available today are primarily limited to the establishment of rules and procedures, and to certain organizational measures for the treatment of current records, including:

- the recognition of the authority of the archives management to define, together with government authorities (the Department for Public Service, the Ministry for innovation, and the Authority for information technology in the public administration), the archival requirements for the production, retention, and preservation of the electronic records of government agencies (art. 18 sect. 3 of the dpr 513/1997);
- the creation in all large, homogeneous organizational areas of the public sector (general direction, departments, etc.) of a service responsible for the automated protocol registry, and document flow and records, at a high level of automation, assigned to a high-profile official, trained in records and archives management (art. 12 of dpr. 428/1998);
- a series of programs for the creation, within a few years, of thousands of archivists, administrators, and civil servants, charged with planning and updating records systems in order to prepare the way for a massive automation initiative (programs being developed partly by the Department of Public Services and AIPA [Autorità per l'informatica nella Pubblica Amministrazione]), and also reform of the regulation of the archives school under the direction of the Central Office for Archives.

These are measures which are not yet sufficient, but nonetheless are useful to sustain and, above all, to create the bases for reinforcing the archival func-

tion in the field of electronic records management. Everything remains to be done to define principles and methods for the preservation of these records, which the Italian government goes about producing today in electronic form ever more widely. The international research undertaken by the InterPARES project has provided a common framework to further developments and implementations, while the new rules and the transformation which is underway make the need for comprehensive answers in this field even more urgent. One point, however, appears to be clear: the necessity of increasing the continual concern of the entire archival community to sustain and evaluate the processes for creating records systems, and extending the traditional sphere of the profession. The first step is that of consolidating and defining the basic principles, which today will bring archivists, regardless of the limits of their traditional training, up to the task of planning and evaluating the adequacy of the processes of automated systems of records, and which in the future, may transform them—if properly pursued—into *auditors* of high stature, expert in monitoring, controlling, and coordinating the government records function.