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**POLICIES AND REQUIREMENTS FOR ARCHIVAL
SEDIMENTATION IN A HYBRID RECORDS MANAGEMENT
ENVIRONMENT: A CRITICAL ANALYSIS OF
INTERNATIONAL WRITINGS**

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Abstract

This study examines in detail the archival functions and practices that determine the sedimentation of records that have been generated in offices. Archival sedimentation, as it is understood in the Italian context, is the process by which records interrelate to create aggregations that document the activities performed by records creators. A fundamental role in this sedimentation process is played by classification, which provides the rules that govern these relationships, guaranteeing a meaningful context to records, as well as intellectual control over them.

Despite the importance of classification for managing records, literature on this specific topic is scarce. Thus, this research examines the concept of classification, and provides clarification to distinguish it from other concepts that are indistinctly used, such as filing and arrangement. The records classification scheme, an essential tool traditionally used to classify and file records, is examined in the current digital environment, as new technological solutions for establishing records relationships have emerged. Traditional hierarchical records classification schemes, their constitutive elements, divisional criteria and methodologies for construction are analyzed, as are other tools currently used to simplify classification tasks, multiply records relationships and increase access points for retrieval. Findings show that the hierarchical structural relationships are still necessary to manage digital records, as are associative relations. Both types of relationship are used in records classification schemes, although at different levels of the scheme.

Surprisingly, the construction of records classification schemes is almost unexplored within the archival discipline, which proposes general, scattered and dissimilar structures and few methodologies for their elaboration. This research presents a compendium of principles and methodological steps to be followed, highlighting the issue (still unresolved) of identifying classification elements such as functions, activities and transactions. Findings show that the analytical process that needs to be followed to identify these elements is based on both the functional and sequential analyses of the work processes/activities that generate records. However, the work process analysis for records is currently not consistently applied due to the high level expertise and interdisciplinary work it requires.

Finally, another neglected topic within the archival literature, that of procedures for classification and filing, is also analyzed, as users need guidance on how these operations should be properly executed.

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Para Sofía y Valerio

Dime que tienes tiempo
para contarme un cuento
esta noche,
mamá.

Quiero que me traigas duendes
y que hagas sonar trompetas
y, junto con mil caballos,
llenes mi habitación
de magia, color y fiesta.

Y yo...
prometo estar bien atento,
(¡y más que contento!)
si tú esta noche vienes
a contarme un cuento.

Una noche de cuento
Almudena Orellana

1. INTRODUCTION

1.1 Overview

This dissertation emerges from a real need to efficiently manage both the analogue and digital records produced at the institution where this author works, in what is known as a hybrid records management environment.

In 2008, a project for designing and implementing a records management system that respected archival principles and practices was initiated by this author at her work institution. The project was a case study of InterPARES 3,¹ and followed the guidelines and recommendations elaborated by InterPARES 2 for the creation, maintenance and preservation of reliable records in recordkeeping systems, including records metadata specifications. The case-study consisted of three main phases: 1) The creation of a records classification scheme for the whole institution, integrated with a records retention and disposal schedule; 2) The identification and adoption of a records management software package, which involved the elaboration of functional requirements, both archival and technological. The functional requirements were based on international standards and specifications (ISO 15489:2001, InterPARES 2, MoReq2), and also technical documents produced by the Italian national entity for information technology in the public administration.

¹ InterPARES (International Research on Permanent Authentic Records in Electronic Systems) is a project aimed at developing knowledge for the long-term preservation of authentic digital records. It is directed by Luciana Duranti and is based at the School of Library, Archival and Information Studies at The University of British Columbia, in Vancouver, Canada. The project has been developed through several stages:

InterPARES 1 (1998-2001) established the means for assessing and maintaining the authenticity of electronic records once they become inactive and are selected for permanent preservation. This first phase was based on the findings of a previous research project titled *The Preservation of the Integrity of Electronic Records*, undertaken by researchers at the University of British Columbia from 1994 to 1997, in collaboration with the United States Department of Defense. This research project aimed at establishing standards for creating reliable electronic records and maintaining their authenticity during their active and semi-active life. One of its products was DoD Standard 5015.2 for recordkeeping systems;

InterPARES 2 (2002-2007) aimed at developing concepts, principles, criteria and methods to ensure the creation and maintenance of accurate and reliable records and the long-term preservation of authentic records in the context of artistic, scientific and government activities that are conducted using experiential, interactive and dynamic computer technology;

InterPARES 3 (2007-2012) translated the theory and methods of digital preservation developed by InterPARES 1 and 2 into concrete action plans for bodies of records to be kept over the long term by archives endowed with limited resources.

The current project phase, called InterPARES Trust (2013-2018) aims at generating theoretical and methodological frameworks to develop local, national and international policies, standards and legislation, in order to ensure evidence of good governance on digital records entrusted to the Internet. [This information comes from the InterPARES website at: <http://www.interpares.org>. (Accessed on 31/01/2017)].

Once the system requirements were identified, a market survey, evaluation and selection of software were undertaken. Finally, phase 3 consisted of software customization, which involved the following steps: Analysis; System development; Release and testing; Final test; and Staff training.²

Several setbacks were encountered with this project and process, especially in relation to software customization and development. Particular analysis and emphasis were also necessary for the design and implementation of the organization's first records classification scheme, which was elaborated by an external consultant archivist. The need for guidelines was then recognized, in order to consistently lead the process of managing and updating the scheme; in particular, the identification of new headings to be incorporated to the scheme (when appropriate); where to incorporate them; how to name them; etc. There was also a need to provide procedures to the organization's staff on how to use the classification scheme and how to properly file records. Considering that the working environment of the organization is characterized by the decentralization of recordkeeping tasks, common methods for classification and filing were fundamental in order to retain overall control of the business records production. Records sedimentation, and especially classification and filing, turned out to be the main focus of attention, and similarly the main topic of this research.

1.2 Research scope

This thesis mostly focuses on what is known in Italy as records sedimentation, which should be understood as the process of records accumulation, in which archival functions and operations (classification/filing and arrangement) are implemented in order to obtain homogeneous aggregations of interrelated records that serve the informational and legal needs of records creators during the conduct of their business.

Among the diverse archival traditions around the world, differences exist in conceiving what classification and filing are for. Some give more weight to retrieval; others consider retrieval "as a collateral benefit, to the extent that it does not contradict the primary purpose of records classification, which is 'to place individual records into the aggregates to which they belong, based on the creator's mandate and

² See the final report of the case-study: Maria Mata Caravaca - Roberto Nahum, *Study 01 – Design and Implementation of a Records Management System at ICCROM: Final Report*, 2012.

functions.”³ With the introduction of electronic records management, several schools of thought have limited or reduced the scope assigned to classification/filing, or even questioned the need for it. This can be perceived as a collision between traditional archival theory and practices (advocating for the use of hierarchical classification schemes which determine stable records relationships), and more recent technical and technological solutions that aim to establish multiple records relationships, as well as to ease the users’ work, i.e. through metadata categorization, faceted classification, poly-hierarchies, the use of “big bucket” categories, etc. Obviously, the appearance of these new solutions responds to an objective need for simplifying classification work and processes. Decentralized environments in which records producers also classify records are taking the place of previously centralized systems in which dedicated staff (i.e., file clerks) worked exclusively on records registration and filing. In this perspective, staff currently dealing with recordkeeping tasks need proper training to acquire confidence with archival concepts and practices, including skills for accurate and consistent classification and filing. In the end, classification is not an easy task; it requires that users make intellectual choices and decisions on the category in which the records belong. If many possible categories are presented, the choice may become difficult. Therefore, a pre-defined classification structure combined with proper staff training is fundamental for successful records organization in decentralized environments. Ideally, automation can simplify the work of users. Nowadays, however, most classification in electronic systems is done manually, as development of machine-driven classification or auto-classification software with partial or non-user involvement is still in its early stages.

All these aspects and particularities will, to a certain extent, be analyzed in this thesis. The study will start by providing an overview of the concept and purpose of classification and filing, as it is understood in different archival traditions, such as the Italian, Spanish and Anglo-Saxon ones. It is remarkable to note that the same terms may have different connotations, as they apply to different archival contexts with their specific regulations and needs. Subsequently, the main tool that has been traditionally used to guide records classification, that is the records classification scheme, will be analyzed, and topics to which the archival discipline has not paid

³ Fiorella Foscarini, *Function-based Records Classification Systems. An Exploratory Study of Records Management Practices in Central Banks*, PhD Thesis, The University of the British Columbia, Vancouver, 2009, p. 3. The internal citation comes from Duranti et al., *Preservation of the Integrity of Electronic Records*, Dordrecht: Kluwer Academic Publishers, 2003, p. 43.

special attention, such as the concept and principles of hierarchy, structure and relationships, will be further examined. In addition, types of records classification schemes (organic, functional, hybrid, subject-based) and their constitutive elements will be investigated through the theories of Theodore Schellenberg, Raffaele De Felice and Michel Roberge.

Although the records classification scheme is considered a fundamental tool for organizing records, the archival discipline has not dedicated much effort to analyzing how this type of scheme should be constructed. A standardized methodology for elaborating a classification scheme has not yet been defined, and the few methodologies available do not always deal with fundamental aspects, such as the identification of categories, or how they interrelate to build the archive structure. This study will analyze the methodology proposed in the 1960s by Zygmunt Dobrowolski, who addressed the construction of hierarchical classification structures and coding systems as well as the assessment of their structural quality. However, Dobrowolski did not give adequate emphasis to the identification of the objects (classes/categories) that define and determine the structure. Dobrowolski's methodology was developed for libraries of specialized scientific institutions, and in the 1980s became the inspirational source of the classification theories of two archivists, Michel Roberge and Raffaele De Felice, which will be also studied.

Other references on the design of records classification schemes will be considered in this research, such as 1) ISO 15489, the first international standard devoted to records management. This standard gives very general methodological recommendations for identifying the business activities that will be the basis for elaborating a records classification scheme; 2) The **Business Activity Structure Classification System (BASCS)**, developed by the National Archives of Canada, which proposes the use of business processes analysis to identify functions, sub-functions and activities for elaborating a records classification system; 3) The **DIRKS methodology (Designing and Implementing RecordKeeping Systems)**, developed by the National Archives of Australia (NAA), which provides further explanations and examples in its recommended approach to identifying the organization's functions, activities and transactions, their review and testing. This methodology is complemented by the Australian Standard 5090-2003, Work Process Analysis for Recordkeeping, subsequently issued as an ISO standard (ISO/TR

26122:2008), which offers detailed advice on how a business process analysis for recordkeeping purposes is done.

More references may be found in the Spanish literature, where several proposals for standardizing the way in which classification categories are identified and formalized have been developed. One of these proposals uses the General Budget of the Spanish public sector institutions, which follows a functional classification of expenditures and supports the identification of higher levels (functions and sub-functions) in the classification scheme. In addition, the analysis of work processes and administrative procedures, from general to specific, in combination with sequential analysis determines the identification of the other categories (activities, administrative procedures, document type, records series).

All these different methodological approaches are based on functional analysis as the functional approach in elaborating classification schemes is, at present, the one that has raised broader consensus within the archival discipline. Sherry Xie makes interesting remarks on the current situation of functional analysis, writing that it “[...] appears to be an underdeveloped concept, in both its theoretical underpinnings and its methodological implications.”⁴ Xie adds that this is due to the abstract concept of function, for which direct application is difficult to find. The common guidance that functions can be derived from the legal and regulatory documentation of the records-creating organization is “ineffective in indicating the complexity of the analysis required to reach the pursued goal.”⁵ In fact, the analytical process for designing functional records classification schemes requires the intensive interdisciplinary work of several professionals. As pointed out by the Business Process Analysis (BPA) Benchmarking Report⁶ conducted by NARA in 2005, the work process analysis that needs to be carried out to identify functions, processes and transactions is labour intensive and costly, particularly when complex processes need to be formalized, or business processes and related records need to undergo major automation. In addition, obstacles can be encountered during this type of analysis, the main one being getting the right information. These projects

⁴Li Xie, *Entry: Functional analysis*, in *Encyclopedia of Archival Science*, 2015, p. 221.

⁵*Ibidem*.

⁶The NARA Business Process Analysis (BPA) Benchmarking Report contains the outcomes of a 2005 project aimed at investigating business process analysis and systems development to support electronic recordkeeping. One of the benchmarked organizations was the National Archives of Australia, where it was analyzed the methodology proposed by the Australian Standard: Work Process Analysis for Recordkeeping, AS 5090-2003, which later became ISO/TR 26122:2008.

cannot be supported by documentation alone; analysts (information and records management teams) have to rely on their deductive logic, analytical and interpersonal skills (that is, non-explicit knowledge) plus the information gathered during staff interviews to understand the realities of the workplace. In addition, a high level of expertise is required to fully understand and apply the standard for work process analysis (ISO/TR 26122:2008). As a consequence, records managers would need to acquire new skill sets that include interviewing and related communication skills, deductive logic, and analysis to effectively manage a work process analysis project. This type of analysis should be made with the support of legal, IT, and information systems design offices, given the interdependency of their functions with records management. In summary, approaches and methodologies for constructing records classification schemes are undeveloped. Thus, the quality and applicability of the classification schemes that are currently being produced depend on the analytical skills and experience of the archivist responsible for constructing them, as proper training is not provided to archivists/records managers.

This introductory overview raises many questions for which answers are still pending. This dissertation aims to gain insight into several issues that classification and filing present in daily archival practice, especially when records managers/archivists face both the implementation of a records classification scheme, and the elaboration of procedures for classification and filing in hybrid environments. Accordingly, the questions that this research has advanced during the course of work are as follows:

Question 1: What is the state of knowledge with respect to the construction of records classification schemes?

This key question comprises two specific research questions that have also been considered in this dissertation:

Sub-question 1: What is the analytical process that needs to be followed to identify, define and name functions, activities or records categories when designing a records classification scheme?

Sub-question 2: Is a hierarchical structure still necessary to classify and file records?

Question 2: What is the state of knowledge with respect to procedures guiding users in their daily filing work?

1.3 Theoretical framework

The thesis examines writings that focus on records classification at the creation stage in different archival geographical contexts, such as Italy, Spain and Anglo-Saxon countries. The fact that in the Spanish context the term and concept of classification has a broad meaning and applies to both active and inactive records (that is, to records management and historical archives), means that references to the archival description perspective also appear in the dissertation, particularly when the concept and definitions of classification and classification schemes are analyzed in the Spanish literature. These references are intended to provide an insightful view of what classification means or how it is applied in this specific geographical area. In particular, Chapter 3 (Section 2) provides comparison of the definition and goals of classification in the three archival traditions, which clarifies conceptual differences between them.

This thesis also takes into consideration authors whose classification perspective focuses on appraisal. This choice can be explained by the interest in having an overview of the entire classification phenomena.

1.4 Methodology

The thesis employed a deductive approach or reasoning, which involved reaching conclusions from propositions of the existing archival theory, tested by comparing them with observations derived from the researcher's own experiences at the ICCROM Archives, and from visits to records and archives departments of four other institutions. The research methodology was based on a wide review of Italian, Spanish and Anglo-Saxon archival literature, as well as some French and Portuguese writings, relative to the specific topic of classification. This review provided the basis for intensive exploration of the topic of interest, and allowed identification of significant theorists and research groups. Writings such as archival dictionaries, vocabularies and encyclopedias were examined first, in order to compare concepts and definitions of records classification. Findings showed a close relationship between classification and other archival functions, such as appraisal, and archival description and arrangement, to which this thesis also makes reference. Other types of writings, such as scholarly literature (monographs, journals articles, theses and dissertations), standards and guidelines were then used to analyze the types and

elements of records classification schemes, and methodologies for their design. At this point, the literature review was expanded to include other disciplines that had also explored this topic in their respective territories, such as library and information science and business process management. The literature review, in this case mostly records management manuals, also allowed identification of common provisions for elaborating records classification schemes and guidelines for classification and filing.

However, bibliography on the specific topic of classification is scattered and not as abundant as might be desired. To fill gaps on specific themes, the review of literature from different countries had advantages. When literature on a specific topic was not treated in much depth in one country context, writings from the other contexts could partially fill the gap.

The literature analysis was complemented by several empirical aspects, which were intended to illustrate some of the points made in the research, rather than being a primary source of data. Thus, an important aspect was the progressive implementation of the records classification scheme at the institution where this author works. This daily activity was vital to ascertain the purpose, the techniques and processes of the classification function. Also, the parallel implementation of an electronic records management system offered opportunities for analyzing the functional requirements relevant to the sedimentation of records within a records system. Another methodological aspect involved visiting records and archives management departments of institutions based in Rome that had implemented records management systems. The aim of the visits was to understand their records sedimentation modalities, their positive experiences, and any issues encountered in the daily process of managing records. Visits were characterized by unstructured interviews, in which participants' observations prevailed over any interview protocol; therefore, the interview findings are integrated in this dissertation as examples of topics related to classification.

1.5 Glossary of terms

During the course of the research, evidence emerged of the slightly different meanings that the same archival terms had, depending on the archival context in which they were used. Therefore, this glossary formulates the definitions that the author gives to these terms in the thesis, so that a common and comprehensible language is proposed before reading the work. These definitions are the result of consulting and comparing dictionaries, glossaries and monographs available in the different archival contexts on which this study has focused, that is, the Italian, Spanish and Anglo-Saxon ones.⁷ The terms are logically (not alphabetically) arranged to better explain terms that are associated or consecutive parts of a process.

Organization: An activity that comprises classification, filing and arrangement, when applied to the archival context. Its main aim is to provide a logical structure and order to records. The concept of organization may also include other activities such as records storing.

Sedimentation: The process of records accumulation in which records aggregations may follow informal and/or empirical practices, or can be guided by predefined organizational tools, such as a records classification/filing scheme and a retention schedule.

Classification: Archival function that consists of assigning records to categories or classes according to several criteria (such as functions, activities or operations generating the records) for the purpose of (1) guaranteeing a meaningful context to records and (2) achieving physical or intellectual control over them. The classification function allows linking of a record (and file) to the administrative activity to which it relates, and is materialized through a records classification scheme that provides a logical structure of categories in which files (aggregations of records) are created or associated.

⁷ The consulted references come from: Government of British Columbia, *Recorded Information Management Glossary*; José Ramón Cruz Mundet, *Diccionario de Archivística*, Madrid, Alianza Editorial, 2011; Monica Grossi, *L'archivio in formazione*, in *Archivistica: Teoria, metodi, pratiche*, Linda Giuva - Maria Guercio (Ed.), Roma, Carocci editore, 2014; Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, Sevilla, Junta de Andalucía, 2011; InterPARES 3 Project Terminology Database; Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, Chicago, Society of American Archivists, 2005.

Filing: Archival function that is subsequent to classification and consists of placing or connecting records to files for the purpose of creating homogeneous archival series that reflect the relationships among records and the way in which records creators have operated.

Arrangement: Archival operation that consists of putting elements (such as records and files) into a sequential order or relation, according to several criteria: alphabetic, chronological, numeric or a combination of some of these (i.e., alphanumeric). Arrangement is complementary to classification and does not suppose hierarchy.

Classification scheme (also classification plan): A diagram or chart composed of abstract partitions, categories or classes, which aims to logically organize the records created and maintained by an institution. Classification schemes often categorize the creator's records by hierarchical classes (from general to specific), which are uniquely identified by a coding system. Generally, classification schemes are integrated with file plans, which indicate the types of files to be created within the abstract scheme of classes.

File plan: A diagram or chart that identifies the records series and, in most cases, gives indications on the types of files to be created (by business, activity, natural or legal person), their naming and arrangement.

When both the classification scheme and file plan are integrated with the records retention schedule, file transfer instructions, file retention and disposition instructions, and other specific instructions that provide guidance for effective management of records, including vital records, are added to the scheme.

File: The aggregation of all the records that participate in the same business affair or relate to the same event, person, place, project, or other subject. They provide evidence of a transaction, case, subject or other business matter. The records composing a file are treated as a unit, arranged in a logical sequence, and classified and scheduled together. The file is the logical entity used to organize and manage records (the archival unit).

Competence: The main function(s), sphere of action(s) or subject area(s) assigned to an organization. They are ascribed to one (or more) office(s), as a structure made of human and material resources is needed to materialize and formalize the functions/activities that the organization needs to perform.

Function: The purpose or task assigned to an organization, which is carried out through activities/processes. Function is considered at an abstract level, with a non-specific structure (office or individual) identified for its fulfilment.

Activity: A series of actions aimed at accomplishing the functions assigned to an organization. Activities are performed through a process (a sequence of actions or transactions), which may be regulated by procedures.

Action: The state or process of doing or acting to accomplish an activity, a function. Action is a broader term than transaction, as transaction is considered the act of carrying out or conducting business, negotiations, and exchanges with others.

2. THE CONCEPT OF ARCHIVAL SEDIMENTATION: ITS MEANING AND USE IN THE ITALIAN CONTEXT⁸

2.1 Introduction

As the title of this thesis indicates, the aim of this research work is to analyze policies and provide indications or guidelines for the sedimentation of records in the current hybrid environment. To better understand the aim of this dissertation, the concept of sedimentation needs to be clarified, as it is a term exclusively used in the Italian archival field that, in addition, has an ambiguous acceptance or meaning when applied to the archival context. This is mostly due to the fact that the term comes from other scientific disciplines and has been incorporated into the Italian archival language as a metaphor of a process in which the archive is formed in a natural and spontaneous manner.

Therefore, this chapter intends to give answer to the following questions: What does archival sedimentation mean? Why and when did the term sedimentation start to be used in the Italian archival field? The chapter also provides reflections on the spontaneity and/or intentionality of the sedimentation process. The ambiguity presented by archive attributes, such as natural, spontaneous and organic, is analyzed, along with the changes of the archival sedimentation connotations in the last decades.

2.2 Use of the term sedimentation

The term sedimentation was incorporated into the Italian archival scientific language in the second half of the 20th century. At that time, the Italian archivist Filippo Valenti published his reflections on the nature and structure of archives. Archival theory and practice was progressively developing, and theorists were reflecting on the differences, singularities and specificities of archives in comparison with two similar cultural disciplines: libraries and museums. It was also a way to defend the autonomy of this fairly young discipline.

⁸ The research carried out for this dissertation on the concept of sedimentation was published by the author in the *Archival Science Journal*. The article, with few updates and modifications, is reproduced in this thesis: María Mata Caravaca, *The concept of archival "sedimentation": its meaning and use in the Italian context*, in «Archival Science», Springer, 2015.

To describe the nature of archives, Valenti took into consideration some affinities that may be observed between archives and archaeology. In fact, Valenti compares archives to archaeological remains, in which findings emerge as they were stratified through time, in an organic and natural way, without any external or artificial classification or categorization scheme (as happens in museums). This comparison fostered the vision of the archive as the spontaneous sediment of somebody's practical activity.

Even so, Valenti recognizes that the archive entity is ambivalent and heterogeneous and, for this reason, he identifies two poles of attraction when addressing the archive concept: *archive-thesaurus* and *archive-sediment*. The *archive-thesaurus* is an archive of selected records. It is the result of an intentional and systematic selection due to practical and operational goals (including the desire of a certain elite to transmit to posterity a particular image of themselves). Instead, the *archive-sediment* is the spontaneous sediment of records generated by an activity.

Valenti affirms that these two opposite concepts are continuously interacting and alternatively prevalent in certain periods of archival history. The *archive-thesaurus* is preponderant in the medieval period, mostly due to the insignificant documentary production of a society almost free of bureaucratic structures, in which sovereigns were especially interested in retaining certain records that could prove their territorial, jurisdictional and property rights. The *archive-sediment* appears with the emergence of municipalities and city-states in certain parts of Europe over the course of the 13th century. More complex institutional structures started to be created, which increased the amount of records produced. The need came about to maintain memory of administrative and accounting records generated by daily bureaucratic routine. Both *archive-thesaurus* and *archive-sediment* coexist from the 13th to the 18th centuries. With the fall of the *ancien régime*, however, the nobility began to lose secular privileges. Along with this trend, the archives of selected records (*archive-thesaurus*) that had favoured the interest of nobles and had promoted the image they wished to convey, gradually fell out of use. From the second half of the 19th century, the *archive-sediment* started to prevail. The principle of *respect des fonds* replaced prior methods of grouping and artificially

arranging records (mostly by subject), which had been stimulated by the demand of the positivist historiography.⁹

These reflections on the archive nature by Valenti favoured the introduction of the term sedimentation in the Italian archival discipline. The archive was then conceived as a natural and spontaneous sedimentation of records.

2.3 Etymological origin of the term sedimentation

Sedimentation is not originally an archival term. The word sedimentation is mostly used in the scientific fields of geology and physics. In geology, sedimentation is defined as the accumulation or deposition of sediment or gravel on the Earth's surface. In physics, it describes a process in which particles in suspension are settled out of a fluid and accumulated against a barrier, in response to the forces acting on them (i.e. gravity). The so-called *sedimentation by gravity* (or *settling*) is a method that naturally removes suspended solids from a fluid. It is based on the spontaneous sedimentation process, which exploits the force of gravity.¹⁰

The concept of sedimentation, as a spontaneous process in which (due to certain forces) sediments are naturally deposited and stratified, is a metaphor that fits very well with Valenti's concept of archive. In reality, the terms sediment and residue were previously used to define the archive entity, as it may be observed in the following citations.¹¹

Friedrich KÜch (beginning of the 1900s) defines the term archive as: “[...] all written residues, destined for long-lasting conservation, organically produced during the management of business or private activities, by an authority, corporation, family or person.”¹²

⁹ Filippo Valenti, *Riflessione sulla natura e struttura degli archivi* (1981), in *Scritti e lezioni di archivistica, diplomatica e storia istituzionale*, Daniela Grana (Ed.), Città del Castello, Ministero per i beni e le attività culturali, Ufficio centrale per i beni archivistici, Rassegna degli Archivi di Stato, Saggio 57, 2000, p. 90-95.

¹⁰ The following dictionaries and encyclopedias have been consulted: Edigeo (Ed.), *Dizionario enciclopedico delle arti, scienze, tecniche, lettere, filosofia, storia, geografia, diritto, economia*, 2001; Enciclopedia Italiana G. Treccani; Encyclopaedia Britannica; Oxford Reference; Real Academia Española, *Diccionario de la lengua española*.

¹¹ All quoted material has been translated into English by the article's author, except for those citations from English-speaking authors (Jenkinson and Eastwood). The original texts of quotations are included in the notes.

¹² “Ein Archiv ist die Gesamtheit der im Geschäftsgang oder im Privatverkehr organisch erwachsenen, zur dauernden Aufbewahrung bestimmten schriftlichen Oberreste einer Behörde, Körperschaft, Familie oder einzelnen Person.” Reported by J. Papritz, *Archivwissenschaft*, 2^a ed.,

Robert-Henri Bautier (1961), when highlighting the antithesis between collections (of museums, libraries or amateurs) and archives, writes: “records are deposited [...] in the archive as the sediments of the geological layers are formed, progressively, constantly.”¹³

Claudio Pavone (1964) remarks that “the archives are firstly born as manifestations and sediments of life activities; after and only after, they are considered sources for the history of those same activities.”¹⁴

Filippo Valenti (1981) theorized in depth on both concepts. He affirmed that the archive is the documentary residue of the activities of a records creator. But Valenti moved further, comparing archives with archaeology and privileging a vision of the archive as spontaneous sediment, where records were naturally stratified based on their necessary archival bond.

Even while defending the spontaneity of the archive, Valenti recognized that this archive conception was not totally exact. The ambiguity and ambivalence of the nature of archives entails that certain levels of voluntary decisions are present when constituting archives. Therefore, the idea of spontaneous sediment may also include voluntary expressions. For example, the fact that an archival fonds has been preserved up until today, in a given order, indicates the intentional will of the producer to constitute a certain type of memory for himself.¹⁵ As mentioned before, the *archive-sediment* and *archive-thesaurus* may continuously interact and interrelate.

Marburg, 1983, vol. 1, p. 57. Quotation from: Elio Lodolini, *Archivistica: Principi e problemi*, Milano, Franco Angeli, 1998, p. 178.

¹³ “Les documents se déposent au contraire dans les archives exactement comme se forment les sédiments des couches géologiques, progressivement, constamment.” R.-H. Bautier, *Les archives*, en *L’histoire et ses méthodes*, Paris, 1961 (“Encyclopédie de la Pléiade”, vol. XI), p. 1120. *Ivi*, p. 185.

¹⁴ “Gli archivi prima nascono come manifestazione e sedimento di attività vive, poi, soltanto poi, vengono assunti come fonti per la storia di quelle stesse attività.” Claudio Pavone, *Archivi fatti e archivi in fieri*, 1964, reprint 2004, p. 69.

¹⁵ Valenti writes: “[...] giacchè il fatto stesso che un determinato complesso archivistico ci sia stato pur parzialmente conservato, e secondo un determinato ordine, sta ad indicare almeno all’origine, da parte di chi l’ha prodotto, una deliberata volontà di costituirsi un certo tipo di memoria.” Filippo Valenti, *Riflessione sulla natura e struttura degli archivi*, 1981, reprint 2000, p. 89.

2.4 Concept of archival sedimentation

The concept of sedimentation is deeply linked to the concept of archive. Two processes are needed for the constitution of an archive: records production and records sedimentation. The concept of sedimentation may involve records depositing, accumulation, stratification, and even setting aside, ordering and organization.

If the initial use of the term sedimentation is analyzed, it is possible to observe special emphasis in its connotation of spontaneity. Throughout the 20th century, many definitions of the term archive contain the concept of spontaneous, natural and organic sedimentation, for example:

- The Dutch Manual (1898) affirms that “the archive is an organic whole,”¹⁶ as was also highlighted in the archive definition given by Friedrich Kuch.
- Giovanni Vittani (1914) defines the archive as “a natural product that is being constituted with the life development of the entities that form it, and which reflects their continuous sequence of events.”¹⁷
- Giorgio Cencetti (1939) declares that to build the archival doctrine, it is fundamental to qualify the archive through “the necessary bond that links the records from their birth or [...] the organicness that characterizes that Institute as opposed to others of its type.”¹⁸ The necessity and determinateness of the archival bond is manifested through the mutual relations that link the records, allowing conception of the file folders and series as a *corpora*, “just as the reciprocal relations among the series determine the often-noted organic character of archives.”¹⁹
- Jenkinson (1948) defines archives as “documents accumulated by a natural process in the course of the conduct of affairs of any kind, public or private, at any date, and preserved thereafter for reference, in their own custody, by

¹⁶ “Een archief is een organisch geheel.” S. Muller - J.A. Feith - R. Fruin, *Handleiding voor het Ordenen en Beschrijven van Archieven*, 1898. Quotation from: Elio Lodolini, *Archivistica: Principi e problemi*, cit., 1998, p. 177.

¹⁷ “[...] un prodotto naturale che si vien costituendo con lo svolgersi della vita degli enti che lo formano, che ne riflette le continue vicende.” Giovanni Vittani, *Collezioni e musei degli Archivi*, in “Annuario de R. Archivio di Stato in Milano per l’anno 1914” (n. 4), p. 79. Ivi, p. 179.

¹⁸ “[...] la necessità del vincolo che fin dal loro nascere lega le carte d’archivio, [...] l’organicità che caratterizza quell’istituto di fronte agli altri congeneri.” Giorgio Cencetti, *Il fondamento teorico della dottrina archivistica* (1939), Reprint in *Scritti archivistici*, Roma, Il Centro di Ricerca Editore, Fonti e Studi di Storia, legislazione e tecnica degli archivi moderni, 1970, p. 38.

¹⁹ “[...] così come le reciproche relazioni fra le serie determinano le tante volte notata fisionomia organica dell’archivio.” Ivi, p. 39.

the persons responsible for the affairs in questions or their successors.”²⁰ Jenkinson (1949) indicates four characteristics of the archive: impartiality, authenticity, naturalness and interrelationship. In relation to naturalness, Jenkinson says that “Archives are not documents collected artificially, like the objects in a museum... but accumulating naturally in offices for the practical purposes of Administration.”²¹ These four features are exclusive characteristics of the archival documents and are unknown for the other type of sources.

- Bautier (1961) describes the archival fonds as “the whole of pieces of any type that any administrative body, physical or juridical person, has automatically and organically gathered together by reason of their functions and activities.”²²
- Eastwood (1994) indicates five characteristics that constitute the organic theory of archives: the four identified by Jenkinson (impartiality, authenticity, naturalness, interrelationship), plus uniqueness. In relation to naturalness and interrelationship, Eastwood specifies that “both concern the manner in which the documents in archives accumulate [...]. They are natural, in the sense that they are not collected for some purpose outside the administrative needs generating them, and not put together according to some scheme to serve other than those needs, as are the objects in a museum or the documents in a library collection.”²³
- Lodolini (1998) writes that “[...] the archive can never be identified with a collection [...], since a unanimously recognized characteristic of the archive is its organic and spontaneous formation.”²⁴ “The archive, furthermore, is spontaneously born, as documentary sedimentation of a practical,

²⁰ Hillary Jenkinson, *The English archivist: a new profession*, London: H. K. Lewis, 1948, p. 237. Quotation from: Elio Lodolini, *Archivistica: Principi e problemi*, 1998, p. 180.

²¹ Public Record Office, *Guide to the Public Records, Part I: Introductory*, London, 1949, p. 135n. Ivi, p. 181.

²² “Un fonds d’archives est... l’ensemble des pièces de toute nature que tout corps administratif, toute personne physique ou morale, a automatiquement et organiquement réuni en raison même de ses fonctions ou de son activité.” Bautier, Robert-Henri, *Manuel d’archivistique; théorie et pratique des archives publiques en France*, Ministère des affaires culturelles. Direction des archives de France - Association des archivistes français, 1970, p. 22-23. Ivi, p. 184.

²³ Terry Eastwood, *What is archival theory and why is it important?*, 1994, p. 127-128.

²⁴ “[...] l’archivio non può essere mai identificato con una raccolta [...], in quanto caratteristica unanimemente riconosciuta all’archivio è quella della organicità e della spontaneità di formazione.” Quotation from: Elio Lodolini, *Archivistica: Principi e problemi*, cit., 1998, p. 185.

administrative, juridical activity. Therefore, it is constituted by a whole of records, reciprocally linked by an original bond, one that is necessary and determined, which is why each record conditions the others and is conditioned by the others.”²⁵

- The standard ISAD-G: General International Standard Archival Description (2000) defines fonds as “the whole of the records, regardless of form or medium, organically created and/or accumulated and used by a particular person, family, or corporate body in the course of that creator's activities and functions.”²⁶

These definitions illustrate how archives are conceived as natural, spontaneous and organic sedimentation/accumulation of records, and how these archive characteristics are used to delimit boundaries with other disciplines.

These three terms present similarities in their meanings, and also express some ambiguities when applied to the archival context. The definitions that descriptive dictionaries provide of these terms are as follows:²⁷

Natural: 1) Existing in or derived from nature; not made or caused by humankind; 2) Growing spontaneously, without being tended by human hand; 3) Characterized by spontaneity and freedom from artificiality; not conditioned.

This archive characteristic conveys a strong ambiguity: the archive is produced and caused by humankind; therefore, it is not free of artificiality, as records are created and managed by persons. So, what is the sense given to the term *natural* in the archival field? Eastwood explains that archives are natural in the sense that they are accumulated and put together for the sole purpose of serving the administrative needs generating them. Therefore, the naturalness derives from this need, which (in theory) drives an unforeseen sedimentation of records.

Spontaneous: 1) Coming or resulting from a natural impulse or tendency; without effort or premeditation; natural and unconstrained; unplanned; 2) Arising

²⁵ “L’«archivio», poi, nasce spontaneamente, quale sedimentazione documentaria di un’attività pratica, amministrativa, giuridica. Esso è costituito perciò da un complesso di documenti, legati fra loro reciprocamente da un vincolo originario, necessario e determinato, per cui ciascun documento condiziona gli altri ed è dagli altri condizionato.” Ivi, p. 21.

²⁶ International Council on Archives, *ISAD(G): General International Standard Archival Description*, 2000, p. 10.

²⁷ The following dictionaries have been consulted: Oxford Dictionary of English; Cambridge English Dictionary Online; Collins English Dictionary Online; Enciclopedia Italiana di Scienze, Lettere ed Arti, Istituto Giovanni Treccani.

from internal forces or causes; independent of external agencies; self-acting; 3) Growing naturally; 4) Produced by natural process.

The spontaneity declared by Valenti refers to an unplanned and non-premeditated archive, which is produced by necessity. The records are stratified based on their necessary archival bond, which seems to prevail over human intervention (and herein resides the ambiguity of the term).

Organic: 1) Relating to or derived from living organisms; 2) Having an organization similar in its complexity to that of living things (Philosophy); 3) Characterized by the systematic arrangement of parts; organized; 4) Denoting or characterized by a harmonious relationship between the elements of a whole; 5) Characterized by gradual or natural development.

As with the other two terms, this also contains an ambiguity: the archive is not a living organism, but a human and therefore artificial product. In the archival field, the term organic is used in its wider sense of having an organization similar to that of a living thing, which is biologically composed of hierarchical and complex relationships. It refers to the arrangement of the parts of a whole (the archive), and the necessary relationships that interconnect the records.

Throughout the last century, these three characteristics were used as attributes of the sedimentation process; however, the connotative aspects of archival sedimentation have been modified over the course of time. The changes induced by computing and telecommunications technologies since the end of the 20th century have led in recent times to review the concepts traditionally used to make distinction among archives, libraries and museums. Stefano Vitali writes that this traditional difference based on “opposed concepts, such as bond/autonomy, spontaneous/intentional, necessary/voluntary”²⁸ is called into question by the dynamics of contemporary culture and mentality, and the challenges posed by technological changes. Vitali speaks about the new approach to the modalities of production and selection of contemporary archives, which determines sedimentation processes and selection/retention dialectics where “the role of subjective and

²⁸ “[...] concetti opposti quali vincolo/autonomia, spontaneità/intenzionalità, necessarietà/volontarietà.” Stefano Vitali, *Le convergenze parallele. Archivi e biblioteche negli istituti culturali*, in *Convegno di Studi: Il futuro della memoria. Archivi per la storia contemporanea e nuove tecnologie* (Torino, 1998), Roma, Ministero per i beni e le attività culturali, Ufficio centrale per i beni archivistici, *Rassegna degli Archivi di Stato*, LIX, 1999, p. 37.

intentional choices at different levels of awareness”²⁹ is evident.

In the last decades, the term sedimentation has acquired connotations that are closer to the concept of organization. The fragility and preservation challenges of digital records have meant that certain archival functions and processes must be moved forward to the records creation phase. Records sedimentation is now planned in advance and guided by archival tools, such as the protocol register,³⁰ the records classification/filing scheme, and the retention schedule. The sedimentation process is at that point governed and voluntary, no longer spontaneous or not exclusively so.

2.5 Definition of archival sedimentation

As previously mentioned, the term sedimentation is not originally an archival term. It was incorporated into the Italian archival scientific language in the second half of the 20th century, at the time of Valenti's theory on the nature of archives. The term sedimentation is common in the Italian archival literature: in articles and monographs on archival science, one finds expressions such as sedimentation criteria, sedimentation process, sedimentation times, sedimentation effects, ways of sedimenting or sedimentation modalities. Even with this diffuse use, it is not easy to find definitions of archival sedimentation or in-depth studies on the topic. The only recent definition available is the one given by Marco Bologna, who recovers the concept of sedimentation used in geology and physics, transposing it to the archival field:

The reflexive act of 'sedimenting' means both depositing and decanting, while when the term 'sedimentation' is used, it refers both to the concept of 'accumulation' and to the more refined one of 'settling' and 'separation'. When we speak of records sedimentation, we mean both piling up records one upon the other (accumulation) in an apparently random manner, and the clarification and separation process which is internally developed in relation of the records' own 'weight'. On one hand, it indicates an almost unforeseen mechanical action (accumulation) [...]; the other refers to a partitioning and sorting procedure that entails the distinction between 'heavier' and 'lighter' records,

²⁹ Vitali writes: “Se volgiamo l'attenzione ai processi di sedimentazione e alla dialettica conservazione/selezione negli archivi della contemporaneità [...], il ruolo delle scelte soggettive e intenzionali, a livelli diversi di consapevolezza, si conferma anche in questo caso evidente e, talvolta, esplicito.” Ivi, p. 41.

³⁰ The so called 'protocollo' is a register where incoming and outgoing records are progressively registered. For Italian legislation, the protocol register is a legal tool that provides certainty that records exist and are authentic. Its legal character is guaranteed by the certainty that comes from the progressive and non-modifiable recording of basic descriptive records elements: progressive number, chronological details (date receipt or sending date, and registration time), name of the sender or recipient, and records subject.

[...] that is, the records that attest to more significant activities from those that attest to less relevant ones.³¹

If one reflects on the concept of archival sedimentation, one may affirm that *sedimentation* is not an archival function. It is not one of the primary responsibilities explicitly assigned to an archivist when processing archives, since whoever sediments records is, at a first stage, the records creator. Sedimentation is a process, which is linked to two archival functions: classification and filing. At the same time, it can be connected to the appraisal function and to the records selection process, as these activities can affect the original corpus of sedimentary records.

Any process entails a sequence of operations that aim for a result or product. The first operation that foresees the archival sedimentation process is the positioning of the records produced in a physical or logical space. The positioning/deposition of a certain quantity of records determines accumulation, and also stratification (this last operation may involve dividing and sorting out records into layers, classes or categories). In this way, as previously mentioned, sedimentation is linked to several archival functions and operations, such as classification/filing (which may be guided by a records classification/filing scheme), arrangement (of records and files), and selection (which may foresee a records retention schedule). The final result or product of the sedimentation process is the constitution of an archival fonds. Figure 1 illustrates the sequence of indispensableness and inevitability that is implied in the constitution of an archival fonds:

³¹ “L’atto riflessivo di ‘sedimentarsi’ significa sia depositarsi, sia decantarsi e quando si usa il termine ‘sedimentazione’ si fa riferimento tanto al concetto di ‘accumulo’, quanto a quello più raffinato di ‘decantazione’ e di ‘separazione’. Parlare di sedimentazione di documenti significa quindi parlare sia del loro ammassarsi l’uno sull’altro (accumulo) apparentemente a caso, sia del processo di chiarificazione e di separazione che si sviluppa al loro interno in rapporto al ‘peso’ di ognuno di loro. Da un lato si indica un’azione meccanica e quasi per nulla preparata (accumulo) [...]; dall’altro si indica un procedimento di suddivisione e smistamento che porta alla distinzione tra documenti più ‘pesanti’ e più ‘leggeri’ [...] ossia le carte che attestano attività ritenute più significative da quelle che ne attestano di meno rilevanti.” Marco Bologna, *La sedimentazione storica della documentazione archivistica*, in *Archivistica: Teoria, metodi, pratiche*, Linda Giuva – Maria Guercio (Ed.), Roma, Carocci editore, 2014, p. 212-213.

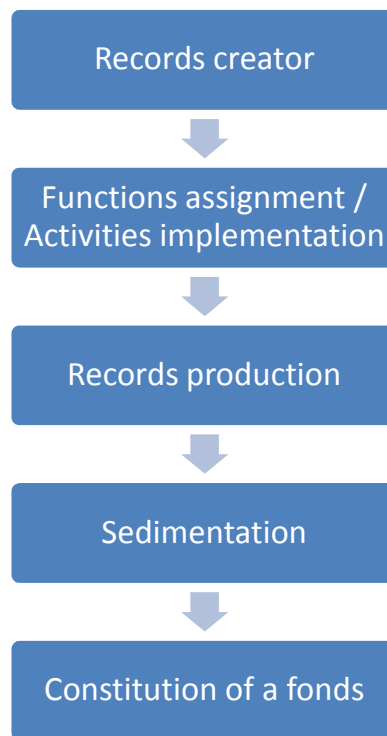


Figure 1: Sequence of operations that aim to the constitution of a fonds

A records creator has assigned functions that are carried out through administrative activities. These activities need to be documented to sustain the records creator's daily activity and to ensure future memory.³² The need for supporting business actions and for maintaining evidence of and information about activities and transactions determines the indispensableness and inevitability of records production and sedimentation. Nonetheless, the records creator must also demonstrate the will to produce and sediment records that, as said, derive from the practical and functional need of performing daily activities. Therefore, a need determines the records creator's will in acting.

At this point, the main issue resides in how to qualify the concept of archival sedimentation: is *sedimentation* a spontaneous process (as it occurs in nature) or is a process governed by the records creator's will? Sedimentation is a process whose result (the constitution of an archival fonds) is necessary (a concept that may be comparable to spontaneous and natural). Even so, as a process, the operations needed to obtain the result are subjective due to the intervention of the records creator, who applies different levels of organizational and selection criteria to the

³² Paola Carucci – Maria Guercio, *Manuale di Archivistica*, Roma, Carocci editore, 2008, p. 201.

operations of positioning/deposition, accumulation and stratification.

After these reflections, one might define *archival sedimentation* as the process of records accumulation in which records aggregations may follow informal and/or empirical practices, or can be guided by predefined organizational tools, such as a records classification/filing scheme and retention schedule. In this last case, the constitution of homogeneous aggregations is governed by preset logical criteria that reflect the plurality of the records creator's functions and the diverse nature of the records produced.

2.6 Accumulation, sedimentation and organization

These three concepts present similarities but also have different connotations. The term *accumulation* is defined by Cruz Mundet as “the natural process for which the records, produced as a result of the activities of a physical or legal person, are aggregated over time creating a documentary fonds.”³³ The concept of accumulation is very close to sedimentation; both mean the depositing and gathering of records in a single place to provide a continuous record of activity. However, the term accumulation may include connotations such as the idea of piling, amassing and agglomerating records without criteria and order, which do not appropriately fit together with the meanings conveyed by the concept of sedimentation. In the Italian context, archival sedimentation has connotations of structured and functional aggregation of records.

When sedimentation is provided with a logical structure or classification scheme, it acquires connotations that are closer to organization. Cruz Mundet defines the term *organization* as:

The archival process and its result, applied to a fonds or a fonds section (subfonds), which consists of: 1) giving it a logical structure that reproduces the process by which the producer created the records, following the principles of provenance and original order (classification and arrangement); 2) describing the records and their aggregations in a way that can be retrievable for use (description); 3) positioning them in such a way that their conservation and location (storing) can be guaranteed.³⁴

³³ “Proceso natural por el que los documentos, producidos como resultado de las actividades de una persona, física o jurídica, son agregados con el tiempo dando lugar al fondo documental.” José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 69.

³⁴ “Proceso archivístico y su resultado, aplicado a un fondo o a una sección de fondo (subfondo), que consiste: 1) en dotarle de una estructura lógica que reproduzca el proceso mediante el cual los documentos han sido creados por su productor, siguiendo los principios de

As for Cruz Mundet's definition, the term organization includes functions and operations that are clearly linked to the sedimentation process, such as classification, filing and arrangement. However, organization is a wider concept that includes activities not directly connected to sedimentation, such as archival description and storing operations.

2.7 Conclusions

The term sedimentation was introduced in the Italian archival literature for its connotation of spontaneous accumulation of records. In this way, a connatural aspect of the archive was highlighted in comparison to other related disciplines, such as libraries and museums.

Valenti, who theorized on the archive's spontaneous nature and distinguished between *archive-thesaurus* and *archive-sediment*, also mentioned the ambivalence of the archive entity, and affirmed that "none of the two possible aspects of the archive may ever be absent."³⁵ In brief, spontaneity and intentionality, even if opposed, coexist and interact, and most of the time it is difficult to find a boundary between them.

But the archive concept is changing and evolving. Marco Bologna, who has written an essay on the history of archival sedimentation, affirms that "the first error to be avoided is to think that the archives are naturally and spontaneously formed."³⁶ He indicates that records sedimentation is the result of a voluntary act and "an intentional choice [...], deeply linked to the historical context in which it occurs."³⁷

In fact, voluntary and intentional choices characterize the sedimentation of records in the digital era. New approaches to records production, organization and selection are applied in electronic records management systems. Archival functions,

procedencia y de orden original (clasificación y ordenación); 2) en describir los documentos y sus agrupaciones de modo que sean recuperables para su uso (descripción) y 3) en ubicarlos de modo que se garantice su conservación y localización (instalación)." Ivi, p. 268.

³⁵ "[...] nessuno dei due possibili aspetti dell'archivio può mai essere del tutto assente [...]." Filippo Valenti, *Riflessione sulla natura e struttura degli archivi*, 1981, reprint 2000, p. 95.

³⁶ "Il primo errore da evitare nello studio degli archivi è quello di credere che essi si formino spontaneamente e che siano naturali." Marco Bologna, *La sedimentazione storica della documentazione archivistica*, cit., 2014, p. 212.

³⁷ Bologna writes: "[...] si deve ritenere che nulla di spontaneo vi sia nell'archivio e nei documenti che lo compongono e che il processo di formazione dell'archivio e di sedimentazione dei suoi documenti non sia un fatto semplice e involontario, ma rappresenti l'esito di una scelta intenzionale [...], profondamente legata al contesto storico in cui avviene." *Ibidem*.

such as appraisal, description and preservation are implemented early in the records management process, even at the design stage.

In the Italian context, here analyzed, the sedimentation process is tightly associated with organizational archival principles, processes and tools, such as registration, classification/filing schemes, appraisal, retention and disposal schedules. The archive is conceived as a structured system, in which records are organized in a functional and logical manner that reflects the creator's way of working.

Therefore, the terms *natural* and *spontaneous*, traditionally used to define archive properties and to claim autonomy for archival science, seem now to be idealized metaphors that do not entirely reflect the way in which archives are formed. The qualification of archival sedimentation as a spontaneous, natural and organic process is less effective than it was in the past.

Having in mind these considerations, it is possible to conclude that, even if the archive is born to respond to administrative needs (which may involve spontaneous actions), the processes of records production and sedimentation are governed by logical and voluntary decisions. This circumstance has become more evident in recent decades with the rise in use of digital technology for producing and managing records.

3. THE CONCEPT OF CLASSIFICATION AND FILING

3.1 Introduction

Once established that the activities of classification and filing have a fundamental role in records sedimentation, an analysis of the concept and purpose of classification and filing was also necessary and is included in this chapter. Additionally, this chapter provides a detailed study of the elements, structure and types of records classification/filing schemes adopted in the archival field, together with an analysis of several methodological approaches for the elaboration of these schemes.

Starting with an analysis of the general concept of classification, literature tells us that classifying, categorizing, and ordering are innate human faculties that allow us to know and become aware of our surroundings. This knowledge that human beings are able to acquire is based on a process of distinction or identification of significant differences (and similarities) between entities. In this way, ideas and objects are recognized, differentiated, and understood. This critical knowledge of humans helps to control and dominate reality, giving certainty and security to human lives.

Dobrowolski writes that without classification, we could not live among the vast variety of objects and phenomena that surround us. By grouping objects according to their external appearance, purpose, similar functions, sequence in time or space, or based on any other link that allows their assignment to a determined class, we replace the plurality of concepts with a single, more general concept. And we subordinate the latter to a more general one, by creating a whole, “the class of classes.”³⁸ Classification facilitates knowledge of the world, allowing humans to limit the study of our surroundings to the properties of classes and their reciprocal relations, without having to analyze the individual elements composing these classes. Thanks to this, we can know the world without adding to our memory non-essential details and vice versa: the knowledge we have of classes allows us to recognize the properties of the elements belonging to them.

³⁸ Zygmunt Dobrowolski, *Étude sur la construction des systèmes de classification*, Paris, Gauthier-Villars, Warszawa, PWN – Éditions Scientifiques de Pologne, 1964, p. 36. Dobrowolski’s theory is analyzed later in this chapter.

Classification, then, is a method of knowledge and information.³⁹ It is considered a thinking skill and vice versa. In an essay entitled “Thinking is classifying” (“Pensare è classificare”), Riccardo Ridi, associate professor of library science at the Università Ca' Foscari (Venice), writes that “The human drive to group, sort, list, catalogue and classify is probably congenital... Metaphysics and epistemology, encyclopaedias and library filing systems, cosmogonies and universal languages, have always solved in infinite ways the eternal dilemma of how to order the world, or at least how to believe they did.”⁴⁰

This premise has also been outlined by several theorists of the archival discipline. The publication edited by the Italian National Working Group on University Records Classification Schemes, titled “I calzini del principe Carlo,” outlines that classification is a known neurological function, which is part of our cognitive activity.⁴¹ Classifying exercises our critical skills, and therefore our criteria-based judgment including interpretation, analysis, evaluation, inference, explanation, and self-regulation skills. Continuing in this line, De Felice writes that: “classifying means implementing a mental process due to an innate human ability that is critical knowledge of the world around him, therefore faculty of judgment ... This intellectual power accompanies man during his life in his choices, his actions, which are based on right or wrong assessments.”⁴²

Bonfiglio-Dosio further refers to the psychological aspects of classification, affirming that the operation of classification is a form of control over reality; classifying means to have certainty of finding something important to us in the

³⁹ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, «Legajos. Cuadernos de Investigación Archivística y Gestión Documental», Archivo Municipal de Priego de Córdoba, n. 10, 2007, p. 9.

⁴⁰ “La pulsione umana a raggruppare, ordinare, elencare, catalogare e classificare è probabilmente congenita... Metafisica e epistemologia, enciclopedie e sistemi di classificazione bibliotecari, cosmogonie e lingue universali, da sempre hanno risolto in infiniti modi diversi l'eterno dilemma su come ordinare il mondo, o almeno su come credere di averlo fatto.” Riccardo Ridi, *Pensare è classificare*, 2001. (Training course on “La classificazione”, Sistema bibliotecario di ateneo dell'Università Ca' Foscari, Venezia). This reference comes from Giorgetta Bonfiglio-Dosio, *Strumenti di gestione dell'archivio corrente inteso come sistema*, Venezia, 2014 (ppt presentation).

⁴¹ “La classificazione delle cose fa parte della nostra attività cognitiva. [...] Si tratta di una nota funzione neurologica...” Gruppo di lavoro nazionale sui titolari delle università (Ed.), *I calzini del Principe Carlo: Titulus 97, I titolari per gli archivi delle università italiane in vigore dal 1° gennaio 2007*, Padova, CLEUP, 2007, p. 30.

⁴² “[...] classificare significa attuare un processo mentale dovuto a una facoltà innata nell'uomo che è conoscenza critica della realtà che lo circonda, quindi facoltà di giudizio... Questa facoltà intellettuale accompagna l'uomo durante la sua vita nelle proprie scelte, nelle sue azioni, basati su valutazioni giuste o errate.” Raffaele De Felice, *L'archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, La Nuova Italia Scientifica, Roma, 1988, p. 27.

position where we placed it, or in the position that we assigned to it. She also states that classification is an operation across all the disciplines,⁴³ thus classification is a transverse function that involves many disciplines of knowledge, including the archival field.

Therefore, as in other disciplines, archival science uses the classification process as a means to recognize, differentiate and understand the objects of its domain, which are records and their relationships. As a consequence, this cognitive activity is considered one of the main archival functions to be performed by archivists when managing records and archives, preferably following a series of criteria and common principles that this research will try to investigate.

3.2 Definition of classification

In general terms, the verb to classify is defined as “to arrange (a group of people or things) in classes or categories according to shared qualities or characteristics.”⁴⁴ In the archival field, the definition of classification may vary, as specific characteristics, goals or aims are highlighted depending on archival traditions. They may distinguish between classification and filing, or may not consider distinction, or may confuse both activities. For this reason, the concept of classification, as understood in the Italian, Spanish and Anglo-Saxon traditions,⁴⁵ will be analyzed in this section.

3.2.1 Italy

In Italian literature, classification is considered an essential strategic activity for records management, and even more necessary in electronic environments. The following descriptions of classification are reported here to provide a comprehensive notion of the meaning of classification in the Italian archival field:

Classification is the organization into groupings of logical nature of all records produced by a records creator (received, sent or otherwise acquired). Groupings are made according to a hierarchically organized structure of entries (categories, classes, subclasses) that systematically represent functions

⁴³ “Aspetti psicologici della classificazione: L’operazione della classificazione è una forma di dominio sulla realtà, qualunque essa sia (naturale/artificiale, fisica/incorporea, etc.); Classificare significa costituire, trovare certezze (ruolo delle serie di telefilm); Classificare significa essere sicuri di ritrovare qualcosa cui teniamo nel posto in cui lo abbiamo collocato, nel posto che gli abbiamo assegnato; La classificazione è operazione trasversale a tutte le discipline.” Giorgetta Bonfiglio Dosio, *Piano di classificazione (titolario)*, Treviso, 2 maggio 2013. (ppt presentation).

and subjects conferred to the records creator by institutional provisions and regulations, as it happens in the case of a legal person.⁴⁶ Classification establishes the reciprocal order in which records are organized when administrative activities are performed; it defines the relationship between records in the creation phase, connecting them to the tasks entrusted to the records creator, its administrative structure and specific working methods.⁴⁷

Classification [...] is used to link records and files to the administrative activity or to the business which they relate; its role is not just to make records available and properly manageable, but also (1) to make explicit their use value within the administrative system that receives (or produces) or uses them, and (2) to accumulate records in homogeneous series, composed by records' groups that refer to the same type of activity. The primary objective is to build a records management system that both (1) accurately reflects, in the manner and order in which records are aggregated, how the records creator has operated, and (2) represents the administrative reality that generated it.⁴⁸

The following several considerations emerge from these definitions:

The main purpose of classification is to organize records in such a way that they interrelate with the business processes to which they refer, and thus to contextualize them

Classification allows gathering all the records relevant to the implementation of the records creator's activities for the purpose of information and decision-making. This guarantees the rational and profitable use of the archive. Therefore, classification

⁴⁴ From: Oxford Dictionary of English.

⁴⁵ In particular, archival literature from United States, Canada and Australia has been consulted.

⁴⁶ "Classificazione: organizzazione di tutti i documenti formati da un soggetto produttore (ricevuti, spediti o diversamente acquisiti) in raggruppamenti di natura logica, secondo una struttura di voci gerarchicamente organizzata (categorie, classi, sottoclassi) che rappresentano in modo sistematico le funzioni e le materie attribuite al soggetto produttore, nel caso di una persona giuridica, da provvedimenti istitutivi e regolamentari." Paola Carucci – Maria Guercio, *Manuale di Archivistica*, cit., 2008, p. 209.

⁴⁷ "[...] stabilisce in quale ordine reciproco i documenti si organizzano nello svolgimento dell'attività amministrativa; definisce cioè il rapporto tra i documenti nella fase di creazione dell'archivio, in relazione ai compiti affidati all'ente, alla struttura amministrativa e alle concrete modalità operative." Maria Guercio, *Principio e metodologia per la classificazione d'archivio*, in *L'archivio: Teoria, funzione, gestione e legislazione*, Angelo Giorgio Ghezzi (Ed.), Milano; I.S.U Università Cattolica, 2005, p. 23.

⁴⁸ "La classificazione [...] è usata per collegare il documento e il fascicolo all'attività amministrativa o all'affare cui essi si riferiscono: il suo ruolo non è solo quello di rendere il documento reperibile e correttamente gestibile, ma anche di rendere esplicito il suo valore d'uso all'interno del sistema amministrativo che lo accoglie (o lo produce) o lo usa, e di accumulare documenti in serie omogenee, composte da gruppi di documentazione che facciano riferimento al medesimo tipo di attività. L'obiettivo primario è costruire un sistema documentale che rifletta fedelmente, nel modo e nella sequenza con cui sono aggregati i documenti, come l'ente produttore ha operato, e che sia dunque rappresentazione della realtà amministrativa che lo ha generato." Monica Grossi, *L'archivio in formazione*, cit., 2014, p. 45-46.

aims to stratify and aggregate (sediment) records which are the juridical evidence of business actions. It makes explicit the archival bond existing between records. In this sense, the documentary system acquires its structure and forms the archival fonds through classification.⁴⁹

A part of this primary function, classification accomplishes other important purposes, such as (1) retrieving records from the entire records production that refer to a specific activity or administrative process; (2) preparing records selection operations for the purpose of permanent preservation or disposal; or (3) facilitating the description, control and access to records.

Classification determines the relationships among records in the creation phase

The term classification applies exclusively to active records, which are logically organized through a records classification scheme. This aspect is highlighted because, in the Spanish archival field, the notions of classification and records classification scheme are applied to both records management and historical archives. Essentially, this is due to a different terminological use of similar archival processing practices, as will be seen later.

In the Italian archival context, a records classification scheme is not conceived to be an instrument which is applied *a posteriori*, that is, in historical archives, as it can dismember the original order of fonds. Still deeply present in Italian memory is the dismembering of the fonds of the State Archives of Milan that occurred during the 19th century. These fonds were reorganized *a posteriori* applying a records classification scheme by subject.

For Penzo Doria, a records classification scheme has no effect retroactively. He believes that it is necessary to separate the classification phase from any subsequent rearrangement (*riordino*) and inventorying phases. If an archive is sedimented inappropriately and with inadequate tools, it should remain this way, even after archival rearrangement. What can be useful is to draw up a summary table with cross-references between the old and new classification, but nothing more can be done.⁵⁰ Reclassifying records or files represents a substantial historical fake, and it

⁴⁹ Paola Carucci – Maria Guercio, *Manuale di Archivistica*, cit., 2008, p. 209.

⁵⁰ “Il titolario, quindi, non ha alcuna efficacia retroattiva. Se un archivio si è sedimentato in malo

has no organizational utility; thereby, the archival bond is disintegrated, that is, the archive itself. Even archives lacking classification elements should not be reclassified to forcibly bring them back to a fictitious order.⁵¹

This view is reiterated by the Italian archival literature. A records classification scheme organizes the records produced by an entity since the date on which the scheme was formally adopted. It cannot, under any circumstance, be used as a means of re-classification/re-arrangement of an already produced archive, which should be preserved in its original structure and organization.⁵²

Distinction between classification and filing is made; they are presented as two sequential operations

Classification guides records sedimentation in an orderly and consistent manner; and filing (*fascicolazione*) aggregates all the records produced by the same activity or administrative process into archival units (such as files; *fascicoli* in Italian). Therefore, classes and files are separate but interrelated entities of the same structure. Classes represent the functions and activities attributed to a records creator through regulation. They form an abstract structure in which, generally at the last classification level, files are created. Records are preferably placed into files or are logically linked to them. As Penzo Doria writes: “Classification alone is not effective, because each record must be filed, that is brought to the archival unit of its lowest class (the last divisional level used).”⁵³

modo e con strumenti inadeguati, così deve rimanere o così deve essere ricostituito da un lavoro di riordino archivistico. Quello che invece può essere interessante redigere, soprattutto per la storia istituzionale di un ente produttore, è la tavola sinottica della vecchia e della nuova classificazione, con le rispettive e puntuali voci di rinvio, ma nulla di più. Bisogna dunque tenere separati i momenti della classificazione con quelli dell’ordinamento e dell’inventariazione.” Gianni Penzo Doria, *La linea dell’arco. Criteri per la redazione dei titolari di classificazione*, in *Labirinti di Carta: L’archivio comunale: organizzazione e gestione della documentazione a 100 anni dalla circolare Astengo*, Atti del convegno nazionale, Modena, 28-30 gennaio 1998, Pubblicazioni degli Archivi di Stato, Saggi 67, Ministero per i Beni e le Attività Culturali, Direzione Generale per gli Archivi, 2001, p. 10.

⁵¹ “Riclassificare il pregresso, documento per documento o fascicolo per fascicolo, oltre a rappresentare un sostanziale falso storico, non riveste alcuna utilità organizzativa... così facendo si disintegra il vincolo, cioè l’archivio stesso. Perfino un archivio privo di qualsiasi elemento di classificazione non va riclassificato per ricondurlo forzatamente ad un ordine fittizio.” *Ibidem*.

⁵² “Il titolare serve a organizzare i documenti prodotti dalla data in cui viene formalmente adottato dal Comune; non può in nessun caso essere utilizzato come strumento di riordino dell’archivio già prodotto, che deve essere conservato nella sua struttura e organizzazione originaria.” Giorgetta Bonfiglio-Dosio – Valeria Pavone, *Il piano di classificazione (titolario) per i documenti dei comuni*, in *Quaderni dei laboratori archivistici – I*, Andreina Rigon (Ed.), Padova, Regione del Veneto e Comune di Padova, 2007, p. 20.

⁵³ “La classificazione da sola non risulta efficace, poiché ogni documento deve essere fascicolato, cioè ricondotto all’unità archivistica della propria classe estrema (l’ultimo grado divisionale

Classification is conceived as a system, which is the vehicle of connection between records, activities and working processes.⁵⁴ The tools used to classify and file records are respectively a classification scheme and a filing plan, generally integrated in the same application.

Records are mostly classified following a hierarchical structure

This means that records are aggregated into classes, which in turn are divided into more subclasses. At the last classification level, records that have equal or similar values in relation to shared attributes or elements are filed together.

According to the Italian literature, an important aspect that a hierarchical structure guarantees is the ability to organize records on the basis of stable relationships, which (if necessary) can be reconstructed for practical/legal reasons at a later time.⁵⁵ Additionally, stable relationships are a fundamental element that can testify at any time which records were used to carry out a specific administrative process and in what order they were produced or acquired by the person responsible for the process.⁵⁶

3.2.2 Spain

In the Spanish literature, classification is considered a fundamental archival function which logically and physically organizes records in archival series. Definitions of classification in the Spanish context are as follows:

Classification is the action and effect of hierarchically grouping by aggregates or classes the records of a fonds, from the broadest to the more specific, according to the principles of provenance and original order; to reach this goal, records' types are identified, records relationships are made clear and a logical structure called classification scheme, which reflects these relations hierarchically, is applied to organize records' types.⁵⁷

utilizzato).” Gianni Penzo Doria, *La linea dell'arco. Criteri per la redazione dei titolari di classificazione*, cit., 2007, p. 19.

⁵⁴ Mariagrazia Cuozzo, *Progettare per governare: il ruolo della classificazione nelle politiche archivistiche del passato e del presente*, PhD Thesis, University of Rome La Sapienza, 2013.

⁵⁵ Maria Guercio (Ed.), *La gestione elettronica dei documenti e la tenuta degli archivi: Principi generali e requisiti archivistici*, n.d., p. 30.

⁵⁶ Elio Lodolini, *Prefazione*, in *I calzini del Principe Carlo: Titulus 97, I titolari per gli archivi delle università italiane in vigore dal 1° gennaio 2007*, Gruppo di lavoro nazionale sui titolari delle università (Ed.), cit., 2007, p. 34.

⁵⁷ “Acción y efecto de agrupar jerárquicamente los documentos de un fondo mediante agregados o clases, desde los más amplios a los más específicos, de acuerdo con los principios de procedencia y

[To classify is] to establish classification criteria that allow us to reconstruct the structure of a fonds. This operation is manual; it is not placing records with similar characteristics together on one shelf, which would be a systematic arrangement; but it consists of establishing relationships in which records with similar characteristics belong to a group or class. The fact that classification is a superficially ruled operation has often provoked confusion between the terms classification and arrangement, even in the professional literature.⁵⁸

To classify is the most important operation of those integrating records management. [...] The purpose of classification is to generate files, so that all records relating to the same matter are filed together. Moreover, the sum of files of the same nature constitutes a "records series," which manifests as an individual physical category and, as such, is contained in the records classification scheme.⁵⁹

Several considerations emerge from these definitions. The following may be considered the most relevant:

Classification is conceived as an archival function which is indissolubly linked to the concepts of fonds, provenance and original order

In Spain, the archival theory and practice establish that classification systems are elaborated *a posteriori*, once records have been already generated. The identification of records classes or categories was traditionally applied to historical archives, which were characterized by an indiscriminate accumulation and lack of systematization. By the 1990s, however, the attention given by archivists to administrative archives and the introduction of electronic records management systems made it possible for classification to be anticipated in the records

orden original; para lo cual se identifican los tipos documentales, se evidencian las relaciones que existen entre ellos y se organizan en una estructura lógica, llamada cuadro de clasificación, que refleja jerárquicamente dichas relaciones.” José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 111-112.

⁵⁸ “[...] establecer criterios de clasificación que nos permitan reconstruir la estructura del fondo. Esta operación no es manual, no se trata de colocar juntos en un mismo estante los documentos de características similares, lo que sería una ordenación de tipo sistemático, sino que consiste en establecer relaciones de pertenencia a un grupo o clase de características similares. El hecho de que la clasificación sea una operación reglada de manera superficial ha provocado que sea frecuente la confusión de los términos clasificación y ordenación, incluso en la literatura profesional.” César Martín Gavilán, *Principios generales de organización de fondos archivísticos. Clasificación y ordenación de documentos. Cuadros de clasificación*, 2009, p. 4-5.

⁵⁹ “Clasificar es la operación de mayor relevancia de cuantas integran la gestión documental. [...] La finalidad de la clasificación es la generación de expedientes, de manera que se archiven juntos todos los documentos relativos a un mismo asunto. Por otra parte, la suma de expedientes de la misma naturaleza constituye la “serie documental”, que tiene su plasmación como categoría física singular, y como tal aparece recogida en el cuadro de clasificación de los documentos.” Universidad Pública de Navarra, *Normas y procedimientos para la clasificación de documentos*, in *Buenas prácticas en gestión de documentos y archivos: manual de normas y procedimientos archivísticos de la Universidad Pública de Navarra*, Joaquim Llansó Sanjuan (director); Lucía Costanilla Baquedano, Olivia García Irigaray, Itziar Zabalza Aldave, Pamplona, Universidad Pública de Navarra, 2006, p. 1.

management phase. Classification was then preset, and positioned in the workflow before the creation of records, more specifically at the point in which records functions and activities were recognized, and the administrative processes were designed.⁶⁰

In other words, in the Spanish archival context, classification is an archival function used during the life cycle of records for organizing both active records and an already constituted fonds. Classification not only means to provide a structure to records which are being created, but it is also a phase of records processing which aims to analyze the information contained in an archival fonds and to conceptually structure it in an objective and stable system of classes and categories that reflect the administrative functions and competencies of the producer entity.⁶¹

Records classification requires several processes, from which several results are obtained. Classification may be applied to an existing fonds, the documentary content of an Archive,⁶² a collection, or a whole of active records. The different classification schemes are, respectively: the classification scheme of a fonds (or fonds structure, as it is sometimes called in Italian), the classification scheme of the fonds and collections of an Archive, the classification scheme of a collection, and a records classification scheme.⁶³

The connection between a records classification scheme and the classification scheme of a fonds is illustrated in the following description of the structure of a classification scheme, the elements of which are:⁶⁴

⁶⁰ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011.

⁶¹ “El concepto técnico, como en el resto de disciplinas documentales, es *clasificación*, que es la fase del tratamiento documental que tiene por objeto el análisis de la información contenida en un fondo de archivo y su estructuración conceptual en un sistema objetivo y estable de clases y categorías de las familias competenciales y funcionales administrativas.” Ángel Montejo Uriol, *La clasificación de fondos archivísticos administrativos*, in *Métodos de Información*, 4 (1997), n. 17-18, p. 51.

⁶² Heredia Herrera makes difference between “Archive” (the first letter in upper case): institution, and “archive” (the first letter in lower case): whole of records.

⁶³ “La clasificación de los documentos exige varios procesos y varios resultados. Según se parta del fondo, del contenido documental del Archivo, de una colección o del conjunto de los documentos tendremos diferentes cuadros de clasificación (cuadro de clasificación de fondo, cuadro de clasificación de fondos y colecciones de un Archivo, cuadro de clasificación de una colección, cuadro de clasificación de documentos).” Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 66.

⁶⁴ Universidad Pública de Navarra, *Normas y procedimientos para la clasificación de documentos*, cit., 2006, p. 2-3.

1. Conceptual categories, which relates to the general functions developed by an entity. They facilitate the coherent grouping of other subordinated categories. The conceptual categories generally correspond to the so-called "classes" and "sub-classes" of a records classification scheme. They are located at higher levels, and are equivalent to the "sections" and "sub-sections" of a fonds. Usually these categories do not contain records or files.
2. Files (in Spanish, called *Expedientes*), which relate to specific activities developed by an entity. These categories generally correspond to the so called "divisions" of a records classification scheme. They are equivalent to the "series" and "subseries" of a fonds. Normally these categories cannot exist if they do not contain records or files.

In the Italian context, as previously mentioned, the term and notion of classification scheme exclusively applies to active records. Even so, Paola Carucci distinguishes between two Italian terms when naming classification schemes: *quadro di classificazione* and *titolario*. When describing the Peroniani Archives, she mentions the rearrangement carried out on all fonds of the Archives of Milan through a classification scheme by subject (*quadro de classificazione per materie*) applied a posteriori, and writes:

Instead, the records classification scheme (*titolario*), although it is also a classification scheme (*quadro di classificazione*), is provided for the organization of all Court records and is intended to determine the sedimentation criteria of the records that will be produced after the adoption of the records classification scheme (*titolario*).⁶⁵

Thus, Carucci seems to consider *quadro di classificazione* as the classification scheme of a fonds, and *titolario* as a records classification scheme. Nowadays, however, both terms are used indistinctly in an exclusively records management environment.

⁶⁵ The entire paragraph referred to the citation is as follows: «Il riordinamento eseguito nell'Archivio milanese tocca tutti i fondi in esso confluiti determinando la scomposizione dei fondi originari [...]. In sostanza, definito un quadro di classificazione per materia, se ne è attuata l'applicazione a posteriori [...]. Nella stessa prospettiva, il quadro di classificazione doveva essere applicato anche alla documentazione futura [...]. Il *titolario* invece, pur essendo ugualmente un quadro di classificazione, è previsto per l'organizzazione dell'archivio di ogni singola magistratura ed è destinato a determinare i criteri di sedimentazione delle carte che verranno prodotte a partire dall'adozione del *titolario*. Il *titolario* può essere per materia, per funzione, per competenza; molto spesso un buon *titolario* combina questi criteri». Paola Carucci, *Gli archivi peroniani*, «Archivi per la storia», XII (1994), n. 2.

The term classification includes the concept of filing

Classification is not conceived without filing (without placing or connecting records in files). In fact, there is no word to correctly translate the term filing into Spanish; generally the generic concept of *archivar* (archiving in English, or *archiviare* in Italian) is used.

As reminded by Ramírez Deleón,⁶⁶ classification is a process which allows the grouping of records into categories. The higher levels of these categories, up to the level of series, allow the conceptual construction of a records classification scheme. The lower levels, files and records, make the classification process materialize when they are combined with the higher levels. If the lower levels are not linked to the higher ones, the construction of a records classification scheme is pointless, because files cannot be integrated into the series and classes to which they belong. Similarly, if higher levels are not linked to the lower ones, the classification process cannot be performed in a practical way because the records classification scheme becomes a mere decorative instrument.

Distinction between classification and arrangement is made, considering both complementary activities

Classification is seen as an intellectual function which aims to give or reconstruct the internal structure of a whole of records, identifying its classification levels. It is represented by a classification scheme, which is elaborated following several methods, such as functional, organizational, subject-based, or a hybrid system. On the other hand, arrangement (*ordenación*) is considered a mechanical operation which consists of linking elements of a group or aggregate according to an order unit established in advance. Arrangement criteria are alphabetic, chronological, numeric or mixed, and provide a sequential order or relation to the aggregated elements. Classification supposes hierarchy, not so arrangement. Arrangement is a complementary operation of classification. Therefore, classification is applied to a whole of records (it provides the structure); arrangement is applied to the elements of the classification structure, such as files and records within files, which means

⁶⁶ José Antonio Ramírez Deleón, *Metodología para el diseño y formulación de sistemas de clasificación y ordenación archivística*, Instituto Federal de Acceso a la Información y Protección de Datos (IFAI), México, Colección Cuadernos Metodológicos, Cuaderno 3, 2011, p. 24.

that is applied within an aggregation of records already defined.⁶⁷

It is interesting to remark that classification and arrangement are concepts differently used in the Italian archival context. As previously mentioned, the term classification is only used when dealing with active records. Instead, when referring to the archival processing of a fonds, the term *ordinamento* (also known as *riordinamento* or *riordino*) is used. The concept of *ordinamento* may refer to either (1) the internal structure or organization of a fonds, which is represented through the archival description of its parts and relationships, or (2) the operation by which a fonds recuperates its own structure. Generally, this operation is done through a process of study and critical analysis of the records and the institutional history of the records creator. This process of reconstituting the original order of records by following the history of the entity that generated them is known as *metodo storico*.⁶⁸ In any case, the term *ordinamento* may also apply to active records. In literature, several arrangement criteria are proposed: chronological, alphabetic, numeric, record type, function, competence, subject, etc. As it may be observed, the term *ordinamento* has a broader sense and it is understood as an operation which comprises both classification criteria (organic, functional, competence, subject) and arrangement criteria (alphabetic, chronological, numeric or mixed). As De Felice once declared: “Classification is [...] confused with the arrangement operation (for which various methods are adopted, from alphabetic to chronological, from geographic to numerical), depending on the prominent records research needs.”⁶⁹

Classification is mostly hierarchical

The organization of records into categories is represented in a classification scheme which establishes hierarchical part-to-whole relationships, proceeding from the

⁶⁷ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 66.

⁶⁸ “Il metodo storico consiste nel riordinare l’archivio ricostituendo l’organizzazione originaria nella quale si riflette il rapporto tra funzioni svolte dall’ente e documenti prodotti, i quali risultano collegati tra loro da un vincolo di necessità, vincolo archivistico, costituitosi fin dall’epoca in cui i documenti venivano posti in essere. Comporta studio delle competenze e dell’organizzazione degli uffici di un ente, dell’iter burocratico che seguivano le pratiche, delle disposizioni normative che regolavano le materie che rientravano nelle competenze dell’ente, dell’ordinamento politico istituzionale nel quale operava l’ente.” Paola Carucci, *Le fonti archivistiche: ordinamento e conservazione*, Roma, Carocci editore, 1998, p. 219.

⁶⁹ “La classificazione viene pertanto confusa con l’operazione di ordinamento (per la quale si adottano metodi vari, dall’alfabetico al cronologico, dal geografico al numerico), a seconda delle preminenti esigenze di ricerca degli atti.” Raffaele De Felice, *L’archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 15.

broadest to the more specific. The same type of relationship is found in the hierarchical model proposed for fonds and its constituent parts by the ISAD-G standard. In fact, records classification schemes are used in combination with other archival control tools, such as inventories. This reflects the close relationships between classification and description. In the Spanish context, it is said that classification is the first instrument of description of an archive, which provides an overview of the different types of records (series), groups (sections) and their hierarchical relationships. It is the tool that will allow the systematic planning of other records processing activities, from disposition (retention schedule) to the elaboration of description tools (inventory).

3.2.3 Anglo-Saxon countries

In the Anglo-Saxon archival community, distinction among classification, filing, arrangement and indexing has traditionally been unclear. During the last century, records management “was considered to mean the storage, retrieval, and protection of business papers, basically filing.”⁷⁰ This evolved to include not only filing but the creation, control, use and disposition of records. Publications of the time mostly refer to records management and filing, and rarely consider classification. These are some examples of definitions of classification and filing that may help to understand the use and sense given by Anglo-Saxon countries to these terms:

Classification means the arrangement of records according to a plan designed to make them available for current use. The plans or systems of arrangement are many and varied [...] they may be grouped into two classes: registry systems and filing systems.⁷¹

To classify is to organize contents according to key items and relationships. [...] A classification may be designed according to the way information is accumulated or according to the way it is requested for use. It may be a sequential, random, significant, or chronological numbering system. It may be alphabetic by location, subject, or name. In general, there are only two basic classification patterns: alphabetic and numeric. [...] Classification, then, identifies, groups, standardizes, and codifies.⁷²

Classification: The process of identifying records or information in accordance with a predetermined filing or security system. This includes

⁷⁰ Jeffrey R. Stewart – Judith A. Scharle – Judith A. Hickey – Gilbert Kahn, *Filing Systems and Records Management*, United States of America, McGraw-Hill Inc., 1981, p. 2.

⁷¹ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: Chicago, The Society of American Archivists, 2003, p. 53.

⁷² Irene Place – Estelle L. Popham, *Filing and Records Management*, New Jersey, Prentice-Hall Inc., 1966, p. 16.

determination of the function and/or subject of a record and selection of the appropriate classification for filing [...].⁷³

Filing: The storage of data.⁷⁴

Filing is the process of classifying, arranging, and storing records so that they can be obtained quickly when needed.⁷⁵

To file: To store documents in an organized collection for safekeeping and future reference. [...] Filing system: Policies and procedures directing how files should be stored and indexed in order to ensure their retrieval, use, and disposition. Notes: Sometimes called a recordkeeping system. Filing systems often include a records inventory, a retention schedule, and a file plan.⁷⁶

The following several considerations may emerge from these definitions:

Filing is perceived as a broad activity that includes classification and arrangement

In the United States, filing is used to include classification, and predominantly refers to the physical arrangement of files. Furthermore, records arrangement frequently follows alphabetic, numeric or chronological sequencing; or when classification criteria are applied, it is usually based on subject or on geographical location.⁷⁷ These arrangement and classification methods denote the strong influence on archives administration that librarians and manuscript curators have had in the United States along a large portion of the past century.⁷⁸ Principles and techniques of library classification and cataloging influenced the administration of archives in a context of lack of strong traditions in methodical recordkeeping, absence of a fully developed registry system, relatively late establishment of a national archival

⁷³ Government of British Columbia, *Recorded Information Management Glossary*, cit.

⁷⁴ Irene Place – Estelle L.Popham, *Filing and Records Management*, cit., 1966, p. 273.

⁷⁵ Jeffrey R. Stewart – Judith A. Scharle – Judith A. Hickey – Gilbert Kahn, *Filing Systems and Records Management*, cit., 1981, p. 202.

⁷⁶ Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005.

⁷⁷ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, Master's thesis, Northumbria University, 2005.

⁷⁸ The influence of library methods of classification may be also found in the Australian archival field. When Schellenberg refers to the Australian filing system, he writes that "File units have certain characteristics of books. They generally contain all documentation of a particular subject according to the rule of "one subject, one file." File units are handled as books while they are in current use. The documents within them usually exist in unique copy. [...] Collectively the units have an affinity, or relationship, only because they are produced either by a particular office or in consequence of a particular activity or in relation to a particular broad subject. The significance of file units collectively may be judged either by the importance of the office that produced them, or by the importance of the activity. The significance of the individual file units may sometimes be judged by their titles, as books would be judged by their titles." Schellenberg, T.R., *Modern Archives: Principles and Techniques* (1956), Reprint: Chicago, The Society of American Archivists, 2003, p. 76.

agency, and institutional autonomy and procedural diversity.⁷⁹ There was also lack of uniformity in archival terminology. The term classification was used with reference to filing systems, and frequently no distinction was made between classification and arrangement.⁸⁰ By the early 1940s, “the term arrangement replaced the term classification to denote the work that archivists carried out to organize records.”⁸¹

Therefore, the use of the term filing prevailed over classification, as precedence was given to the physicality and arrangement of records in order to easily retrieve them. In this context, little attention was given to establishing a conceptual structure that privileged the identification of relationships between records and business processes, what is understood as classification.

Classification is seen as synonymous of indexing

In the Anglo-Saxon archival context, arrangement methods have privileged systems in which records could be simultaneously filed and indexed to facilitate retrieval. Particularly in the United States, filing systems, which did not use records registers, usually arranged records on self-indexing systems thanks to very evolved (for the time) filing equipment (drawer files, shelf files, visible index files, vertical card files, and other motorized units). Filing and retrieval systems were tightly integrated. Filing and records management manuals published along the last century describe several of these systems, including prefabricated subject file systems (i.e., packages of printed headings for use on folders’ tabs), whose manufacturers claimed to be adaptable and applicable to most executive data.⁸² In many cases, there was no need to produce indexes to retrieve records as folders were arranged alphabetically by name, that is, by the key word in the file subject.⁸³

But, the physical arrangement of files is one thing, and the conceptual structure in which those records should be placed is another. According to Schellenberg, filing systems provide only the mechanical structure for records to be grouped. “[...] they are of little assistance in determining the subject headings under

⁷⁹ Frank B. Evans, *Modern Methods of Arrangement of Archives in the United States*, «The American Archivist», 29 (1966), n. 2, p. 242.

⁸⁰ Ivi, p. 252.

⁸¹ Ciaran Trace, *Entry: Archival Arrangement*, in *Encyclopedia of Archival Science*, Luciana Duranti and Patricia C. Franks (Ed.), United States of America, Rowman & Littlefield, 2015, p. 23.

⁸² Irene Place – Estelle L.Popham, *Filing and Records Management*, cit., 1966, p. 84.

⁸³ Theodore Roosevelt Schellenberg, T.R., *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 71.

which particular papers of files would be most aptly placed.”⁸⁴ This, instead, is the process of classification.

Despite Schellenberg’s considerations, most of the time classification has been confused with arrangement and filing. Place writes: “There are many ways to classify (index) material”, and mentions two classification criteria, numeric and alphabetic (which in reality are arrangement criteria).⁸⁵ The alphabetic ‘classification’ may apply to subject and functional classifications. In the case of subject classification, Place affirms that subject files may be classified either by dictionary arrangement into a straight alphabetic subject file, or by encyclopedic subject file arrangement.⁸⁶ The straight alphabetic subject file arranges new subjects (or their subdivisions) in alphabetic order, without creating groups of related subjects. The encyclopedic subject file provides major subject classifications and then sub-categories. “All records directly relating to a major subject are brought together under one primary subject and its appropriate secondary and possibly its tertiary subdivision.”⁸⁷ Subject classification may therefore be represented as (1) a list of headings, which are not grouped in classes but alphabetically organized, and (2) a flat (sequential) or hierarchical structure in which headings are grouped into classes and sub-classes, which in turn are arranged in alphabetical order. It is evident that the prominence of the alphabetic arrangement is due to the appeal of an index-like system that makes it easy to retrieve records.

Paradigm shift

These classification and filing concepts have progressively changed. From the prevalence of subject-based classification and alphabetic arrangements, new systems with a function-based approach were gradually introduced and implemented by the end of the 1980s and during the 1990s.

⁸⁴ Ivi, p. 91.

⁸⁵ Irene Place – Estelle L.Popham, *Filing and Records Management*, cit., 1966, p. 16.

⁸⁶ In relation to encyclopedic subject filing, Orr wrote in 2005: “The Association of Records Managers and Administrators (ARMA) recently issued a draft on ‘filing systems’ [...] This refers to classification as ‘encyclopedic subject filing’ (p.11). Functions-based classification is seen as a type of subject classification and is described in a way that relates back to early writers: ‘A structured-functional filing system is based upon organizational structure, functions performed by each organizational unit, and the processes related to each function (p.20).’” Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 51.

⁸⁷ Irene Place – Estelle L.Popham, *Filing and Records Management*, cit., 1966, p. 82.

The introduction of new concepts and new approaches to information management (i.e. management accountability, access to information and protection of personal information), the focus on new ways to improve records management (for sound internal decision-making and optimal external service), and the investigation of new options for designing classification systems, determined that classification structures be reviewed at the governmental level. Forward-looking initiatives were produced in Canada. In 1987, the Province of British Columbia developed the block numeric system, which was known by the dual denomination of ARCS (Administrative Records Classification Systems) and ORCS (Operational Records Classification Systems). This system was inspired by proper archival principles and was formulated by SLAIS (School of Library, Archival, and Information Studies) at the University of British Columbia, Vancouver, in which Luciana Duranti had been teaching archival science since 1987.⁸⁸ The ARCS/ORCS model distinguishes between records related to common administrative functions, and records produced in the fulfillment of specific activities assigned to offices. At the beginning of the 1990s, the Province of Nova Scotia started a similar initiative with the elaboration of a classification system. Integrated with the conservation plan, it also was structured in two parts: STAR (Standard for Administrative Records) and STOR (Standard for Operational Records). At the end of the 1990s, a successive step in this evolution towards function-based systems was marked by BASCS (Business Activity Structure Classification System), developed by the National Archives of Canada. Another interesting government-level initiative was developed in Australia during the 1990s: it elaborated findings and recommendations in the form of a design methodology for constructing function-based records classification systems. This was the so-called DIRKS (Designing and Implementing Recordkeeping Systems) methodology,⁸⁹ which ultimately influenced the development of ISO standard 15489.

⁸⁸ Maria Guercio, *La classificazione nell'organizzazione dei sistemi documentari digitali*, cit., 2016.

⁸⁹ "DIRKS: A Strategic Approach to Managing Business Information, also known as the DIRKS Manual, is a methodology developed in Australia for designing records management systems. The DIRKS methodology was developed and tested throughout the 1990s as part of a project undertaken by Australian recordkeeping authorities and professionals to re-conceptualize records and recordkeeping." Stephen Macintosh – Lynne Real, *DIRKS: Putting ISO 15489 to Work*, «The Information Management Journal», March/April 2007, p. 50. DIRKS was replaced in 2007 at the Australian Commonwealth level, but continues to be in use at state level in New South Wales as a non-tool to assist the public sector in complying with the State Records Authority of New South

These methodologies, which will be analyzed later, are currently being subjected to a revision process. In the case of DIRKS, the manual outlining the process for creating records management systems was removed from the National Archives of Australia website, which (up to 2016) stated that the DIRKS methodology was not recommended for use by agencies since 2007 and was superseded by other advice on the National Archives website. The current National Archives of Australia webpage⁹⁰ provides general indications on how to manage agency records. Records management is presented as involving a series of interrelated processes: 1. Create, capture and describe, 2. Secure and store; 3. Preserve; 4. Keep, destroy or transfer. Classification is not considered a primary function for records management. Prominence is given to records capture, which is defined as: “applying metadata as the records are captured. This fixes the records within their business context and establishes management control over them. Metadata provides information about who created and captured the record, when, and for what business purpose, as well as information about the content, appearance, structure and technical characteristics of the record.” Furthermore, it enables records to be retrieved, accessed and managed over time. Classification now has an extremely subsidiary function and has been relegated to the description phase, once records have been captured into the system (in most of the cases, in an automated way): “Metadata can also be used in conjunction with a classification scheme, controlled vocabulary or thesaurus, these tools help staff choose terms for indexing, titling and retrieving records.” Therefore, classification schemes are supportive tools aimed at providing metadata on the business the record is documenting. Their scope is just to facilitate retrieval through the indexing of headings. The aggregation of records and their arrangement is dependent on the aleatory computer searches. These new guidelines reflect the new approach to digital information governance, which is being proposed and implemented by the National Archives of Australia (NAA) for the Government records. DIRKS is substituted by the Digital Continuity 2020 Policy, whose aim is to improve information interoperability, entirely digital work processes, and information management capabilities and professionalism. With the Digital Continuity Policy, all information should be managed based on format and

Wales State Records Act 1998.

⁹⁰ Available online at: <http://www.naa.gov.au/records-management/agency/index.aspx>. (Accessed on 31/01/2017).

metadata standards for information governance and interoperability by December 31, 2020, as reported on the NAA website.

In the case of the Canadian initiatives, they are currently experiencing difficulties with the implementation of cutting-edge responses to the changing landscape of electronic records management. In the case of ARCS and ORCS, Dan Gillean, an archivist and records manager, was tasked in 2011 with responsibility for the digital archives of the British Columbia government. He explains how the implementation of the ARCS/ORCS model and the government standard Document and Records Management System (EDRMS) called TRIM (Total Records and Information Management) will barely achieve comprehensive coverage in the government offices without increased funding and staffing support from government. TRIM is a programme that manages the complete life cycle of a ministry's records – from creation to retention and use, and to destruction or archival preservation. In addition, various government offices are employing other recordkeeping systems (Local Area Networks drives, Microsoft SharePoint, etc.), and little pressure or incentive is made to standardize these competing platforms across government. This diversity of systems, locations and platforms without proper classification and scheduling decreases the good records management practices at the creator level. According to Dan Gillean, records management is viewed “as a low priority at the executive level,”⁹¹ and the profession perceived “as merely a clerical necessity.”⁹² As a consequence, understaffing and subsequent backlogs determine the lack of a broad records management follow-up and development. He believes that “what is required now is a shift in organizational culture within the upper levels of government vis-à-vis the importance of RIM [Records and Information Management] functions.”⁹³

Maria Guercio reaffirms Gillean's opinion. She thinks that the records management difficulties of the Anglo-Saxon countries are related to their limited experience and the absence of long-term historical traditions. Projects of great ambition, such as the functional classification system of the Canadian government (BASCS), have revealed a complex application, and therefore have had to be

⁹¹ Dan Gillean, *The Consequences of Ignoring Records Management: A Personal Reflection on My Time with the Government of British Columbia*, University of British Columbia, AIEF Scholarship Application, 2011, p. 9.

⁹² Ivi, p. 15.

⁹³ *Ibidem*.

reviewed due to insufficient awareness and commitment of the upper levels of institutional management, and to the absence of legislative support. The lack of specific legislation providing stability and authority on records management principles and good practices has not favoured the consolidation and further development of the excellent discussions conducted in this field in the mid-nineties. In relation to British Columbia's refined classification system (ARCS/ORCS), which has been running successfully for over twenty years but has failed to impose itself on the rest of the country, it is now in danger of being considered too complex and expensive in the face of the constant reduction of personnel administrations and the imprudent use of technological tools such as SharePoint that are unsuitable for records management. The cuts in investment, the inadequate organizational and technological choices, including the incorporation of the British Columbia Provincial Archives with the Royal BC Museum, as well as the unawareness of the leaders of the organizations operating in the province of British Columbia of the strategic role that adequate records management plays in the transparency and the quality of administrative action, has entailed the progressive loss of recognition of the strategic value once attributed to this exemplary model system for records management in North America.⁹⁴

Maria Guercio also remarks that the notion of classification has not been clearly or consistently connected to the concepts of filing and archival sedimentation in Anglo-Saxon countries, except in the analyses conducted by Italian scholars or by those archivists trained at the archival school led by Luciana Duranti in Vancouver.⁹⁵ It can be affirmed that, among the Anglo-Saxon countries, Canada is the one in which European historical archival traditions have especially permeated, including in the French speaking province of Quebec. Even if having a different juridical system from the rest of Canada, its archival traditions mostly follow the French or even the Italian way, as seen in Roberge's records classification methodology that will be discussed later.

⁹⁴ Maria Guercio, *La classificazione nell'organizzazione dei sistemi documentari digitali*, cit., 2016, p. 8-9.

⁹⁵ *Ivi*, p. 8.

3.2.4 Proposal of definitions

The previous analysis of different archival traditions leads us to the conclusion that the distinctions between classification, filing and arrangement are unclear. Furthermore, the original meanings of the terms may have evolved, according to the context in which they have been used or applied. This terminological issue manifests uncertainty in delimiting the actions or operations that these activities entail, and denotes the immature state of classification theory and practice.

As it is considered necessary to have a unique terminological reference to allow readers to understand the meaning given to these terms in this research work, a proposal of definitions is made, which is also reported in the glossary. Starting from the broader concept of organization, the more specific functions of classification and related archival processing activities will be defined.

Organization

This word derives from the Old French, in which ‘organize’ referred to internal body organs, and meant giving an organic structure to something. Organization is a term which has two acceptations: 1) An institution or corporate body; 2) A system of arrangement or order, or a structure for classifying things, so that they can be found or used easily.⁹⁶

The term organization is rarely defined in the archival field, as it is a broad and generic term used in many fields of knowledge. In the Spanish archival context, debate on the distinction between organization, classification and arrangement has occurred and, as a result of it, organization is understood as the archival function that comprises the consecutive activities of classification and arrangement.⁹⁷ Some authors also include the activities of description and storing as part of the organization process of a fonds.⁹⁸

In the context of this thesis, which focuses on analyzing the records sedimentation process, the following definition is given to the term organization:

Organization, when applied to the archival context, is an activity that comprises classification, filing and arrangement. Its main aim is to provide a logical

⁹⁶ Definition from: <https://www.vocabulary.com/dictionary/organization>. (Accessed on 31/01/2017).

⁹⁷ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 147.

⁹⁸ José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 268.

structure and order to records. The concept of organization may also include other activities such as records storing.

Classification

Classification has different meanings, as described in the SAA (Society of American Archivists) Glossary:

1) The organization of materials into categories according to a scheme that identifies, distinguishes, and relates the categories; 2) The process of assigning materials a code or heading indicating a category to which it belongs; 3) The process of assigning restrictions to materials, limiting access to specific individuals, especially for purposes of national security; security classification.⁹⁹

The first acceptance is the one which is of interest to this thesis. As it may be observed, the definition uses the word organization to describe classification. It also occurs in other definitions; for example, the one proposed by the InterPARES dictionary (IP3), which defines classification as: “The systematic organization of records in groups or categories according to methods, procedures, or conventions represented in a plan or scheme;”¹⁰⁰ or the definition previously reported when analyzing the Italian archival context: “Classification is the organization of all documents produced by a records creator (received, sent or otherwise acquired) into groupings of logical nature [...]”¹⁰¹

Organization is a broad and ambiguous term that does not contribute to clarify the activities/operations that are part of classification, or the scope of this fundamental archival function. Furthermore, if organization is understood, as defined above, as comprising the activity of classification, we are using the same term (classification) in its definition and this does not help to understand its meaning. Therefore, the following definition of classification is proposed in this thesis:

Classification is an archival function that consists of assigning records to categories or classes according to several criteria (such as functions, activities or operations generating the records) for the purpose of (1) guaranteeing a meaningful

⁹⁹ Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005, p. 72.

¹⁰⁰ InterPARES 3 Project, *International Terminology Database*.

¹⁰¹ Maria Guercio (Ed.), *La gestione elettronica dei documenti e la tenuta degli archivi: Principi generali e requisiti archivistici*, n.d., p. 23.

context to records and (2) achieving physical or intellectual control over them. The classification function allows linking of a record (and file) to the administrative activity to which it relates, and is materialized through a records classification scheme that provides a logical structure of categories in which files (aggregations of records) are created or associated.

Filing

Distinction between classification and filing is found in the English and Italian contexts, but in the Spanish archival field, classification comprises filing, thus a specific term for the act of filing is not available.

In the Anglo-Saxon environment, filing may have a very broad meaning, such as the one previously reported: “Filing is the process of classifying, arranging, and storing records so that they can be obtained quickly when needed;”¹⁰² or may hold a more restricted sense, such as in the following definitions: “To store documents in an organized collection for safekeeping and future reference;”¹⁰³ or “The action of placing documents in a predetermined location according to a scheme of control.”¹⁰⁴

In the Italian context, filing is understood as an activity following to classification: “[...] Classification is closely linked to the subsequent placement of a record to an archival complex aggregation, the archival unit, which gathers all the records related to a specific, single instance of which a particular activity is composed (what is known as filing).”¹⁰⁵ It should be mentioned that in Italy, up to the second half of the past century, classification also encompassed the act of filing, as in the Spanish context. By the late 1990s and early 2000s, several projects or working groups promoted by the Italian public bodies devoted in-depth analysis to develop guidelines for electronic records management, including the proposal of records classification models based on the functional analysis of working processes. These studies highlighted the importance of developing records classification

¹⁰² Jeffrey R. Stewart – Judith A. Scharle – Judith A. Hickey – Gilbert Kahn, *Filing Systems and Records Management*, cit., 1981, p. 202.

¹⁰³ Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005, p. 163.

¹⁰⁴ International Organization for Standardization, *ISO 16175-1:2010: Information and Documentation – Principles and Functional Requirements for Records in Electronic Office Environments, Part 1: Overview and Statement of Principles*, Geneva, 2010.

¹⁰⁵ “[...] L’attività di classificazione è strettamente connessa alla successiva riconduzione del documento a un’aggregazione archivistica complessa, l’unità archivistica, che raccoglie tutti i documenti relativi ad una specifica, singola istanza di cui si compone una determinata attività (fascicolazione).” Monica Grossi, *L’archivio in formazione*, cit., 2014, p. 48.

schemes which included principles for the creation of files, their arrangement and eventual procedures for the control of the administrative processes. Analysis was carried out on how a records classification scheme (and its classes) had to be structured or articulated, and how to create and organize archival units (files and registers) in which records were aggregated to constitute homogeneous series. These studies outlined the need of pre-defining filing procedures, including how to name archival units. The focus on the activity of filing led to further distinguish classification and filing, and to speak about filing plans as complementary to classification schemes. In fact, the classification scheme is presented as a general plan of classes, which are basically articulated in a hierarchical manner in order to identify the archival units.¹⁰⁶ These archival units are pre-established by the file plan, which is a recently defined additional tool. The file plan also identifies procedures for creating and arranging archival units.

Considering this background information, the concept of filing that is used in this thesis is the following:

Filing is an archival function that is subsequent to classification and consists of placing in or connecting records to files for the purpose of creating homogeneous archival series that reflect both the relationships among records and the way in which records creators have operated.

Arrangement

As with filing, arrangement is also a term that may have broad or more restricted meanings. The 1990 RAMP Study “Conceptual problems posed by electronic records” reports that arrangement is “the process of putting archives and records into order in accordance with accepted archival principles, particularly those of provenance and original order [...]”¹⁰⁷ An expansion of this definition states that arrangement is a process which usually also includes packing, labelling, and shelving of archives, records and manuscripts, as it is intended to achieve physical or administrative control and basic identification of the holdings.¹⁰⁸

¹⁰⁶ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, Scuola superiore della pubblica amministrazione, Roma, 2005, p. 15.

¹⁰⁷ Katharine Gavrel, *Conceptual problems posed by electronic records: a RAMP study*, PGI-90/WS/12, Paris, UNESCO, 1990, p. 31.

¹⁰⁸ David B.II. Gracey, *Archives and Manuscripts: Arrangement and Description*. Chicago: Society of American Archivists, 1977.

In this broader sense, arrangement may be considered a synonym of the Italian term *ordinamento*. However, for the purpose of clarifying and delimiting the operations that this archival term involves, particularly in the records creation phase, the following definition of arrangement is given in this thesis:

Arrangement is the archival operation that consists of putting elements (such as records and files) into a sequential order or relation, according to several criteria: alphabetic, chronological, numeric or a combination of some of these (i.e., alphanumeric). Arrangement is complementary to classification and does not suppose hierarchy.

This is also the meaning that Spanish archival theory gives to the term. For Heredia Herrera, arrangement lines up elements, or units of a whole, according to an order unit. It is not a system but a linear sequence necessary to locate and retrieve records.¹⁰⁹

3.3. Purpose of classification and filing

As in other areas of knowledge, classification is an instrument which aims to group and arrange things (in this case records), based on common characteristics. Classification can refer to two types of operations: 1) The division of a set of records by grouping its elements into several classes or subsets determined by one or more criteria; 2) The allocation of a record to one of these groups or classes.¹¹⁰ The objective is serving the informational and legal needs of those who make use of the records for current processes.¹¹¹ Therefore, classification/filing supports recordkeeping as it helps to achieve several purposes, such as:

Make the archival bond explicit

Classification determines the relationships among records, which are correlated to the competencies, administrative structure and operating modes of an entity.¹¹² It

¹⁰⁹ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 146.

¹¹⁰ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 9.

¹¹¹ Maria Guercio, *Principles, Methods, and Instruments for the Creation, Preservation, and Use of Archival Records in the Digital Environment*, «The American Archivist», 64 (Fall/Winter 2001), p. 238-269.

¹¹² Paola Carucci - Maria Guercio, *Manuale di Archivistica*, cit., 2008, p. 209.

links each individual record to the activity originating it and to the other records resulting from it, providing a continuous record of organizational activity.¹¹³

Create stable relationships

The relationships among records and the function or activity conducted are built in a stable manner through classification.¹¹⁴ Therefore, the allocation of records to a file has to be permanently preserved by the records management system as a key element to attest at any time (in the active, semi-active and historical phases) which records were used to carry out a specific administrative process and in which order records were produced or acquired by those responsible for the process.¹¹⁵ In other words, classification satisfies the need, over time, for maintaining stable relationships between records and the activities in which they participate.

Contextualize records

Stable relationships provide valuable contextual information about records.¹¹⁶ Archivists, records creators, and historians are not interested in the information contained in a single record or provided by a whole of data. Their interests lie in the history (and sequence) of a process, an activity and, as a result, in the contextualization of the information in the period in which it was produced. Not to classify means to decontextualize.¹¹⁷

Context is also a necessary part of understanding records, and it is particularly important when dealing with digital records.¹¹⁸ Classification is a fundamental tool in the electronic environment as “it provides essential information about the contexts of records creation and use, information that would otherwise be unattainable.”¹¹⁹ In this way, classification contributes to establishing and maintaining records reliability and authenticity.

¹¹³ National Archives of Australia, *DIRKS Manual* (2003), Revised 2007; and Fiorella Foscarini, *Function-based records classification systems*, cit., 2009.

¹¹⁴ Gruppo di lavoro nazionale sui titolari delle università (Ed.), *I calzini del Principe Carlo: Titulus 97, I titolari per gli archivi delle università italiane in vigore dal 1° gennaio 2007*, cit., 2007, p. 33; and Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 54.

¹¹⁵ Monica Grossi, *L'archivio in formazione*, cit., 2014, p. 48.

¹¹⁶ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 68.

¹¹⁷ Gruppo di lavoro nazionale sui titolari delle università (Ed.), *I calzini del Principe Carlo: Titulus 97, I titolari per gli archivi delle università italiane in vigore dal 1° gennaio 2007*, cit., 2007, p. 35.

¹¹⁸ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 68.

¹¹⁹ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 54.

Context keeps records evidence. Classification does not only aim to organize and facilitate the retrieval of information contained in records, it also preserves the records evidence value by the enhancement of the context in which they are created.¹²⁰

Guide the sedimentation/accumulation of records

Classification allows stratifying and aggregating records in ordered series and subseries and, therefore, meets the objective of providing records with a functional and stable organization over time, so that it reflects the concrete and daily activities of the records creator.¹²¹ It creates order in understanding what an organization does and how it does it.¹²²

Provide a logical structure

Classification provides a logical structure that is functional to the records creator's daily work, providing information on administrative decisions taken at any stage of the processes and supporting decisions taken.¹²³ This responds to the need for understanding and handling a large number of records, which are produced by complex structures, such as public administrations.

Guide the creation of files and series

Filing generates files, so that all records related to the same matter are filed together. Moreover, the sum of files of the same nature constitutes the archival series.¹²⁴ The series (a subset of records of the same origin and the same type) constitute the basic element of archival classification. The identification of series is the main objective of a classification/filing scheme.¹²⁵

¹²⁰ Sabine Mas, *Schémas de classification et repérage des documents administratifs électroniques dans un contexte de gestion décentralisée des ressources informationnelles*, Université di Montréal, PhD Thesis, 2007.

¹²¹ Paola Carucci, Maria Guercio, *Manuale di Archivistica*, cit., 2008.

¹²² National Archives of Australia, *DIRKS Manual* (2003), Revised 2007.

¹²³ José Ramón Cruz Mundet, *Archivistica: Gestión de documentos y administración de archivos*, Madrid, Alianza Editorial, 2012.

¹²⁴ Universidad Pública de Navarra, *Normas y procedimientos para la clasificación de documentos*, in *Buenas prácticas en gestión de documentos y archivos: manual de normas y procedimientos archivísticos de la Universidad Pública de Navarra*, Joaquim Llansó Sanjuan (director); Lucía Costanilla Baquedano, Olivia García Irigaray, Itziar Zabalza Aldave, Pamplona, Universidad Pública de Navarra, 2006, p. 1-13.

¹²⁵ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 16-17.

Identify records that are part of an aggregation, of a fonds

Classification identifies all records which fall within the archival fonds.¹²⁶ Setting aside documents (through informal or pre-established classification/filing) causes the documents to become part of an archive and to be considered records. The InterPARES Project defines a record as “A document made or received in the course of a practical activity as an instrument or a by-product of such activity, and set aside for action or reference.”¹²⁷ Setting aside a document is seen as a requirement for identifying or recognizing it as a record (instead of a document, which is defined by InterPARES as “An indivisible unit of information constituted by a message affixed to a medium (recorded) in a stable syntactic manner. A document has fixed form and stable content.”¹²⁸

Fulfil a legal and administrative function

De Felice writes that classification is misinterpreted as the operation that assembles a record with its precedents or allows creation of a file to which a code is assigned for retrieval. This perception is missing one essential aspect: the evaluation of the position that the file must take to fulfil a legal and administrative function connected with the competencies of offices.¹²⁹

Thus, classification provides executive control of records, ensuring that they are available to protect the fiscal, legal, operational, audit and other liabilities of government for required periods of time.¹³⁰

Enable retrieval of records in their context

Classification helps users identify and locate items. It groups related records together, thus assists the retrieval of all records relating to the same activity, giving contextual information for understanding (and interpreting) facts.¹³¹

¹²⁶ Maria Guercio, *La classificazione nell'organizzazione dei sistemi documentari digitali: criticità e nuove prospettive*, cit., 2016.

¹²⁷ InterPARES 3 Project, *International Terminology Database*.

¹²⁸ *Ibidem*.

¹²⁹ Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 15.

¹³⁰ Government of British Columbia, *Operational Records Classification System: Archives and Records* (Schedule 881148), ARCS01/430-40, 2003.

¹³¹ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005; Autorità

Cruz Mundet affirms that classification facilitates the conceptual location of records, providing (through a logical structure) sufficient information to guide searches correctly, without ambiguities; that is, series and archival units are assigned one conceptual location and not another, so that interrogation of the structure always finds a complete answer, following a logical and unique path, without creating ambiguity or disjunction. [This peremptory statement could be debatable, as classification is not always a straight-forward activity]. Cruz Mundet also asserts that the series headings constitute the most reliable authority record for retrieval. In this sense, records classification schemes allow control of the language for titling and indexing records, enabling the identification of records over time.¹³² Thus, the classification scheme may also function as an indexing system (that is, as a set of words that are tasked with synthesizing and representing records content/subjects for later retrieval). As Carucci - Guercio write, classification may also establish an appropriate basis for the development of efficient search tools.¹³³

Provide control over records creation

Classification helps to identify records that should be created in order to satisfy the evidential requirements of the organization. It also contributes to the recognition of high priority records that should be captured because for their business significance.¹³⁴

Enable the integrated management of hybrid records systems

Classification codes enable the logical connection between both paper and digital files that relate to the execution of the same administrative procedure and activity.¹³⁵

per l'Informatica nella Pubblica Amministrazione (AIPA), *Linee guida alla realizzazione dei sistemi di protocollo informatico e gestione dei flussi documentali nelle pubbliche amministrazioni (GEDOC 2)*, 2000; Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005; National Archives of Australia, *DIRKS Manual* (2003), Revised 2007; Fiorella Foscarini, *Function-based records classification systems*, cit., 2009.

¹³² José Ramón Cruz Mundet, *Archivística: Gestión de documentos y administración de archivos*, cit., 2012, p. 207.

¹³³ Paola Carucci, Maria Guercio, *Manuale di Archivística*, cit., 2008, p. 211.

¹³⁴ National Archives of Australia, *DIRKS Manual* (2003), Revised 2007; Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005.

¹³⁵ Autorità per l'Informatica nella Pubblica Amministrazione (AIPA), *Linee guida alla realizzazione dei sistemi di protocollo informatico e gestione dei flussi documentali nelle pubbliche amministrazioni (GEDOC 2)*, 2000, p. 86; Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 16.

Identify responsibilities for managing administrative processes

In most cases, each last level of a records classification scheme is attributed to a structure of the organization; in this way, responsibilities for managing processes are more easily assigned.¹³⁶

Govern access privileges

Classification helps to determine security protection (i.e. confidential records) and to assign different access levels or users' permissions to read, write, validate, sign, etc. records according to their classification category.¹³⁷

Facilitate records appraisal and disposal

Classification favours the application of retention periods to archival series at the creation phase. Indications on dispositions may be directly linked to the last level of the records classification scheme. In this manner, classification is integrated with retention plans. "If records are classified to reflect organization and function, they can be disposed of in relation to organization and function. The method of classification provides the basis for preserving or destroying records selectively after they have served the purpose of current business."¹³⁸

Facilitate description

Classification is tightly linked to description. It influences the operations of description and the systematic presentation of their results, thus determining documentary groups and types, as well as descriptive units. It normalizes the naming of records aggregations and the assignment of names to the archival units.¹³⁹ The records classification scheme is considered the first instrument of description of an archive. It allows for systematic planning of archival processing, from disposal (as

¹³⁶ *Ibidem*; Paola Carucci, Maria Guercio, *Manuale di Archivistica*, cit., 2008, p. 210.

¹³⁷ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005; National Archives of Australia, *DIRKS Manual* (2003), Revised 2007; José Ramón Cruz Mundet, *Archivistica: Gestión de documentos y administración de archivos*, cit., 2012.

¹³⁸ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 52.

¹³⁹ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 9.

previously mentioned) to the elaboration of description tools (such as, inventories).¹⁴⁰

Improve transparency and accountability

Classification establishes and documents the relationships between a business activity and the evidence (expressed by records) to show that it has been performed efficiently, openly and with accountability. It enhances the capacity of the organization to share information and knowledge.¹⁴¹

Enable the reconstruction of the historical evolution of a fonds

The records classification scheme also allows reconstructing the evolution of the archival fonds across time, as a snapshot of the different articulations that the fonds underwent.¹⁴²

From this long list of purposes, it should be emphasized that, above all, classification aims to provide the structural basis for linking related records into aggregations which in turn will constitute the archive. Therefore, the primary scope of classification systems is to allow related records to be grouped together within a logical and functional structure that serves the informational and legal needs of records creators during the conduct of business. Records are, in this way, contextualized and easily retrieved. Consequently, a formal and pre-established structure supporting the organization of records aggregations is without any doubt necessary.

3.4 Systems, structures and relationships

To understand what is intended by system and structure, and why a structure is needed to organize records, the reflections of philosopher Alexander Spirkin¹⁴³ on the system of categories in philosophical thought are particularly enlightening.

¹⁴⁰ National Archives of Australia, *DIRKS Manual* (2003), Revised 2007; Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005.

¹⁴¹ *Ibidem*.

¹⁴² Maria Guercio, *La classificazione nell'organizzazione dei sistemi documentari digitali: criticità e nuove prospettive*, cit., 2016, p. 4.

¹⁴³ Alexandre Spirkin was a Russian philosopher and psychologist. Among his principal works are the study of the subject matter, structure and functions of philosophy. Citations in this thesis section

Spirkin (1984) clarifies the concepts of system and structure, and their interconnections. He defines system as “an internally organised whole where elements¹⁴⁴ are so intimately connected that they operate as one in relation to external conditions and other systems.” Structure is “the type of connection between the elements of a whole.”¹⁴⁵ Any system consists of a structure with certain properties. Therefore, structure is the law(s) that determine a system's composition and functioning, its properties and stability. Spirkin gives the example of the solar system, which “structure implies not only the position of its elements in space but also their movement in time, their sequence and rhythm, the law of mutation of a process.”¹⁴⁶

If we extrapolate this notion of structure to the archival field, it is possible to infer that any archive (or system) has a structure, in which a set of rules govern the connections and interactions between its elements (records), its functioning and stability. Classification is, therefore, the archival function that provides the rules and methods for interrelating records, in such a way that when aggregations of current records are constituted they respond to the functional needs of the records' creators.

According to Spirkin, systems are divided into three basic types of wholeness:

1) Unorganized and summative whole

This is the simplest type of wholeness. It is characterized by an unsystematic conglomeration of objects, including also a mechanical grouping of heterogeneous things. No recognizable law connects the parts, which properties coincide with the sum of the properties of its component parts. Therefore, objects and their properties are characterized by a summative character; and when objects leave the whole to which they are part, they usually undergo no qualitative change. This type of whole may be compared with the one generated when records organization exclusively

come from his publication on dialectic materialism (1984), in which he analyses the evolution of complexity in the natural world. The dialectic materialism is a philosophy of science and nature, based on the writings of Karl Marx and Friedrich Engels, and developed largely in Russia and the Soviet Union.

¹⁴⁴ Spirkin defines element as “the minimal unit performing a definite function in the whole.” whole is a unity composed of parts. Parts are objects not in itself but in relation to what they are part of. Consequently, “a free atom is distinctly different from an atom that forms part of a molecule or a crystal; [...] The organism is a whole and disfunction of one of its organs leads to disbalance of the whole.” Alexander Spirkin [Daglish, R. (Translator)], *Dialectical Materialism*, London: *Central Books Ltd.*, 1984.

¹⁴⁵ *Ibidem.*

¹⁴⁶ *Ibidem.*

relies on metadata categorization at the item level. Multiple records relations are obtained by applying very simple and generic rules (when available). The result is a summative whole, in which its constitutive parts are not closely integrated.

2) Organized whole

This is a more complex type of whole. According to Spirkin, this whole has varying degrees of organization, depending on the characteristics of its parts and their connections. The parts of an organized whole are in a relatively stable and law-governed interrelationship. The properties of the whole are not just the mechanical sum of the properties of its parts. For example, “water possesses the property of being able to extinguish fire, but the parts of which it is composed, taken separately, possess quite different properties: hydrogen is itself flammable and oxygen maintains or boosts combustion.”¹⁴⁷ This is the type of whole that mostly characterizes archives, which are composed of records with law-governed relationships. The archive can be broken down into its parts to sort out the nature of their relationships. The different parts or objects (records) can be understood only when analyzed in their relation with the whole.

3) Organic whole

This is the highest and most complex type of whole. The organic whole is characterized by the self-development and self-reproduction of its parts. Reporting Spirkin’s words:

The parts of an organism if separated from the whole organism, not only lose some of their properties but cannot even exist in the given quality that they have within the whole. [...] The parts of a whole may have varying degrees of relative independence. In a whole, there may be parts whose excision will damage or even destroy the whole, but there may also be parts whose loss causes no organic damage.¹⁴⁸

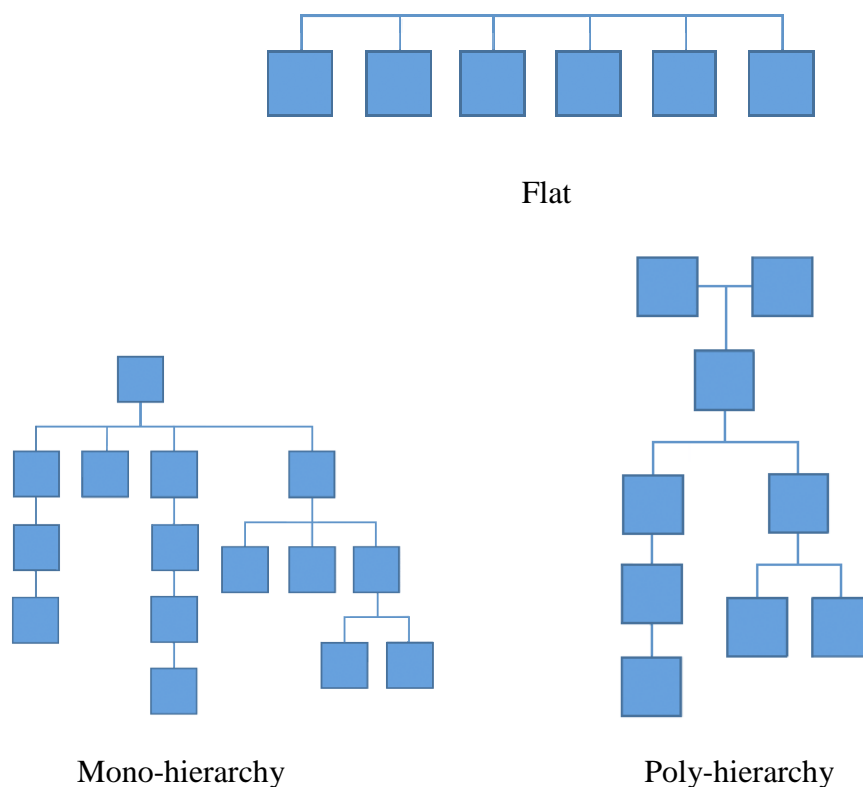
As expressed in Chapter 2, an archive is an organized (in some cases, also unorganized) man-made whole, rather than an organic (self-developed) system. As a complex whole, the archive structure is defined by the organization of records relationships and is essential to its function. The question is what type of structure is more suitable for an organized archive? The structure that traditionally has been

¹⁴⁷ *Ibidem.*

¹⁴⁸ *Ibidem.*

used in archives is the hierarchical records classification scheme, still considered a fundamental tool to establish the rules governing the type of connections between the parts (one-to-many relationships). However, other types of structures and relationships are available to connect records, such as linear or flat relations, poly-hierarchies, faceted classification, networks featuring many-to-many links, or a lattice (hierarchy free) featuring connections between components that are neighbours in space. One of the purposes of this research is to analyze the application of these different structures to the archival field, starting by the traditional hierarchical classification scheme.

Figure 2 represents several types of structures, from which it is possible to observe the relationships between their constituent elements:¹⁴⁹



¹⁴⁹ Figures come from Shari Thurow, *Website Taxonomy Guidelines And Tips: How Best To Organize Your Site*, in Marketing Land (Analytics & Conversion), 8 May 2015.

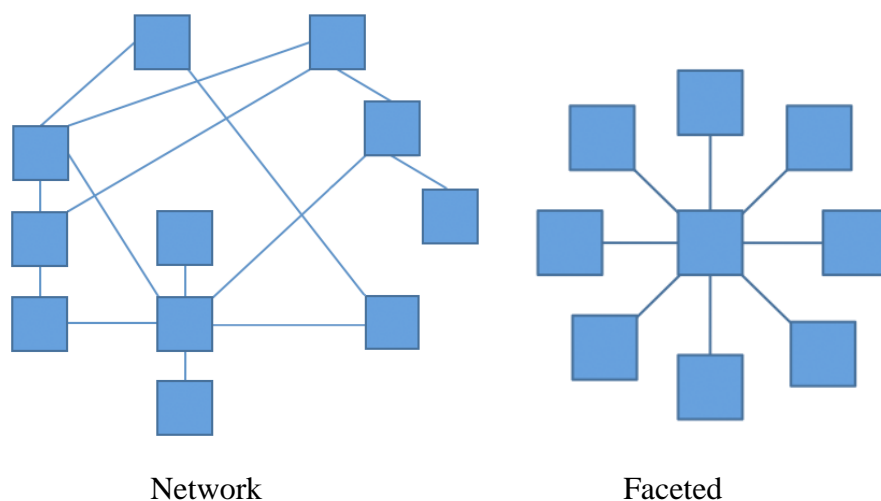


Figure 2: Types of structures that can be adopted to relate records

3.5 Records classification scheme

3.5.1. Definition

A records classification scheme, also known as a record plan, is a system of abstract partitions (categories), derived from the analysis of an entity's functions, and generally articulated in a hierarchical manner in order to identify, according to a logical scheme that goes from the general to the particular, the archival unit, that is the base unit of records aggregation within the archive.¹⁵⁰

Traditionally, the purpose of the records classification scheme was meant to be records organization and retrieval, but it has become a strategic element for e-government as it has the added value of supporting other tools needed to manage records. Through the records classification scheme, it is possible to systematically plan archival processing, from records transfer, appraisal and disposal, to the development of description tools and retention schedules. The fact that classification entails definition of the records series names, dates and coding, make the records classification scheme the first description tool of a fonds.¹⁵¹ Furthermore, the records

¹⁵⁰ Paola Carucci, *Le fonti archivistiche: ordinamento e conservazione*, cit., 1998, p. 229.

¹⁵¹ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 81.

classification scheme allows a joint view of the archive and the hierarchical relationships between the records aggregations, the entity and its activities.¹⁵²

3.5.2 Structure and relationships: Hierarchy

Commonly, archival theory maintains that records classification schemes are hierarchical structures, in which the relationships between records are created in a stable manner. Furthermore, the assignment of records to an aggregation excludes any possibility of belonging to another. However, it may be accepted that the same record is classified several times according to the multiplicity of functions identified on it. In traditional settings, this option implies the duplication of records, while only information on the connections between the same record and its copies (established through links) is duplicated in the digital environment. Thus, the proliferation of copies of the same record is managed more easily and with minor organizational implications in the digital field. Yet, it is recommended to restrain the number of copies filed into the system in order to avoid overloading the system management and research functionalities.¹⁵³

As hierarchical structures are preferred to any other structural associations in the archival field,¹⁵⁴ the purpose of this section is to analyze why these hierarchical structures are applied to records classification, and if this type of structural relationship is still effective to manage digital records.

3.5.2.1 Information classification techniques

The archival literature review indicates that the principles of hierarchy or other types of relationships have not been as well developed as in library science. The available literature on information classification techniques mostly comes from the library discipline. And even if these techniques are not specifically shaped for archival purposes, as they are mostly subject-based classification methods which focus on establishing access points to documents, their analysis may help to understand the types of relationships that can be established among concepts of knowledge and how

¹⁵² César Martín Gavilán, *Principios generales de organización de fondos archivísticos. Clasificación y ordenación de documentos. Cuadros de clasificación*, 2009, p. 8.

¹⁵³ Autorità per l'Informatica nella Pubblica Amministrazione (AIPA), *Linee guida alla realizzazione dei sistemi di protocollo informatico e gestione dei flussi documentali nelle pubbliche amministrazioni (GEDOC 2)*, 2000, p. 83.

¹⁵⁴ Hierarchical models are applied to both current records and the arrangement of fonds and its constituent parts, as proposed in ISAD-G standard for archival description.

these associations may behave. One of these organization techniques, used in many other disciplines, is represented by taxonomy.

3.5.2.1.1 Taxonomy

Taxonomy may be defined as the practice and science of identification, description, naming and classification of things or concepts. Traditionally, taxonomy has been associated to experimental sciences (biology, chemistry, etc.). In fact, taxonomies have their beginning with Carl Linnaeus, who developed a hierarchical classification system for life forms in the 18th century which is the basis for the modern zoological and botanical classification and naming system for species.¹⁵⁵ In this context, taxonomy applies a mono-hierarchical criterion for establishing classification systems (based on property inheritance); that is, each group or class can only occupy one place in the hierarchical structure.

In the early 1990s, the concept of taxonomy was incorporated into other areas of knowledge such as psychology, social sciences and information technology, to designate almost all systems of access to information, seeking to establish concordances between the terminology used by both users and systems. In the context of knowledge organization systems, taxonomy is mostly considered as a kind of controlled vocabulary or even a specific type of thesaurus or classification scheme. There are also opinions that consider taxonomy as a broader category that includes specific modalities such as thesauri. In this case, taxonomy is defined as the overall process of organization or classification of contents.¹⁵⁶

There are several examples of definitions available both in the library and archival field. ANSI/NISO Z39.19-2005 defines taxonomy as “A controlled vocabulary consisting of preferred terms all of which are connected in a hierarchy or polyhierarchy”¹⁵⁷ (in the latter case, each term in a taxonomy is in one or more parent/child relationships). The glossary of AtoM (a software application for archival description and access) defines taxonomy as: “A grouping of controlled-

¹⁵⁵ Lars Marius Garshol, *Metadata? Thesauri? Taxonomies? Topic Maps! Making sense of it all*, «Journal of Information Science», vol. 30, n. 4, 2004; p. 378-391.

¹⁵⁶ Miquel Centelles, *Taxonomías para la categorización y la organización de la información en sitios web*, «Hipertext.net», n. 3, 2005.

¹⁵⁷ National Information Standards Organization (NISO), *ANSI-NISO Z39.19-2005 (R2010): Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*, Baltimore, 2010, p. 18.

vocabulary terms used to generate value lists and access points.”¹⁵⁸ Pearce-Moses, in his glossary of archival and records terminology, defines taxonomy as “A structure used for classifying materials into a hierarchy of categories and subcategories.”¹⁵⁹ In this latter sense, a records classification scheme is a taxonomy.

As it may be observed, the definition of taxonomy is more specific or broader depending on the purpose assigned to it by the different fields of knowledge (organization/classification; indexing; retrieval; searching; navigation or browsing; etc.). These various and different scopes determine the structural model with which the elements of a taxonomy may interrelate. As previously mentioned, a taxonomy is often (but not necessarily) organized hierarchically. Relationships are typically: parent/broader term, child/narrower term, or often both. In a broader sense, taxonomy also applies to relationship schemes other than parent-child hierarchies, such as network structures, which organize content into both hierarchical and associative categories, and are known as network taxonomy. A taxonomy might also simply be organization of kinds of things into groups, or an alphabetical list of items with only top-level categories, also known as a flat or unlayered taxonomy. Another type is the facet taxonomy, which allows an item to be assigned to multiple taxonomies, enabling the classification to be ordered in multiple ways, rather than in a single, predetermined order (as in a strict hierarchy).

Other information organization techniques particularly developed in library science, which also use hierarchical structures, are thesauri and faceted classification.

3.5.2.1.2 Thesauri

Thesauri are controlled-vocabulary tools to organize knowledge for subsequent retrieval. A controlled-vocabulary is defined as “an organized arrangement of words and phrases used to index content and/or to retrieve content through browsing or searching.”¹⁶⁰ Controlled vocabularies are necessary to allow “catalogers consistently use the same term to refer to the same person, place, or thing... [and] to gather

¹⁵⁸ Artefactual, *Glossary of AtoM*.

¹⁵⁹ Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005, p. 380.

¹⁶⁰ Patricia Harpring, *Introduction to Controlled Vocabularies: Terminology for Art, Architecture, and other Cultural Works*, (Online Edition), Los Angeles, Getty Research Institute, 2010.

together variant terms and synonyms for concepts and to link concepts in a logical order or sort them into categories.”¹⁶¹

Therefore, thesauri, which usually are considered to be the most complex of controlled vocabularies, indicate preferred terms, variant terms and term relationships (which are also known as semantic relationships; that is, the associations existing between the meanings of words, phrases or sentences). According to the standards for thesauri,¹⁶² the semantic relationships that can be established between terms are as follows: Equivalence; Associative; and Hierarchical.

The equivalence relationships link synonymous or nearly synonymous terms, which express equivalent or nearly equivalent concepts. Synonymy occurs when a concept can be represented by multiple terms having the same or similar meanings.¹⁶³

The associative relationships cover associations that are neither equivalent nor hierarchical, yet the terms are semantically or conceptually associated. They lead from one term to other terms that are related to or associated with it (but not hierarchically linked).¹⁶⁴

The hierarchical relationships, which are the focus of this study, show levels of superordination and subordination, in which the superordinate term represents a class or whole, and the subordinate terms refer to its members or parts. This relationship is used in locating broader and narrower concepts in a logically progressive sequence.¹⁶⁵ Hierarchical relationships include:

Generic or genus and species relationships: Children are a type of the parent

This relationship identifies the link between a class or concept (genus) and its members (species). It is the most common relationship in thesauri and taxonomies because it is applicable to a wide range of topics. All children in a genus/species

¹⁶¹ *Ibidem.*

¹⁶² International Organization for Standardization, *ISO 25964-1:2011: Information and documentation - Thesauri and interoperability with other vocabularies*, Part 1: Thesauri for information retrieval (2011), and Part 2: Interoperability with other vocabularies (2013); National Information Standards Organization (NISO), *ANSI-NISO Z39.19-2005 (R2010): Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*, cit., 2010.

¹⁶³ *Ibidem.*

¹⁶⁴ *Ibidem.*

¹⁶⁵ Jean Aitchison, David Bawden, Alan Gilchrist, *Thesaurus Construction and Use: A Practical Manual*, London, Aslib, 2010.

relationship should be a type of the parent (i.e., daguerreotype is a type of photographic processing technique). The relation is also known as the inclusion relationship. It has long been used in biological classification (genus and species are taxonomic ranks, where genus encompasses a group of species), but it is also applied between concepts in every subject field. The generic relationship applies to types of actions, properties and agents, as well as to types of things (entities).

Whole-part relationships: Children are a part of the parent

These relationships are also called a partitive relationship, and cover situations in which one class or concept is inherently included in another, so that the whole is treated as a broader term. They typically apply to geographic locations, parts of corporate bodies, parts of the human body, and other types of concepts that are not easily placed into genus and species relationships. Each child should be a part of the parent and all the other ancestors above it (i.e., the Office of Accountancy is a part of the Department of Management and Administration).

Instance relationships: Children are an instance or example of the parent

This type of relationship associates a general category of things and events, and an individual instance of that category. It is most commonly seen in vocabularies where proper names are organized by general categories of things or events (i.e., if the proper names of seas were organized under the general category ‘Seas’: Baltic Sea, Caspian Sea, Mediterranean Sea are not types or parts, but instances of seas).¹⁶⁶

Polyhierarchical relationships: Children have multiple parents

These are hierarchical relationships in which at least one child has more than one parent. Therefore, some concepts belong to more than one category. This is due to the application of logically different relationship models (genus and species, whole-part and instance) to the same concepts. In a data structure, each record exists only once in the vocabulary but may be linked to multiple parents and can thus appear in multiple hierarchical views. According to Pellini - Jones, they work well when

¹⁶⁶ Patricia Harpring, *Introduction to Controlled Vocabularies: Terminology for Art, Architecture, and other Cultural Works*, cit., 2010.

hyperlinks allow for jumping between categories and cross-references. When the cross-references become too many, facets taxonomies are better.¹⁶⁷

3.5.2.1.3 Faceted classification

Faceted schemes or taxonomies assign a subject to clearly defined, mutually exclusive aspects (facets) of a class, creating more than one path to access the material. They allow the assignment of multiple classifications to an object, as the facets can address multiple classification criteria. Each facet, which can be a simple list, or a tree or a hierarchy, provides a distinct way of organizing and finding the same content. According to Pellini - Jones, facets are normally used when tree structures have become too large and complex, and also where there is frequent use of metadata and tags on digital documents. Hierarchies follow a top-down approach. Instead, faceted classification is a bottom-up process, which goes from specific to general and is content-oriented. In the library field, this approach suggests a different way to classify content.¹⁶⁸ According to Peter Morville: “When populating a top-down taxonomy, the central question is "where do I put this?" but at the heart of the bottom-up approach is the question "how do I describe this?" By asking this subtly different question, you’ll wind up in a dramatically different destination.”¹⁶⁹

All these relationships can be established between the terms of controlled-vocabulary tools such as thesauri or taxonomies, but can also apply to the structural relations established between records, files and series, as it will be analyzed in the next section.

3.5.2.2 Relationships in the archival field

3.5.2.2.1 Hierarchical and non-hierarchical relations

The specificity that may be found in the archival field resides in the aim pursued by classification. As previously shown, the main purpose of classification is to establish stable relationships that contextualize records (what means that provide contextual information about records creation and use). Thus, a record is classified, not

¹⁶⁷ Arnaldo Pellini – Harry Jones, *Knowledge Taxonomies: A Literature Review*, ODI (Overseas Development Institute), 2011.

¹⁶⁸ *Ibidem*.

¹⁶⁹ Peter Morville, *Bottoms up: Designing complex, adaptive systems, Faceted Classification*, New Architect (Keeping Data Leaks Under Control), December 2002.

according to subject, but rather by why it exists, i.e. by its function rather than what it is about.¹⁷⁰ To be more explicit, a record is classified according to where the record comes from; what natural or legal entity produces the record; to what activity the record relates; or what transaction, administrative process or procedure generates the record.

The archival literature diffusely declares that the library classification techniques are focused on the content of the document itself and, for this reason, are subject-based (content-based). Catalogues are thematically organized to search and retrieve documents. Bibliographic classifications define the relations between more generic and more specific subjects, or subjects that are semantically associated. Nowadays, relationships between terms do not only represent aspects of content, but also the context or structure of information resources.¹⁷¹ On the other hand, literature affirms that archival classification techniques are based on the context of records production and, therefore, are mostly functional- and/or organic-based; thus, records are usually organized based on the functions and/or administrative structure of the records creator. In this sense, Foscarini writes that “content-based indexing is not suitable to archival material. Functional access [...] has certainly the potential to become the most powerful access point in archives, as it would assist not only retrieval, but also classification, appraisal, and description.”¹⁷²

Subject-based or function-based classification criteria are used to divide and group, in this case, records into categories. Our interest now is to further understand the type of relationships that can be established between these categories, as they will define the structural model of the classification tool to be used for records management.

Relationships are based on the cognitive process known as analogy. Analogy is a substantial process of knowledge by which objects or concepts can be compared or related based on their similarities, that is, by establishing analogies. This allows the identification of general and specific common characteristics between these objects or concepts. As it was seen in the previous analysis of information organization techniques, types of analogies include the relationships of equivalency, hierarchy and association. These relationships establish semantic or conceptual

¹⁷⁰ National Archives of Australia, *DIRKS Manual* (2003), Revised 2007.

¹⁷¹ Miquel Centelles, *Taxonomías para la categorización y la organización de la información en sitios web*, cit., 2005.

¹⁷² Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 75.

links, through which a word/concept is mentally linked to another. These three types of relationship can also be found in the logical structure of records classification schemes, although at different levels of the scheme:

- **Hierarchical or subordinate relationships**, which form chains of elements/concepts that are subordinated one to the other.¹⁷³ They are partitive relationships between the whole and its parts, that is, between the levels that identify function, activity and series.¹⁷⁴ These relationships are mostly of two types:
 - **Whole to part**, in which the part, or section of something larger, is contained in the whole, or the entire entity (a child is part of the parent). This type of relationship applies to the abstract categories of the classification scheme that are equivalent to the function and activity levels. It also applies to the transaction level, in which the series are identified. For example, the function of ‘Financial Administration’ involves the execution of several activities; this means that it is composed of activities such as ‘Budget preparation,’ ‘Income management,’ ‘Income accounting,’ etc. Similarly, these activities are performed through a series of operations or transactions; for example, the activity of ‘Income management’ involves the collection of direct and indirect taxes, transfer of capital, disposal of investments, etc. These transactions identify records series, which in this case are as follows: ‘Direct taxes,’ ‘Indirect taxes,’ ‘Transfers,’ ‘Property income,’ etc. Series then result from activities.
 - **Genus and species**, which is an inclusion relationship that identifies the link between an object/concept and its members (a child is a type of the parent). The relationships between records series and subseries are relations between genus and species.¹⁷⁵ For example, the records series ‘Direct taxes’ can be divided into two subseries, based on the type of direct taxes collected: ‘Inheritance tax,’ ‘Income tax.’

¹⁷³ Rodrigo de Sales, *Classificações bibliográficas e classificações arquivísticas: diferenças e semelhanças na organização do conhecimento*, «Scire», 22 (2016), n. 1, p. 74.

¹⁷⁴ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 20.

¹⁷⁵ Ivi.

- **Associative (non-hierarchical) relationships**, where the elements/concepts are related at the same level in a hierarchical structure. These relationships keep some semantic links between the elements/concepts.¹⁷⁶ The sequential relationship is the most common type of associative relation between files and among records. It refers to the order in which these are placed in terms of time and space. It is connected to arrangement, and implies sequential order (alphabetic, chronological, numeric or a combination of these), without any clear hierarchy.
- **Equivalence (non-hierarchical) relationships**, in which records in an aggregation are equivalent. This occurs in those series organized by records typology, in which records are essentially equal (series of contracts, administrative circulars, etc.). It groups and orders same type of records (with same formal characteristics) within a file. As in the associative relationship, records are related at the same level, without hierarchy.

In synthesis and generally speaking, hierarchical relationships characterize the relations between both functions and activities, and activities and transactions (thus, abstract categories and series are connected through whole-part relations). Series and sub-series tend to establish hierarchical genus and species connections between them, while non-hierarchical associative relationships are generally established among files, and also between records, as well as between classes at the same level of the hierarchy. Non-hierarchical equivalence relations can be also created among records. Figure 3 illustrates these hierarchical and non-hierarchical relationships established within a records classification scheme:

¹⁷⁶ Rodrigo de Sales, *Classificações bibliográficas e classificações arquivísticas: diferenças e semelhanças na organização do conhecimento*, cit., p. 74.

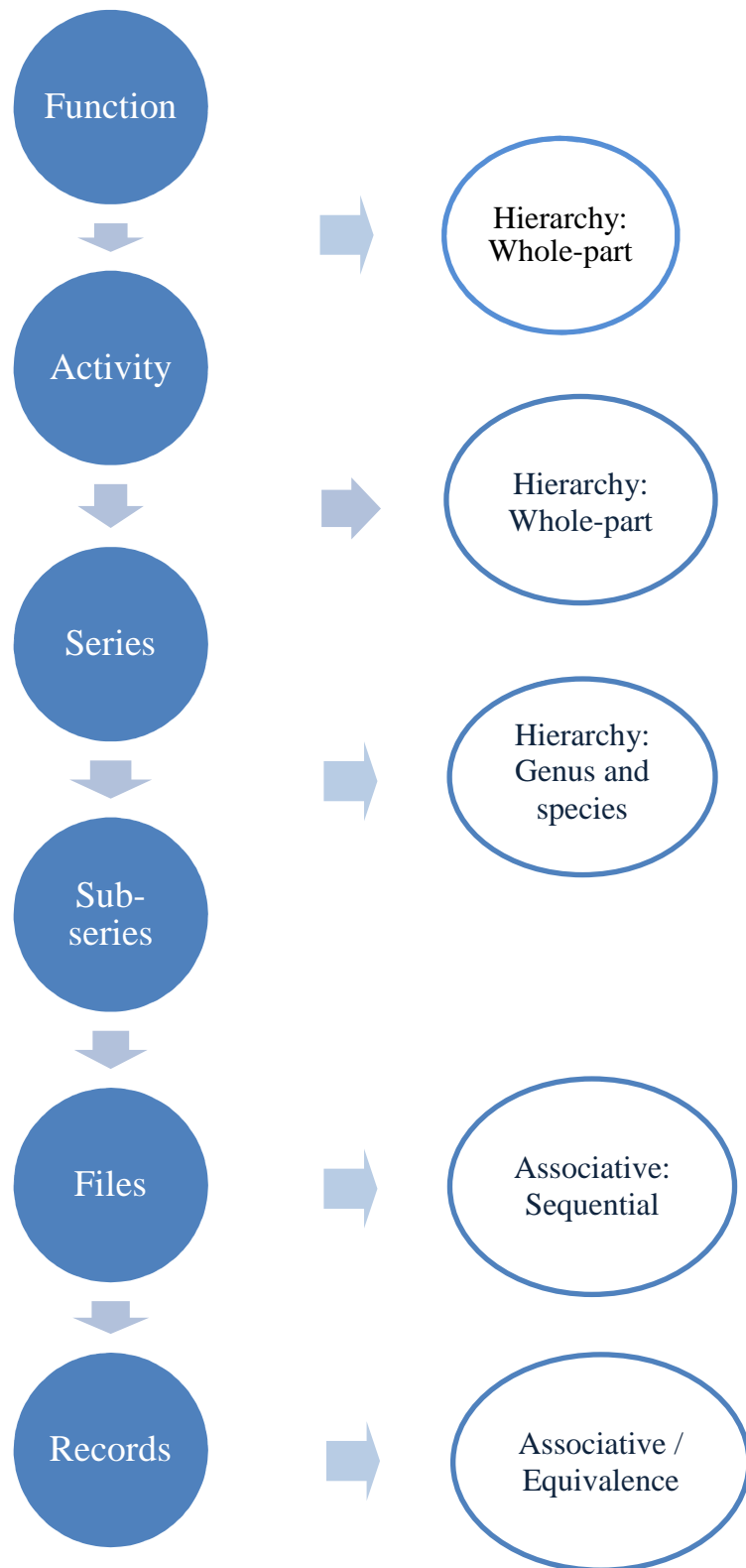


Figure 3: Hierarchical and non-hierarchical relationships within a records classification scheme

The whole-part relationships are normally displayed in the form of a tree or arboreal structure. As a consequence, one category is inherently included in or is

part of another, with the whole treated as a broader category. Tree structures reflect the way we think; the mental model of our logical thinking process or reasoning. They are powerful in displaying cause-effect relationships; this is why literature says that hierarchies are or must be predictable (so as to implement inference along the visual hierarchy in order to help users in their classification/filing and retrieval tasks).

The hierarchical partitive relationship well applies to corporate bodies, where administrative units, except the one at the highest level of the hierarchy, are subordinate to others within the organization. This hierarchical organizational structure ensures command and control of the organization. Its layout consists of multiple entities that descend into the base of the tree. Hierarchical organizational structures were the base to build the so-called organic classification systems, which traditionally were perceived as the only valid system to organize records and archives, as it reflected the original and natural structure of the institution. However, the organic classification system entails several disadvantages due to its rigidity. When applied to current organizations, which may change structure, configurations and names quickly, classification schemes need to be constantly revised.

An alternative method of classification, the functional one, was promoted along the 20th century. Although the functions of an organization are subject to change, they do so less frequently than the administrative organization, providing a safer ground on which to keep stable classification structures. Schellenberg considered that records should be classified according to function, as they are the result of function and are used in relation to function. But, like earlier writers, he assumed a close relationship between organizational structure and function. He affirmed that the organization that is given to an agency is usually determined by the purposes or functions it is designed to accomplish. In other words, functional classification follows an entity's organizational lines.¹⁷⁷ Function-based classification is also displayed as a hierarchical structure following whole-part, part-whole relations. As Hurley writes: "Functions also fall into categories and hierarchies. Any functional expression can be broken down into more specific

¹⁷⁷ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 47.

aspects or drawn together with closely related functions to form a larger "generic" unit."¹⁷⁸

But, as it has been explained, hierarchy is not the only type of relation used in records classification/filing. Systematic displays (tree structures) mix hierarchical and associative relations, although at different levels of the tree. The archival theory has traditionally advocated for the use of this (mono-)hierarchical structure, which offers a well-understood and highly stable basis for the association of related records. Yet, by the end of the 20th century, several authors had questioned the traditional hierarchical records classification system used for records management, as will be analyzed in the next section.

3.5.2.2.2 Other structural models

Bearman and Little (1985) once wrote about the weakness of the mono-hierarchical structures in modern organizations, in which complexity and dynamism are not within the scope of superior/subordinate relationships (in the classical view of organizations, a bureaucratic unit is directly subordinate to no more than one higher unit). Instead, structure, processes and activities of modern organizations are better understood through poly-hierarchical structural relationships and non-hierarchical relationships (as "some of the most important relations are not hierarchical at all").¹⁷⁹ These multiple relations can be established through a complex networking model. In 1996, Bearman proposed that logical relationships between electronic records be documented at the item level through metadata. He wrote that physical aggregations are not necessary, and not desirable for electronic records. "It will be both more efficient and less expensive to control and describe records at the item level from the moment of their creation than it is to try to carry over into the electronic environment the methods of the paper world."¹⁸⁰ Therefore, he proposes a network model of multiple relations obtained through metadata categorization at the item level.

Bearman's theories find many concordances with Hurley's. When Hurley analyzes relationships in records, he distinguishes between logical hierarchies (used

¹⁷⁸ Chris Hurley, *What, If Anything, Is A Function?*, «Archives & Manuscripts», 21 (1993), n. 2, p. 211.

¹⁷⁹ David A. Bearman – Richard H. Lytle, *The Power of the Principle of Provenance*, «Archivaria», 21 (1985-1986), p. 19.

¹⁸⁰ David A. Bearman, *Item Level Control and Electronic Recordkeeping*, «Archives & Museum Informatics», 10 (1996), n. 3.

by the bibliographer and taxonomist) and the contingent approach to hierarchy in recordkeeping. He believes that a taxonomic structure is a true hierarchy: it is logical; it is timeless. Each subordinate entity is part of a higher entity, and cannot be assigned elsewhere. In contrast, the taxonomies of recordkeeping are not truly hierarchical. The relationships are not logical, they are contingent, which means that they are unpredictable, dependent on or conditioned by many circumstances. Moreover, they are time-bound. This happens because recordkeeping taxonomies cannot predict what is yet to happen, as recordkeeping involves documenting what actually happened (instead of what should have happened). Furthermore, “the relationships an entity has at the time it is used may be different from the relationships it had when it was created and both must be documented.”¹⁸¹ It follows that a relationship is never implicit in an attribute; as a consequence “anything can be related to anything else and usually is.”¹⁸²

Hurley continues by saying that true taxonomies are used in recordkeeping, and this error lies in assuming that a recordkeeping hierarchy can be dealt with using the tools and concepts of information management (which focus on discovery) rather than recordkeeping (which emphasize evidence). Paper recordkeeping relates records in sequences, based on business processes, to establish relationships between records and, therefore, to provide evidential value. But business classification schemes are usually developed and applied using logical taxonomies, not contingent ones. The problem this creates is that, in modern electronic records management systems, folder structures do not make and keep robust evidential sequences in records. Records need to be connected with other records through contingent sequences, as electronic records belong to more than one series or sequence (simultaneously, not just in succession). This aspect is linked to the concept of multiple provenances proposed by Scott to solve the problem of changing records ownership through time.¹⁸³ For Hurley, “neither the records nor their provenance are

¹⁸¹ Chris Hurley, *Relationships in Records*, Monash University 2001-2004, p. 11.

¹⁸² Ivi, p. 40.

¹⁸³ Terry Cook writes how Scott also considered that “the traditional archival assumption of a one-to-one relationship between the record and its creating administration was no longer valid. He also demonstrated clearly that administrations themselves were no longer mono-hierarchical in structure or function, but ever-changing, complex dynamisms, as were their record-keeping systems. He therefore developed the Australian series system approach as a means for describing multiple interrelationships between numerous creators, and numerous series of records, wherever they may be on the continuum of records administration: in the office(s) of creation, in the office of current control, or in the archives ... In effect, Scott has moved archival description from static cataloguing

related logically.”¹⁸⁴ For this reason, a classification structure based on pre-determined logical relations is inefficient.

According to Hurley, multiple relationships have also existed in paper recordkeeping processes, where a selected, exclusive and imposed view was applied to the myriad evidential sequences left by business transactions. Currently, electronic recordkeeping enables the preservation of more of these sequences. In this sense, Hurley rethinks the distinction between recordkeeping processes and business processes. The basis of records serialization/sequencing is not the recordkeeping process. In reality the recordkeeping process reproduces the business process, giving form to relationships between the documentary detritus of a business process. In electronic records management, “automated business processes have the potential - not yet fully realised - to document relationships between objects/documents so the need for separate recordkeeping processes will fade away.”¹⁸⁵ Automated mechanisms and methods to establish context and records relationships in object-oriented systems through metadata¹⁸⁶ are the materialization of Hurley’s theories. He also pays particular attention to terminological control for naming business functions/entities, which makes the use of supporting thesauri of terms a means of classification and, extensively, of recordkeeping. Therefore, automated records metadata categorization with the support of controlled vocabularies is considered by Hurley the basis for electronic records management.

Similarly, Shepherd and Yeo think that classification can be enhanced exploiting the functionality of computers; that is, by avoiding the arrangement of records in folders. More flexible and faceted classification can be obtained through the use of contextual metadata from an authority file listing the various functional levels of an entity. In this way, “any aggregated record of a particular process or activity can be assembled on demand in response to a user’s search. The record

to a dynamic system of multiple interrelationships.” Terry Cook, *What is Past is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift*, «Archivaria», 43 (Spring 1997), p. 38-39.

¹⁸⁴ Chris Hurley, *Relationships in Records*, Monash University 2001-2004, p. 11.

¹⁸⁵ Ivi, p. 40.

¹⁸⁶ HERO (Hurley’s Enduring Recordkeeping Object) functions within a system as the validation or source entity/object for some recordkeeping metadata. It is based on the results of the SPIRT Recordkeeping Metadata Project (<http://www.infotech.monash.edu.au/research/groups/rcrg/projects/spirt/about.html>) and assumes an object-oriented technological environment of the kind presaged by David Bearman (BEARMEOs: Bearman’s metadata-encapsulated-objects. (Accessed on 31/01/2017).

series becomes virtual, as it is derived purely from metadata applied at item level.”¹⁸⁷ Therefore, thesauri, authority files, and other controlled vocabularies are considered classification systems or indexes. In Shepherd and Yeo’s opinion, they simplify the process of records categorization, allowing records multiple relations and random aggregations, depending on the faceted search.

More recent contributions in the Spanish context are along the same line. Delgado Gómez believes that mono-hierarchical classification schemes reduce the possibility of polysemous relations. Inspired by Hurley’s ideas, he understands classification as the activity that brings intellectual order to records systems, independently of the physical record aspect in the digital world. Classification is not placing records into electronic boxes or folders. In the words of Delgado Gómez, few things have done as much harm to electronic records management systems as the illustrative and false image of a virtual folder, in which the also virtual records are saved.¹⁸⁸ Classification does not consist of putting things within others, but of establishing multiple relationships between those things. This model seems to make more sense in electronic systems, and can be easily exported to analogue records. Delgado Gómez proposes a classification system by which activities, records and records creators are classified simultaneously from different points of view. This eliminates the limitations of a hierarchical records classification scheme, and satisfies both information retrieval and the need to ensure that records remain the authentic evidence of activities by providing an enriched context. Three instruments are needed to accomplish this: a thesaurus of functions, a thesaurus of agents (records creators), and a thesaurus of series. The functional records classification scheme is substituted by a thesaurus of functions, which establishes relationships (hierarchical, sequential, of ownership, etc.) between functions and activities. This allows that a record to be simultaneously related to multiple activities. The other tools that are needed to link records to classes are 1) a thesaurus of agents, that defines which creator unit has generated the records in a given period; and 2) a

¹⁸⁷ Elizabeth Shepherd - Geoffrey Yeo, *Managing Records. A Handbook of Principles and Practice*, London, Facet Publishing, 2003, p. 96. Quotation from: Fiorella Foscarini, *Function-based records classification systems. An exploratory study of records management practices in Central Banks*, cit., 2009, p. 57.

¹⁸⁸ Alejandro Delgado Gómez, *Sistemas de clasificación en múltiples dimensiones: la experiencia del Archivo Municipal de Cartagena, «Tabula» (Innovar o morir: Entorno a la clasificación)*, n. 13, 2010, p. 128.

thesaurus of series, which allows records to be grouped according to the criterion of sharing an activity with other like records.

Serra also thinks that classification is, at the end, assigning metadata to records. He says that a hierarchy is composed of dependent or inclusive relationships. However, the functions, activities and processes of an organization do not only maintain dependent relationships. They cannot always be represented by a mono-hierarchical structure (a process, for example, can belong to more than one function). Instead, a structure shaped as a map of processes multiplies the number and types of relationships that can be maintained between functions, activities and processes. Thus, a process can relate to other processes by continuity (antecedent and consequent processes), by participating in the same activity (even if the types of processes are different: sub-processes or transversal processes) or by the activity content (the subject or who the addressee of the action is). For this reason, the hierarchical structure of functions and activities necessary to identify the series is replaced by a map of processes, which extrapolates the series into a relational perspective. That is, there is no classification scheme as traditionally understood, but the series are derived directly from the map of processes, and in this way, they inherit the hierarchical and transversal relationships of the map. Therefore, the focus is the construction of a records series map as the structural element for the definition and implementation of policies within records management systems. Series are identified through attributes and relationships, such as the process or family of processes to which they belong and the actor or agent (records creators) involved in the process. In addition, to each records series is associated a retention period, access privileges, etc.¹⁸⁹ Obviously, this solution can be applied in realities in which proceduralized activities or processes are available.

Further contribution on the poly-hierarchical and faceted classification techniques is made by Barbadillo.¹⁹⁰ He thinks that these methods have not been applied, in a strict way, to the archival field due to the complexity of the administrative organizations and functions. Only in some cases are a small auxiliary number of facets used to establish uniform partitions among all classes [This is the case, for example, of the common index proposed by De Felice or the uniform and

¹⁸⁹ Jordi Serra Serra, *Una interpretación metodológica de la norma ISO 15489 para la implantación de un sistema de gestión de documentos*, in *Jornadas Ibéricas de Archivos Municipais: Políticas, Sistemas e Instrumentos*, 4 a 5 de junho de 2013, Universidade Lusófona, p. 1-11.

¹⁹⁰ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 21-25.

specific subdivisions introduced by Roberge, as it will be explained later]. Barbadillo points out that the limitation posed by mono-hierarchical systems, where an archival unit can only belong to a series, can be overcome to some extent by developing poly-hierarchical systems, which use parallel classification schemes. For example, it is possible to construct separate functional and organic schemes to classify the same series from different viewpoints. The use of various classification structures (with several facets or categories) is common in other disciplines, as they multiply the access points. Barbadillo mentions the classification scheme proposed by Páez García for the archives of the Regional Government of Andalucía, in which there is a combination of organic and functional records classification schemes, whose codes are juxtaposed according to the information retrieval needs.¹⁹¹

Another approach to classification, the “big bucket” strategy, is mentioned by Susan Hart when she describes the concept of records classification in the *Encyclopedia of Archival Science* (2015). Hart defines “big buckets” as “the concept of using a few or several categories to cover a large group of records that share a retention schedule and some other features, as an alternative to assigning multiple specific classification codes.”¹⁹² This strategy simplifies records retention schedules by consolidating record types related to the same business function or process, and with similar retention requirements, into bigger retention buckets or records series. With fewer buckets resulting in fewer retention choices, users and auto-categorization tools are more likely to classify information consistently. In fact, Miller affirms that big buckets increase the classification accuracy of machine-driven classification software. This auto-classification capability enables the software to read the content of a target e-mail or document, understand the subject of the document, then classify it by selecting the retention category that most closely matches the document subject. All this happens without any involvement from the user.¹⁹³

¹⁹¹ Mateo Antonio Páez García, *El cuadro de clasificación integrado: normalización de la clasificación archivística*, «Revista PH», 47 (2004), p. 084-095.

¹⁹² Susan Hart, *Entry: Records Classification*, in *Encyclopedia of Archival Science*, edited by Luciana Duranti and Patricia C. Franks, United States of America, Rowman & Littlefield, 2015, p. 332.

¹⁹³ Bruce Miller, *Strategies for Improving Electronic Recordkeeping Performance*, «ARMA International's Hottopic» (Trimming your Bucket List: An Approach for Increasing Retention Compliance) (Supplement to *The Information Management Journal*), 2008, p. 9.

Montaña identifies the potential pros and cons of big bucket retention schedule categories. Large buckets may mean long retention periods because the entire bucket gets the longest retention period applicable to any single record within it; it also means larger volumes of records and data to manage, which increases the difficulty of finding records, and therefore creates the need for other retrieval tools. Consequently, there is a misperception about using big buckets to help organizations avoid the need for granular classification. According to Montaña, “Organizations using big buckets don’t avoid that, they simply do it someplace other than the retention schedule. If they don’t, they can’t locate their records when they need them.”¹⁹⁴ He adds that smaller buckets reduce retention periods, but this comes at the cost of additional complexity and length for the retention schedule. There are also potentially more errors in classification because users have more choices to make when classifying a record. Montaña remarks that big buckets are not the best solution for every situation. “Many organizations will decide that for at least some of their records, big buckets will not yield acceptable results, and big buckets will yield to small buckets or a mixture of big and small buckets.”¹⁹⁵

Hart affirms that big buckets are mostly appropriate for low-value records (non-official business records) that do not document significant actions or decisions, but are needed for reference purposes for a few months or years (such as, working records and records of ephemeral content). Most e-mail correspondence, project documentation and reference materials would be eligible for these big buckets, if the buckets are keyword searchable. However, big buckets cannot obviate the needs for more detailed management and retrieval tools and for a function-based classification system that places these records in the context of their creation, showing their relationship to other records and to electronic systems and the data they contain.¹⁹⁶

These new approaches to records classification are discussed by several authors. For example, the multidimensional approach and the use of a non-hierarchical, faceted classification, mostly advocated by authors of the Anglo-Saxon archival community, is seen as questionable by archivists from the European

¹⁹⁴ John Montaña, *Legal Implications for Using Big Buckets*, «ARMA International’s Hottopic» (Trimming your Bucket List: An Approach for Increasing Retention Compliance) (Supplement to *The Information Management Journal*), 2008, p. 14.

¹⁹⁵ *Ivi*, p. 15.

¹⁹⁶ Susan Hart, *Entry: Records Classification*, in *Encyclopedia of Archival Science*, cit., 2015, p. 332.

tradition, especially among Italians. Fiorella Foscarini, in her doctoral dissertation on function-based records classification systems, asserts that this approach exposes to serious risk one of the fundamental records characteristics, which is the necessary and determined nature of their relationships. The creation of virtual files on demand, based on contingent requirements, introduces uncertain, accidental and artificial relationships that should not replace the fixed or stable arrangements (to be maintained stably) that provide evidence of the way records have originally accumulated in the course of business.¹⁹⁷ Lodolini also remarks that a stable (and unique) relationship between the record and the function or activity performed is needed in order to know which records were used to carry out a specific administrative process and in which order records were produced or acquired by those responsible for the process.¹⁹⁸

Maria Guercio reflects about the characteristics of records relationships, and mentions Giorgio Cencetti's theories about the archival bond, its necessity and stability. Records and their reciprocal relationships are persistent and determined in time and space. From this assumption, two essential records characteristics are derived: impartiality and authenticity. The impartiality of records is linked "to the fact that they are not accumulated in an extemporaneous manner, but as essential instruments of practical activities and for purposes of arrangement and use." Records authenticity is connected to the "real need for self-documentation of the creator," who organizes records to guarantee their reliability. Therefore, stable records relationships are considered necessary to guarantee the archives impartiality and authenticity.¹⁹⁹

Furthermore, Maria Guercio expresses perplexity and concerns on the exclusive use of thesauri (albeit referred to functions and activities) for classification purposes. She regards thesauri as an insufficient archival tool, since it lacks an essential functionality that is the capacity of organizing records based on stable relationships. The thesauri provide valuable solutions for the quality of access and search methods, but they should not be used in place of the instruments aimed at

¹⁹⁷ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 227.

¹⁹⁸ Elio Lodolini, *Prefazione*, in *I calzini del Principe Carlo: Titulus 97, I titolari per gli archivi delle università italiane in vigore dal 1° gennaio 2007*, Gruppo di lavoro nazionale sui titolari delle università (Ed.), cit., 2007.

¹⁹⁹ Maria Guercio, *Principles, Methods, and Instruments for the Creation, Preservation, and Use of Archival Records in the Digital Environment*, cit., 2001, p. 250.

ensuring a systematic and orderly records sedimentation process, consistent with the tasks entrusted to the institution and with the workflows followed, unless it is decided not to qualify the specificity of archival sources in terms of provenance and context at the same stage of their creation. It is through a classification that guides the production of files and series that an action of effective control and simplification can be exercised, while the use of thesauri to manage the richness and flexibility of the documentary information makes that the task of managing records and flows exclusively relies on the end-user (the person in charge of the individual administrative process), without even the certainty of a rational and shared creation of files linked to the individual affairs. In this scene, fragmentation and self-referential definition of the connections between records are unavoidable and involve the loss of a common vision of the archive organization.²⁰⁰

Susan Hart also questions the solution of abandoning classification and the creation of files in favour of an exclusively reliance on records metadata. Records maintained without the context of a file or series will lose the original purpose of the record and the relationship it had to other records created for that purpose. “Thus the document is reduced to data with much of its meaning lost forever.”²⁰¹ These aggregations of records created using metadata will mostly have a reference purpose.

Summarizing, there is a dichotomy between traditional and new technical and technological solutions applied to establishing records relationships. Traditions propose to organize records through hierarchical classification structures. This is also reflected in international standards and specifications for records management, such as the ISO 15489, which describes the process of elaboration of a hierarchical classification scheme. More recent international guidelines and specifications have started to introduce new approaches to classification, without renouncing to hierarchical structures. Moreq2010 uses the traditional hierarchical classification model, but also mentions other types of classification, such as the Keyword AAA, a thesaurus with a poly-hierarchical functional classification structure.²⁰²

²⁰⁰ Maria Guercio, *La classificazione nell'organizzazione dei sistemi documentari digitali: criticità e nuove prospettive*, cit., 2016, p. 4-5.

²⁰¹ Susan Hart, *Entry: Records Classification*, in *Encyclopedia of Archival Science*, cit., 2015, p. 332.

²⁰² The recent and updated version of ISO 15489-1:2016 states that business classification schemes may be hierarchical or relational. [However, this expression is not very clear, as relational classification does not exclude hierarchy. Hierarchy is a type of relation].

With the digital revolution, the proliferation of electronic records and the advancement of the communication technologies applied to content management, the need for classification, as well as classification systems and methods, have been questioned in the archival field. Despite this evolution and new solutions offered by current information management systems, classification is still considered an essential archival function in the digital environment, as electronic records (like analogue records) need to be organized according to a model structure that provides the basis for records relations and contextualization. The issue mainly falls on the classification methods and tools to be adopted. Different examples have been presented in this section, from the traditional and mostly accepted functional records classification scheme based on a mono-hierarchical structure (in which associative, non-hierarchical relationships are also contemplated), to more recent systems in which poly-hierarchical, faceted or network structures provide many-to-many relationships to records (these structures privilege associative relationships, even though hierarchical relations may also exist). In these last cases, tools such as thesauri of functions, agents, types of records, series, etc., or rules for establishing types of relations, are used to categorize and provide metadata (attributes) that connect records with information describing the actions surrounding their creation and use.

To conclude, it is possible to affirm that hierarchical relationships are necessary, as well as associative relationships. An archival system includes both, hierarchies in which records series are part of broader categories, and associative relationships in which the semantic connections between archival units and records series are enriched, increasing the perspectives and avenues of access. Records are generated by specific activities, to which they should be necessarily linked. There is always a predominant classification category(-ies) to which the record belong. This categorization should follow an identifiable model structure that provides stable relationships, as the main scope of classification is to guarantee evidence of the records that were used to carry out specific administrative processes. Even if records have more than one parent, further connections to other series, activities and functions are additional features that may be established by the same users when classifying or by the same system through searches.

3.5.3. Types of records classification systems

After analyzing the types of relationships that can be established between records, it is convenient to start studying the classification criteria that the archival field has adopted to group records. Several types of records classification systems have been implemented through the centuries. Analyzing the systems used since the late modern period, it may be observed that in the first half of the 19th century, archival records were mostly classified according to thematic or subject-based criteria inspired by the library field, which in turn were influenced by the Enlightenment movement (and the Encyclopaedia, a Systematic Dictionary of the Sciences, Arts, and Crafts). In the second half of the 19th century, organic-based classification prevailed and, along the 20th century, it started to coexist with the functional approach. They both interacted, in such a way that organic and functional criteria were indistinctly used to elaborate classification schemes.

Though the functional approach was strongly promoted since the 1990s, the idea that records should be classified according to business functions has been described by writers and practitioners of archives and records management for over one century. In particular, several archivists have significantly theorized and recognized function as an important characteristic of records. These were, in the United Kingdom, Sir Hilary Jenkinson and in the USA, Margaret Cross Norton and Theodore Schellenberg. However, all appeared to consider that organizational structure and business functions were coincident.²⁰³ Since the 1980s, there have been significant efforts to develop classification systems based on the records functional nature, as in the case of Raffaele De Felice, who developed in Italy a systematic classification of competences to distinguish archival classification from other types of classification, adopted by other disciplines such as the library and information science. De Felice also identified competence with organizational structure (“competenza-ufficio”),²⁰⁴ proposing a system in which functional and structural elements coexist. In the 1980s too, Michel Roberge, archivist from the Canadian francophone province of Quebec, developed a universal purely functional classification system based on the functional analysis of administrative records,

²⁰³ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 37-38.

²⁰⁴ “La competenza primaria (che è anche competenza-ufficio) [...] l’organo o ufficio amministrativo [...]” Raffaele De Felice, *L’archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 42.

regardless of the organizational structures creating the records.²⁰⁵ More recent archival theories consider that purely functional classification does not work well, as it is a too abstract approach, unable to capture the ways in which work is carried out in offices, mostly because not all activities behave as a structured and repetitive process. As Fiorella Foscarini points out, there are human areas of knowledge, such as academic research, teaching, or artistic performance, which have the characteristic of being creative and unpredictable, so the relevant activities do not follow any preset linear or cyclic sequence of steps.²⁰⁶

Although the functional approach to records classification is greatly promoted, it is not clear that it is universally accepted. For example, the standard published by ARMA International²⁰⁷ for the implementation of alphabetic, numeric and subject filing systems provides functional classifications (Structured Functional Filing Systems) as a variant of classifications by subject (Subject Filing System Arrangements) and only as one possibility among others.²⁰⁸

In conclusion, functional classification is generally proposed by archival theory as the principal means of managing records. However, its application is inhomogeneous and uneven everywhere for several reasons: 1) the concept of function is not thoroughly understood by practitioners,²⁰⁹ nor are the nature and purpose of classification consistently stated throughout the literature;²¹⁰ 2) other concepts, commonly used together with function as criteria to establish classification levels or divisions, such as competence, activity, action, transaction, process, procedure, etc., are similarly not uniformly defined; thus, they are used interchangeably, creating incoherence or inconsistencies in classification schemes; 3) the lack of empirical studies on how all these elements interrelate, especially how

²⁰⁵ Ángel Montejo Uriol, *La clasificación de fondos archivísticos administrativos*, cit., p. 55.

²⁰⁶ Fiorella Foscarini, *La clasificación de documentos basada en funciones: comparación de la teoría y la práctica*, «Tabula» (Innovar o morir: Entorno a la clasificación), n. 13, 2010, p. 42.

²⁰⁷ ANSI/ARMA 12-2005 - Establishing Alphabetic, Numeric and Subject Filing Systems, ARMA International, Lenexa, KS: ARMA International, 2005. [Standard for Records and Information Management, approved as American National Standards Institute (ANSI) standard, 25 January 2005].

²⁰⁸ Javier Barbadillo Alonso, *Clasificaciones y relaciones funcionales de los documentos de archivo*, «Tabula» (Innovar o morir: Entorno a la clasificación), 2010, n. 13, p. 95.

²⁰⁹ In this sense, Hurley (1993) writes “How we guide users (who express their needs in subject terms) to records analysed and described functionally is a problem which will have to be solved once we know what a function is.” He also recognizes that: “In the literature of descriptive practice, functions are routinely nominated as important tools. Yet [...] little has been written about the science or methodology of function analysis.” Chris Hurley, *What, If Anything, Is A Function?*, «Archives & Manuscripts», 21 (1993), n. 2, p. 210.

²¹⁰ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 103.

functions (activities) and competences (offices) should be connected within a classification scheme; 4) all these aspects cause the absence of clear guidance on how to design, implement and maintain a function-based classification scheme.

After this brief introduction to classification systems, a more detailed analysis of their principles and criteria is made.

3.5.3.1 Organic classification

The organic approach to classification encompasses that the series are grouped according to the different administrative divisions or organizational structure of the entity that produce them, reproducing their departments, sections and hierarchical structure, from the basic administrative units to the wider divisions.²¹¹

Schellenberg presents the organization of an agency as an element to be considered in classifying records. Anyhow, he thinks that, even if the “organizational structure provides the basis for major groupings of records,” it is “advisable only in governments whose organization is stable, and whose functions and administrative processes are well-defined.”²¹² At the time of Schellenberg, the organizational structure and functions of an agency were used interchangeably. The perception was that, as the organization of an agency was determined by the function it was assigned, organization frequently corresponded to function.

Even in current days, when a function is carried out by one unit or department in an agency, the boundaries among function and structure are “so blurred that making a distinction for the purpose of describing only the function, ‘abstractly,’ will almost be impossible.”²¹³ Anyhow, organic classification schemes encounter great difficulties to present the organizational variations of an institution. The use of several organic classification schemes according to these variations does not seem advisable.²¹⁴ Therefore, to ensure stable classification and the continuity of archival series despite frequent changes in offices, archival theory recommends to elaborate

²¹¹ “Clasificación orgánica: aquella en la que las series se agrupan de acuerdo con las diferentes divisiones administrativas o la estructura orgánica de la entidad que las producen, reproduciendo sus departamentos, secciones, unidades... y su estructura jerárquica, desde las unidades administrativas básicas hasta las divisiones más amplias.” José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 113.

²¹² Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 59.

²¹³ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 31.

²¹⁴ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 26.

classification schemes based on the functions of the institution, and not on its organizational structure.

3.5.3.2 Functional classification

The functional classification system is defined by means of the functions assigned to an institution. The archival theory states that as functions are more permanent than organizational structures, they allow building durable and solid records classification schemes.

According to Schellenberg, function should be taken into consideration when developing a classification scheme for public records. The broadest or primary classes are based on the major functions of an agency; the secondary classes on the activities; and the most detailed classes on transactions pertaining to persons, corporate bodies, places or topics. The latter should correspond to individual file units, or aggregates of file units. Tertiary classes between the secondary classes and the individual file units can be created, if necessary, to group the file units in relation to areas, classes of persons, etc.²¹⁵

Schellenberg has been the inspiration of many subsequent theorists and practitioners. In fact, similar considerations are made by Cruz Mundet, who defines functional classification as the one in which the elements that are taken into account to classify records are the functions of the entity. He follows a bottom-up approach to identify the elements of a hierarchical or pyramidal records classification scheme. Starting by identifying the processes or procedures that originate records, these are grouped in series, which are gathered in turn under broader classes that cover all activities related to the same function. Finally, these functions are grouped into broader classes, derived from the lines of action of the entity. Therefore, the major or broader classes are based on actions, the secondary classes are based on the functions, and the elementary classes or documentary series include files and other records aggregations which are the result of each process.²¹⁶

In these two descriptions of functional classification, the criteria that should be taken into consideration to group records are differently proposed. While Schellenberg states that the primary classes are established on the basis of the major

²¹⁵ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 59.

²¹⁶ José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 113.

functions of an agency, the secondary classes on the basis of activities, and the most detailed classes are established in relation to transactions, Cruz Mundet states that the primary classes are based on actions, the secondary classes on the functions, and the elementary classes on the activities and processes. The apparent lack of coherence in these two propositions may not be considered a problem, if the levels of subdivision are established in a consistent manner. Anyhow, the main issue resides on how to define, identify and differentiate these different conceptual criteria (actions, functions, activities, transactions, processes, procedures, etc.) to establish the classification partitions, as the archival community often makes an imprecise use of them.

De Felice (1988) proposes a systematic classification by competence, which is defined as the powers, duties, faculties and tasks entrusted to a natural or legal person. The classification by competence is developed through the division of a primary competence into smaller conceptual partitions up to the lowest subdivision, in which files (thus, business/transactions, “affari” in Italian) are located. Partitions (classes, subclasses, categories, subcategories, etc.) reflect the specific differences of a common characteristic, which is taken as a divisional basis.²¹⁷

Even if a functional approach to classification is widely accepted, neither the concept of function nor how to analyze what an organization does is thoroughly explained in the archival theory. The design, implementation and maintenance of a functional classification scheme lack a shared and established methodology.²¹⁸ In this way, the construction of functional records classification schemes presents more difficulties than the development of organic ones and is more vulnerable to subjective criteria.

3.5.3.3 Organic functional classification

The organic-functional approach is a hybrid system in which both criteria, organizational and functional, are used to classify records. Schellenberg mentions that “records may also be grouped on both an organizational and a functional basis

²¹⁷ Raffaele De Felice, *L'archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 29.

²¹⁸ Fiorella Foscarini, *La clasificación de documentos basada en funciones: comparación de la teoría y la práctica*, cit., 2010, p. 54.

by their division into series.”²¹⁹ In general, in organic-functional classification schemes, primary classes are defined by functions, and secondary classes by bodies.²²⁰ Cruz Mundet gives the example of the French Central Administration, whose classification system was divided into three levels: the first level was functional, the second comprised the large administrative structures and directions, and the third reflected the administrative subdivisions of the previous structures up to the offices.²²¹

Criticisms to this hybrid system argue that it does not follow a fixed and uniform criterion, that is, a clear connection between classification levels and classification criteria. So, when the organic criteria fail, the functional ones are applied, and vice versa.²²²

3.5.3.4 Subject-based classification

Schellenberg advocates for a classification based on organizational and functional criteria. Nevertheless, exceptions to this rule can be made if certain types of records do not “entail positive governmental action,” and are used for reference or information. These can be classified in relation to the topics they refer to and can therefore follow a subject classification. Schellenberg remarks that the classification of these records should be established pragmatically *a posteriori*, “as experience attests to their need,” and not be forced into a preset scheme.²²³

This classification criterion complies better with the library field. “File headings that are derived from a purely logical analysis of the topics comprising a field of human knowledge are comparable to those under which library materials are classified.”²²⁴ This system is not easily adapted to archival holdings, as records are classified based on their transactional provenance. In fact, since the second half of

²¹⁹ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 60.

²²⁰ César Martín Gavilán, *Principios generales de organización de fondos archivísticos. Clasificación y ordenación de documentos. Cuadros de clasificación*, 2009, p. 7.

²²¹ José Ramon Cruz Mundet, *Manual de Archivística*, Madrid, Fundación Germán Sánchez Ruipérez, 1999, p. 247.

²²² Mateo Antonio Páez García, *El cuadro de clasificación integrado: normalización de la clasificación archivística*, cit., 2004, p. 084-095.

²²³ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 62.

²²⁴ Ivi, p. 61.

the 19th century the archival theory does not recommend the use of this classification approach.

3.6 Elements of a records classification and filing scheme

3.6.1 Definitions

According to Schellenberg, the functional sequence of any organization is composed of several elements: the competences assigned to an organization, and the functions developed by its bodies, which are materialized through activities and transactions.²²⁵ Similarly, Heredia Herrera proposes the following sequence of elements to be taken into account in records classification: competence – function - activity/process - action/transaction (Figure 4).²²⁶

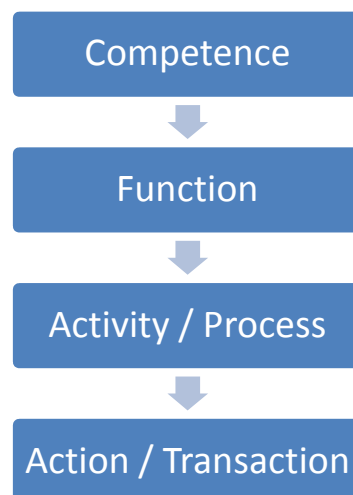


Figure 4: Chain of elements of a records classification scheme following Heredia Herrera's proposal

This sequence of elements is generally considered when defining the structure of a records classification scheme. Functions/activities determine the structure of classes. Actions and transactions define the file units where records are filed.

Before starting to analyze the different authors that have theorized on how these elements interrelate for constructing records classification schemes, definitions of the aforementioned elements are given to better understand the way in which this sequence may be formed.

²²⁵ José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 65.

²²⁶ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 72.

Competence

Competence is defined as the powers, responsibilities, or assignments entrusted in an exclusive way to a public body to resolve issues concerning a particular matter.²²⁷ In this sense, competence is understood as the subject or field of action assigned to an entity.

In the same line, De Felice defines competence as the powers, duties, functions, obligations, etc., that any public body exercises under a legal and regulatory framework.²²⁸ In De Felice's view, competence is the fundamental element on which records classification is based. Penzo Doria believes that competence corresponds to the function performed in a defined time period by an office, a section or unit of an organization. For example, the function of student registration is the competence of the Students' Secretariat in a University. Therefore, while function is an abstract and logical element, competence is a concrete aspect, which corresponds to how a records creator is organized through setting up offices and resources to fulfil the job functions. In this sense, Penzo Doria argues De Felice's systematic classification based on competence, as he believes that this system binds records classification to the organizational structure of an entity, and not exclusively to functions.²²⁹ As remarked by Foscarini, functional (sphere of activities) and structural elements (office or individual) coexist in De Felice's system by competence.²³⁰

In synthesis, competence may be defined as the main function(s), sphere of action(s) or subject area(s) assigned to an organization. They are ascribed to one (or more) office(s), as a structure made of human and material resources is needed to materialize and formalize the functions/activities that the organization needs to perform.

²²⁷ "Competencia: Atribuciones encomendadas en carácter exclusivo a un organismo de la Administración para resolver los asuntos referentes a una determinada materia." Subdirección General de Archivos Estatales, *Diccionario de Terminología Archivística*, 2ª ed., Madrid, 1995.

²²⁸ "Competenza: è l'insieme delle potestà, dei doveri, delle funzioni, degli obblighi ecc, che ogni organismo pubblico esercita nell'ambito della legge e dei regolamenti. Rappresenta l'elemento fondamentale sul quale si basa la classificazione della documentazione archivistica." Raffaele De Felice, *L'archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 97.

²²⁹ Gianni Penzo Doria, *La linea dell'arco. Criteri per la redazione dei titolari di classificazione*, cit., 2001, p. 42.

²³⁰ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 27.

Function

Schellenberg defines function as “all the responsibilities assigned to an agency to accomplish the broad purposes for which it was established. Usually these functions are defined in the law or directive that establishes the agency.”²³¹ Similarly, Sabourin describes function as “any high level purpose, responsibility, task, or activity which is assigned to the accountability agenda of an institution by legislation, policy or mandate.”²³²

These definitions are very similar to the ones provided previously for competence. Additionally, the Spanish *Diccionario de Terminología Archivística* defines function as a “homogeneous set of competences that define each of the major fields of administrative actions or public powers.”²³³ The distinction between competence and function is not clear, as they seem synonymous and interchangeable terms. In fact, Duranti observes that “function and competence are a different order of the same thing,” and clarifies the difference among both concepts: “Function is the whole of the activities aimed to one purpose, considered abstractly. Competence is the authority and capacity of carrying out a determined sphere of activities within one function, attributed to a given office or an individual [...] While a function is always abstract, a competence must be attached to a juridical person.”²³⁴

Function is also defined as the “the activities of an organization or individual performed to accomplish some mandate or mission.”²³⁵ Similarly, Sabourin defines function as: “a set or series of activities (broadly speaking, a business process) which, when carried out according to a prescribed sequence, will result in an institution or individual producing the expected results in goods or services that it is mandated or delegated to provide.” In this way, a function is perceived as a set of activities performed in a sequential and repeated manner, as a process.²³⁶

In conclusion, function is the purpose or task assigned to an organization, which is carried out through activities/processes. Function is considered at an

²³¹ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 53.

²³² Paul Sabourin, *Constructing a Function-Based Classification System: Business Activity Structure Classification System*, «Archivaria», 51 (Spring 2001), p. 144. The same definition is given by ICA-ISDF (2007): “Any high level purpose, responsibility or task assigned to the accountability agenda of a corporate body by legislation, policy or mandate. Functions may be decomposed into sets of co-ordinated operations such as subfunctions, business processes, activities, tasks or transactions.” International Council on Archives, *ISDF - International Standard for Describing Functions*, First Edition, Paris, 2007.

abstract level, with a non-specific structure (office or individual) defined for its fulfilment.

Activity

Schellenberg defines activities as “A class of actions that are taken in accomplishing a specific function.”²³⁷ Similarly, DIRKS²³⁸ and BASCS define activities as the major tasks or actions performed by the organization to accomplish each of its functions. BASCS states that activities may occur in a linear or cyclical sequence. Besides, activities encompass transactions, which in turn produce records.

Heredia Herrera defines activity as the division and diversification of a function that is usually regulated by rules of procedures or best practices. It is manifested through a process, thus a sequence of actions that produce a certain result. The phases of this sequence are composed of actions/transactions; and the results or products of this process are records. Heredia Herrera also remarks that the

²³³ “Función es el conjunto de competencias homogéneas que delimitan cada uno de los grandes campos de actuación administrativa o de los poderes públicos.” Subdirección General de Archivos Estatales, *Diccionario de Terminología Archivística*, cit., 1995.

²³⁴ Luciana Duranti, *Diplomatics: New Uses for an Old Science*. Society of American Archivists and Association of Canadian Archivists in association with Scarecrow Press, 1998, p. 90. Quotation from: Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005, p. 180.

²³⁵ Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005, p. 179.

²³⁶ Cruz Mundet (2011) also believes that functions are performed in a systematic and repeated manner; therefore there is continuity over time. He classifies functions as follows:

- *Explicit functions*. When one or more units or individuals exist to carry them out.
- *Implied functions*. When they are not located in a specific unit of the organization structure.
- *Main functions*. Aimed at achieving the primary or main objectives of the organization.
- *Complementary functions*. Those whose development leads to achieve secondary objectives.
- *Governing and executive functions*. Two aspects can be distinguished in each function:
 - o Governing aspects, which relate to the formulation of objectives, programming the results to be achieved, control over work, coordination of resources and activities, and allocation of tasks and responsibilities.
 - o Executive aspects, which relate to the development of operations necessary to obtain results from the use of materials, equipment, human resources, data and information.
- *General functions*. They concern all units or individuals in the organization.
- *Management functions*. They are inherent and common to all organizations: planning (determining the plan of action, define what is to be done), organization (structure and integrate activities and resources to achieve goals efficiently), integration (choose competent people to fill the jobs of the organization), leading (guide the actions of the organization towards the established objectives) and controlling (ensuring progress towards the objectives according to the plan of action).

²³⁷ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 53.

²³⁸ National Archives of Australia, *DIRKS: A Strategic Approach to Managing Business Information, Part 2, Steps A-H*, 2001, p. 8.

documentary evidence of the activity is the records series, and the variations of the activity process give rise to records sub-series.²³⁹

“The activity requires one or more processes and in turn the process is repeated in each of the actions that constitute the activity. In MoReq, the process is first and then the procedure; that is, the design of steps is first, followed by the rules to carry them out.”²⁴⁰ Process and procedure are generally used quite indistinctly. Both are a sequence of actions. However, procedure is a specific process within administrative management. It is a model, a norm, which has to be followed by the sequence of actions constituting an administrative activity. Therefore, administrative procedures regulate the activity and its actions, whose sequence constitute the activity. Procedures are composed of administrative transactions that have to be documented. They help identify the series and delimit the archival unit. Even so, some administrative procedures can be complex and lead to the constitution of more than one series.²⁴¹

In summary, activity is a series of actions aimed at accomplishing the functions assigned to an organization. Activities are performed through a process (a sequence of actions or transactions), which may be regulated by procedures.

Action / Transaction

Action is defined as: 1) “Execution of an act within the framework of a process;”²⁴²
2) All steps in a process which is materialized in a record.²⁴³

In the standard ISDF (International Standard for Describing Functions), action corresponds to transactions. Transaction is defined as the basic unit of a process,²⁴⁴

²³⁹ “El testimonio documental de la actividad es la serie (Expedientes de obras mayores). Las variantes del procedimiento de la actividad dan ocasion a las subseries (Expedientes de rehabilitacion de edificios).” Antonia Heredia Herrera, *Lenguaje y vocabulatio archivísticos: algo más que un diccionario*, cit., 2011, p. 39.

²⁴⁰ “La actividad exige un proceso o varios y a su vez el proceso se repite en cada una de las acciones que constituyen la actividad. En el texto de MoReq, primero es el proceso y luego el procedimiento, primero el diseño de etapas y luego la norma, la regla para llevarlas a cabo.” Ivi, p. 154.

²⁴¹ Ivi, p. 153.

²⁴² “Ejecución de un acto en el marco de un proceso.” Mesa de Trabajo de Archivos de la Administración Local, *Indicadores de gestión para los archivos de la Administración Local*, Valladolid, Diputación Provincial, 2010, p. 44.

²⁴³ “Cada uno de los pasos de un proceso que se materializa en un documento.” José Ramón Cruz Mundet, *Diccionario de Archivística*, cit., 2011, p. 65.

²⁴⁴ Ivi, p. 344.

that is, “the smallest unit of business activity.”²⁴⁵ “Transactions should be tasks, not subjects or record types. Transactions will help define the scope or boundaries of activities and provide the basis for identifying [...] the records that are required to meet the business needs of the organisation.”²⁴⁶ According to Heredia Herrera, a record requires one or more actions, not vice versa, because actions can exist without records, i.e. commercial transactions in the past did not always produce records.²⁴⁷

In some diplomatics studies, transaction is defined as “An act or several interconnected acts in which more than one person is involved and by which the relations of those persons are altered.”²⁴⁸

In synthesis, action is the state or process of performing or acting to accomplish an activity, a function. Action is a broader term than transaction, as transaction is considered the act of carrying out or conducting business, negotiations or exchanges with others.

Figure 5 graphically represents the progressive sequence of the hierarchical relationship existing between the superordinate (broader) and subordinate (narrower) concepts of the chain. Based on the previous definitions, the sequence of elements should be formed in the following way: function - activity/process - action/transaction.

²⁴⁵ Standards Association of Australia, *AS4390 -1996: Records management*, Standards Australia, Homebush, N.S.W, 1996.

²⁴⁶ National Archives of Australia, *DIRKS: A Strategic Approach to Managing Business Information, Part 2, Steps A-H*, 2001, p. 8.

²⁴⁷ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 38.

²⁴⁸ Richard Pearce-Moses, *A Glossary of Archival and Records Terminology*, cit., 2005. From: Luciana Duranti, *Diplomatics: New Uses for an Old Science*. Society of American Archivists and Association of Canadian Archivists in association with Scarecrow Press, 1998, p. 169.

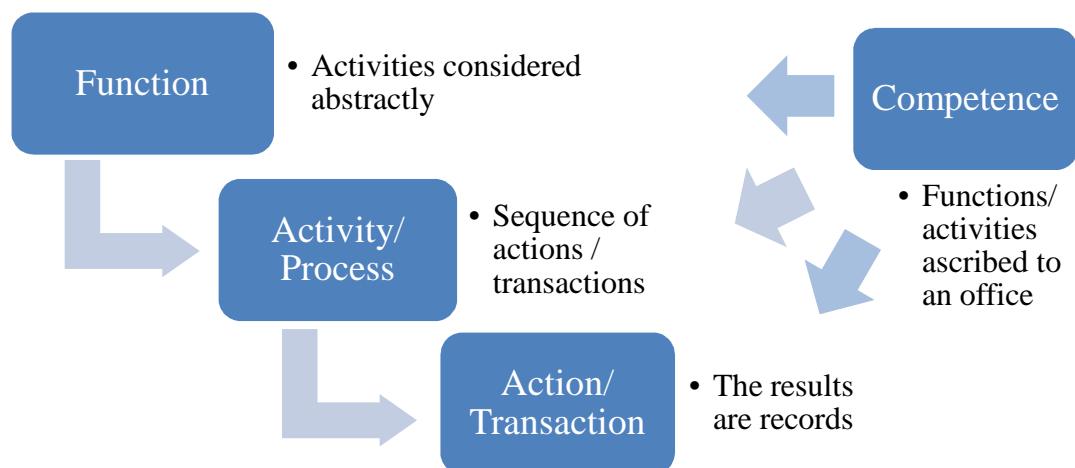


Figure 5: Sequence of hierarchical relationships between the elements of a classification scheme

The actions that an organization undertakes to sustain its work are a sequence of elements nested into one another. These elements fall into hierarchies, from general to more specific aspects up to the materialization of actions into records. Functions are high-level responsibilities or tasks considered abstractly, which are implemented through activities. An activity is manifested through a process, which is a sequence of actions or transactions. An action or transaction results in records.

Competence (functions/activities assigned to an office, called ‘*competenza-ufficio*’ by De Felice) is left out of the hierarchy because it can be placed at any level, or it cannot appear at all. In organic schemes, competence tends to be the primary class (competence - function - activity/process - action/transaction). In the case of pure functional records classification schemes, competence is not considered an element of the chain (function - activity/process - action/transaction). In hybrid schemes, competence may be located at different levels. For example, Duranti proposes the following sequence (function – competence - activity/process - action/transaction): “[...] each functional classification system must have primary classes based on functional areas, secondary classes based on functions, tertiary classes based on competences, categories based on activities (that produce series of

records) and, finally, the reference to the files or other archival units.”²⁴⁹ Páez García proposes the sequence of function - activity/process - action/transaction - competence, as the organic elements should occupy the lowest level of the hierarchy.²⁵⁰ This indicates that the issue regarding the relation of competence with the other elements of the hierarchy is still an unresolved in the building of classification schemes.

To better understand the above sequence of concepts, they are translated to a real case, the institution where this researcher works, ICCROM (The International Centre for the Study of the Preservation and Restoration of Cultural Property). ICCROM is an organization entrusted with the conservation of all types of cultural heritage worldwide. This is its main mandate, which entails the assignment of legal powers, duties and responsibilities. To accomplish this mandate, the ICCROM Statutes foresees five functions or main areas of activity: Training, Information, Research, Cooperation and Advocacy. These are specific or institutional functions that are complemented by general operating functions, i.e. governance, financial administration, management of human resources, legal affairs, etc. If we take one of these latter functions as an example, this will be the sequence of hierarchical relationships that can be established for records classification (Figure 6):

²⁴⁹ “[...] ogni sistema funzionale di classificazione deve avere classi primarie per le aree funzionali, classi secondarie per le funzioni, classi terziarie per le competenze, categorie per le attività (che producono serie di documenti) e infine il riferimento ai fascicoli o altre unità documentarie.” Luciana Duranti, *I documenti archivistici: La gestione dell’archivio da parte dell’ente produttore*, in *Pubblicazioni degli Archivi di Stato: Quaderni della Rassegna degli Archivi di Stato*, 82, Roma, Ministero per i beni culturali e ambientali, 1997, p. 61.

²⁵⁰ Mateo Antonio Páez García, *El cuadro de clasificación integrado: normalización de la clasificación archivística*, cit., 2004, p. 084-095.

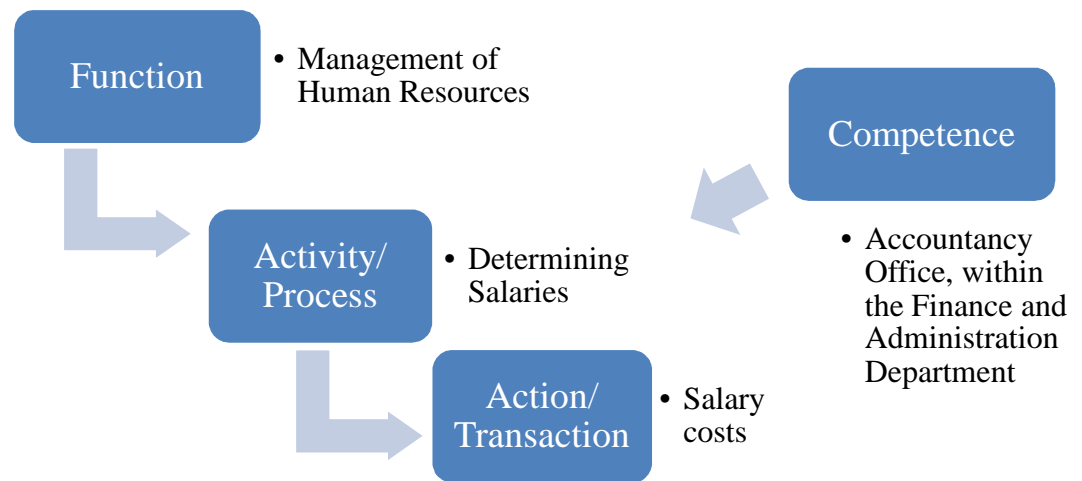


Figure 6: Example of the sequence of hierarchical relationships between the elements of a records classification scheme

The function of Human resources management, which is one of the competences of the Finance and Administration Department, is implemented through several activities, such as Recruitment of personnel, Establishing conditions of employment, Determining salaries, Calculating pension benefits, etc. These activities are performed through several actions or transactions; i.e., within the activity ‘Determining salaries,’ which is the competence of the Accountancy Office, transactions are related to Salary costs, Salary scales, Post adjustments, etc. The transactions undertaken within ‘Salary costs’ produce monthly pay-records. Therefore, ‘Salary costs’ is a records series, organized chronologically by year and month, which contains staff payslips.

The same sequence should be applicable to any of the five main institutional functions: Training, Information, Research, Cooperation and Advocacy. However, it occurs that, except for Information, the other four main functions are implemented by ICCROM all at once through programmes and projects. This means that, for example, a programme on the preservation of audiovisual materials will include projects related to training, research, cooperation and advocacy. Therefore, the four main institutional functions are integrated within the (meta-)function called Activities Implementation. These activities may be programmes, special projects, etc., which are assigned to specific Units or Departments, or may be shared or

collaboratively worked on by different Departments. The programme on the preservation of audiovisual materials, which is the competence of the Collections Unit, constitutes a records series. The specific actions/transactions related to their administration, planning, human and financial resources, implementation, evaluation, and follow-up, are considered sub-series (Figure 7).

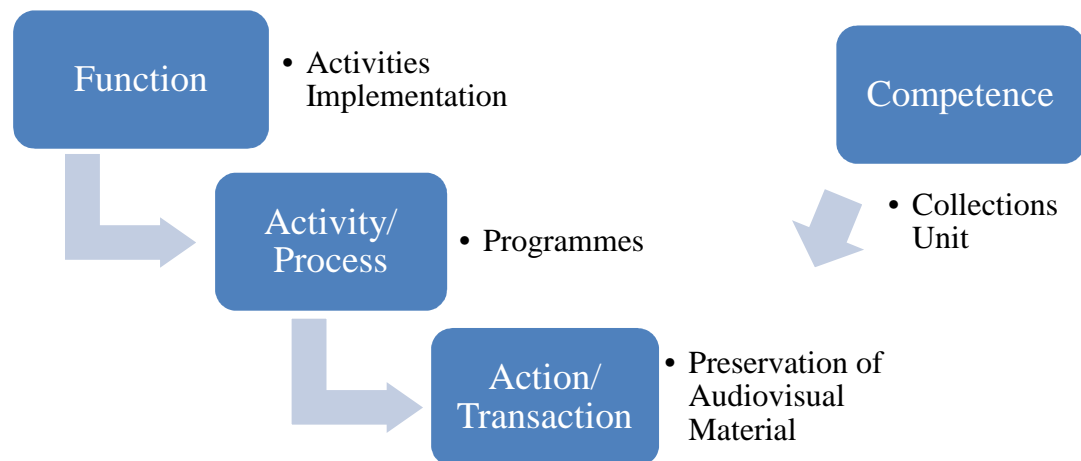


Figure 7: Another example of the sequence of hierarchical relationships

Even if the archival theory presents in a logical and rational way, easily understandable, the functional sequence on how an entity organizes itself to operate and accomplish its mandate, and foresees the flow in which records should be produced and classified, practice confirms that the application of these theoretical principles is difficult and non-homogeneous everywhere. They need to be adapted to the way in which each institution works. The archivist or the designer of the records classification scheme should be able to recognize the different elements composing the scheme. The lack of an established methodology to identify and create relationships between abstract/concrete concepts, such as competence, function, activity, action or transaction and their by-products, which are the records, does not help. Most of the records classification schemes are built in such a way that functional, organic and subject-based categories are mixed, and often the lack of (or the difficulties to establish) clear processes and procedures (with linear sequence of

steps) within institutions determine the creation of contingent and incongruous series/files. To better understand this issue, further analysis of the chain of elements and how theorists have proposed to structure or relate them, is carried out in the next section.

3.6.2 Relationships between the elements

As previously mentioned, the above chain of elements is frequently used to elaborate functional records classification schemes. Several archivists have theorized on this, such as Schellenberg, De Felice and Roberge. These authors, who exemplify different archival traditions, present similarities and also specificities in their theories which deserve further analysis.

3.6.2.1 Theodore R. Schellenberg

Schellenberg identifies three main elements of classification: “the action to which the records relate, the organizational structure of the agency that produced them, and their subject matter.”²⁵¹ He starts by considering action, which may be seen in terms of functions, activities and transactions. Functions “cover all the responsibilities assigned to an agency to accomplish the broad purposes for which it was established.”²⁵² Each function may be broken down into a number of activities, which in turn may be divided into particular transactions. Schellenberg distinguishes two types of activities, which each entity has to perform to accomplish its basic functions:

- a) **Substantive activities**, which “are those relating to the technical and professional work of the agency, work that distinguishes it from all other agencies.”²⁵³ They are concerned with the execution of high specialized activities conferred to an agency, as distinct from the direction and administration of the government programmes.
- b) **Facilitative activities**, which “are those relating to the internal management of the agency, such as housekeeping activities, that are common to all agencies. These are merely incidental to the performance

²⁵¹ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 53.

²⁵² *Ibidem.*

²⁵³ *Ivi*, p. 54.

of the agency’s basic functions.”²⁵⁴ Facilitative activities relate to legal, fiscal, budgetary, personnel, communication, procurement of supplies, transportation, provision of space, and other internal administrative matters of an agency.

Within an activity, whether substantive or facilitative, Schellenberg makes difference between two main types of transactions, policy and operational transactions. “Policy transactions determine courses of action that are to be followed in all transactions of a single class. [...] Operational transactions are the specific individual transactions that are taken in line with policy decisions.”²⁵⁵ Therefore, as it can be observed in Figure 8, Schellenberg proposes a first partition level or primary class of classification based on functions (F); secondary class based on substantive and facilitative activities (A); and tertiary class based on transactions (T), which comprise the individual file units or aggregates of file units. This functional classification model was called the “F-A-T” model, and became a point of reference for the archival community.

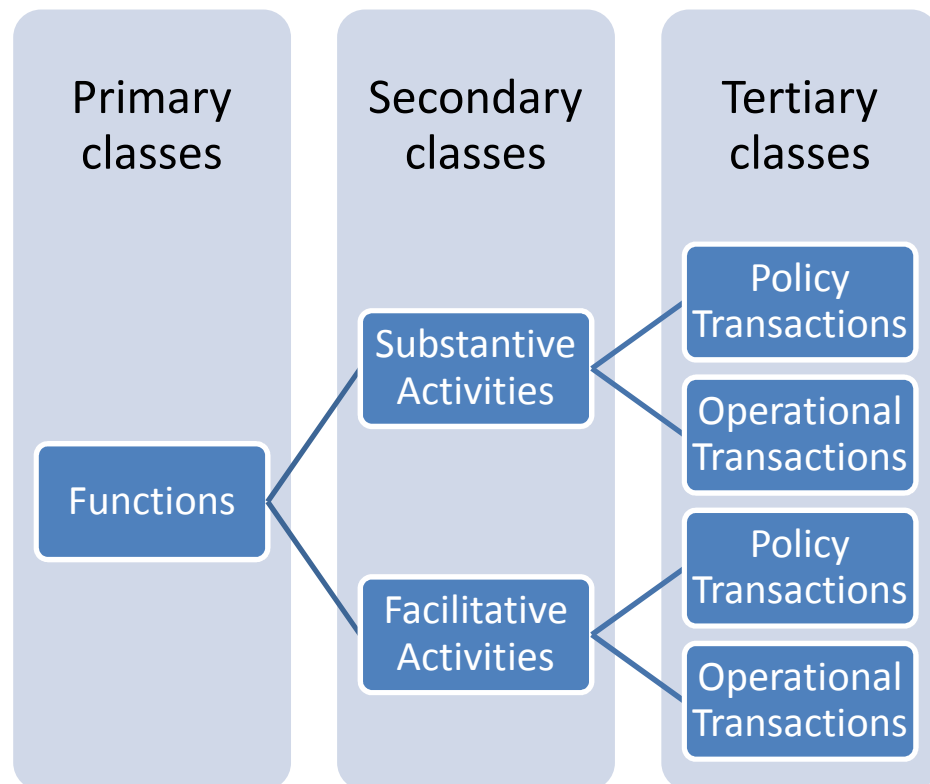


Figure 8: The F-A-T model proposed by Schellenberg

²⁵⁴ *Ibidem.*
²⁵⁵ *Ibidem.*

The influence of the FAT model is visible in the ISO 15489 standard, when describing the development of a classification system.²⁵⁶

3.6.2.2 Raffaele De Felice

De Felice proposes a similar distinction between types of activities. He writes that the activities of an office assume two specific aspects: the first aspect is present in all organizations and refers to organizational and internal activities; while the second is related to the nature and powers of each single institution. Furthermore, under the second aspect, the activity assumes a particular character which is exercised in two ways: a general one for coordinating, directing and promoting the actual work of the organization and, a specific one, through the objective manifestation of its attributions.²⁵⁷

In fact, as observed in Figure 9, De Felice states that the primary competence of a public administration entity determines three aspects of their activities:

- a) **Organizational and operational activities**, which contemplate legislation on the organization and structure of offices and services, recruitment and personnel, financial resources, accountancy management, supply of technical equipment, maintenance of premises, etc.
- b) **General activities of competence**, which is the guide to deal with administrative affairs within a competence entrusted to a body of the public administration. For example, a circular concerning a certain matter that is relevant to several transactions (i.e., a circular on staff special leave).
- c) **Specific activities of competence**, which deals with individual affairs or cases. Each of these is treated within the framework of a competence,

²⁵⁶ The ISO 15489:2001 standard states that “*The structure of a classification system is usually hierarchical and reflects the analytical process as follows: a) The first level usually reflects the business function; b) The second level is based on the activities constituting the function; c) The third and subsequent levels are further refinements of the activities or groups of transactions that take place within each activity.*” International Organization for Standardization, *ISO 15489-2:2001: Information and Documentation – Records Management, Part 2: Guidelines*, Geneva, 2001, p. 9.

²⁵⁷ Raffaele De Felice, *L'archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 356.

which in turn determines also the general activity (i.e., granting of special leave to an employee).²⁵⁸

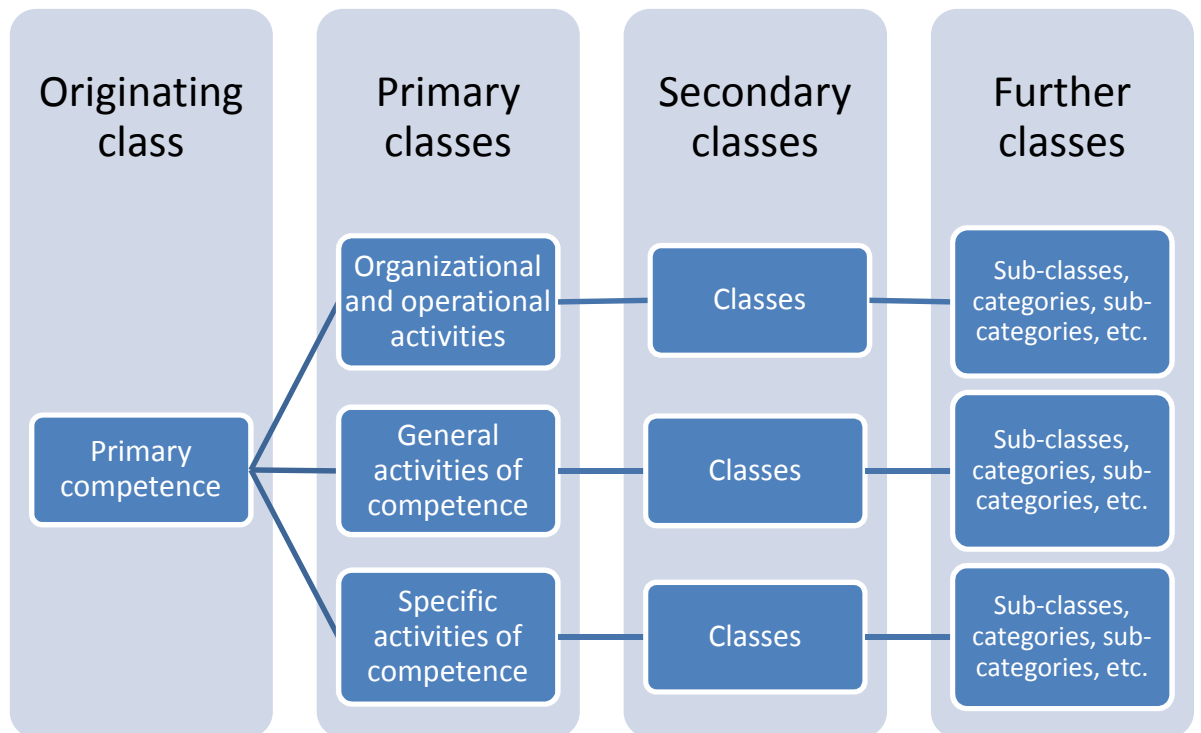


Figure 9: The classification model proposed by De Felice

De Felice’s division of activities and the one proposed by Schellenberg have many similarities: the organizational and operational activities are comparable to Schellenberg’s facilitative activities; and the general and specific activities of competence could be assimilated to the substantive activities. A further parallelism may be done within substantive activities, as general activities (which refer to regulations, planning/organization and studies) are comparable to policy

²⁵⁸ “1) Attività di organizzazione e funzionamento. Contempla la normativa sull’ordinamento de la strutturazione degli uffici e servizi, il reclutamento e l’utilizzazione del personale, i mezzi finanziari necessari, la loro gestione contabile, la fornitura delle attrezzature tecniche, il trasporto di persone e cose, la sede degli uffici, la manutenzione dei locali, l’arredamento, la climatizzazione ecc. 2) Attività generale di competenza. Rappresenta la guida alla trattazione di affari amministrativi in senso generale, propri di una competenza demandata a un organismo della pubblica amministrazione. In tale attività si inquadra, ad esempio, una circolare sui congedi straordinari al personale).3) Attività specifica di competenza. Si concretizza nella trattazione di singoli affari o casi o problemi e ognuno di essi viene trattato nell’ambito di una competenza che, parallelamente, determina anche l’attività generale (ad es. concessione del congedo straordinario all’impiegato Tizio).” Raffaele De Felice, *L’archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 42.

transactions, and specific activities (which refers to works, interventions, supervision) are comparable to operational transactions.

The tripartition of activities proposed by De Felice was meant to be common to all records creators to facilitate interoperability and the identification of creator's most important policy records for purpose of preservation. However, this model involves unnecessary redundancy, as the activities identified under 'general activities of competence' are again repeated under 'specific activities of competence,' where the individual case files are created.²⁵⁹ In this sense, the bipartition model devised by Schellenberg presents a more rational arrangement.

As already stated, similarities between the models can be found at the conceptual level, as distinction between administrative and operational activities is made by both authors (even though the classification elements are organized in different ways: De Felice proposes a tripartition of activities and Schellenberg proposes a bipartite division). The main difference that can be found between the models is the starting point of divisions. De Felice explains how the originating class, which is 'competence' (the primary competence of an entity; can also be called 'Mandate') is always considered to be outside of the divisional levels due to its non-derivative nature.²⁶⁰ Therefore, primary classes are the first divisional level. They are composed of three types of activities: 1) Organizational and operational activities, 2) General activities of competence, and 3) Specific activities of competence. On the other hand, Schellenberg affirms that functions are primary classes, and substantive and facilitative activities are secondary classes. In synthesis, De Felice separates administrative and specialized activities at the first divisional level, and Schellenberg at the second divisional level, which creates some inconsistency in Schellenberg's display of the classification elements (as the division between facilitative and substantive actions should be made at the level of functions; therefore, at the primary class level). In fact, it would be more logical to represent Schellenberg's theory in the following way: 'Action' is considered the originating class; primary classes are substantive and facilitative functions, and secondary classes are activities, which may be subdivided into operational and policy

²⁵⁹ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 23; Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 29.

²⁶⁰ Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 31.

transactions (Figures 10 and 11). Another possibility could be to maintain the distinction between substantive and facilitative activities, as the reason for Schellenberg's bipartition of activities and transactions was to facilitate appraisal operations. However, this last option may excessively break up activities and records aggregations (Figure 12).

If we again consider the example of ICCROM, general operating activities (Governance, Financial Administration, Management of Human Resources, Legal Affairs, etc.), and specific functions conferred to the organization (Training, Information, Research, Cooperation and Advocacy) are distinguished at the first classification level, which corresponds to Schellenberg's level of function. As it may be observed in Figure 11, ICCROM's main sphere of action or competence is Conservation. Among its substantive functions, ICCROM implements activities, which are divided into programmes, which in turn may be subdivided into, for example, training procedures (policy transactions) and specific projects (operational transactions). In the case of ICCROM's facilitative functions, 'Management of Human Resources' contemplates, among other activities, 'Determining salaries,' which in turn produce records related to 'Calculation guidelines' (policy transaction) and 'Salary costs' (operational transaction).

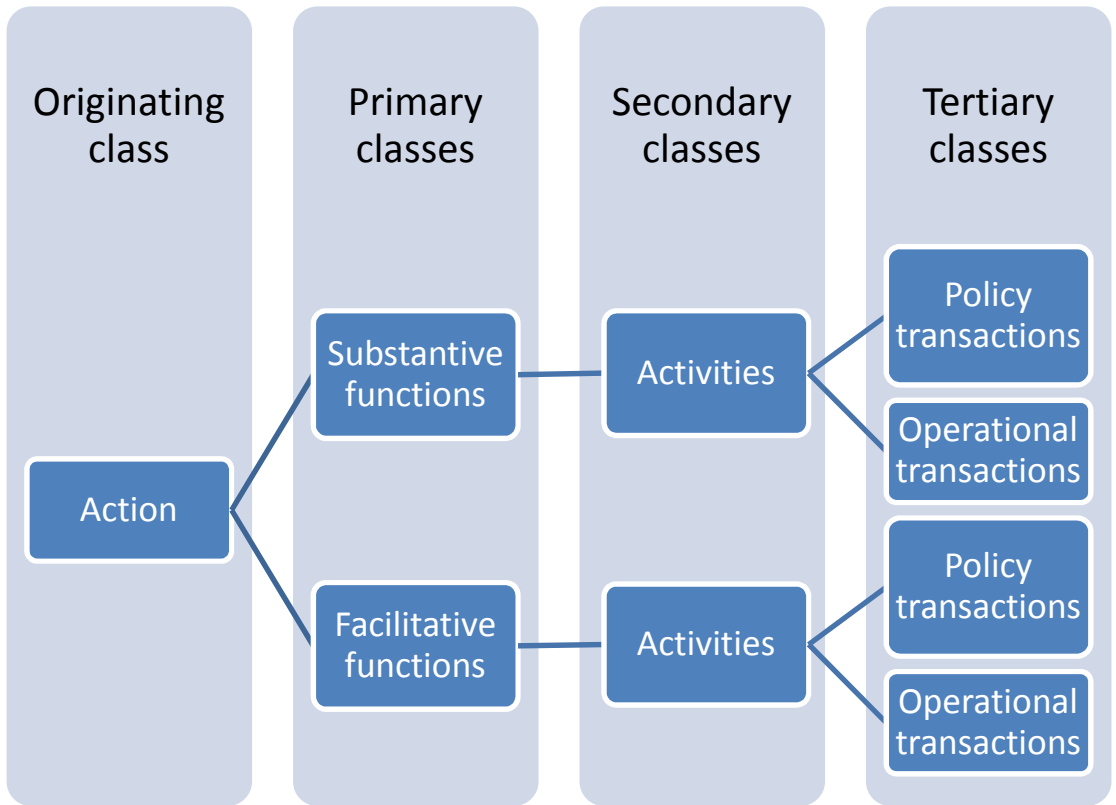


Figure 10: More logical way to represent Schellenberg's theory

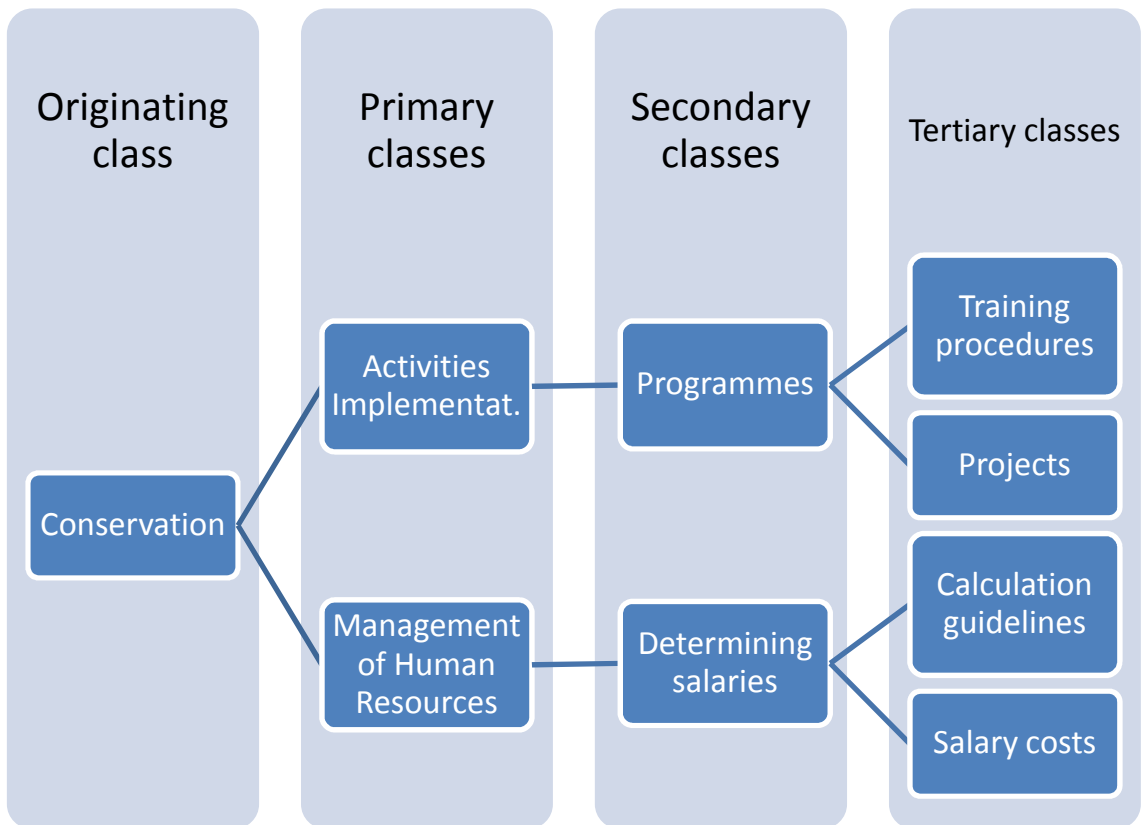


Figure 11: Example of the application of the previous table to ICCROM activities

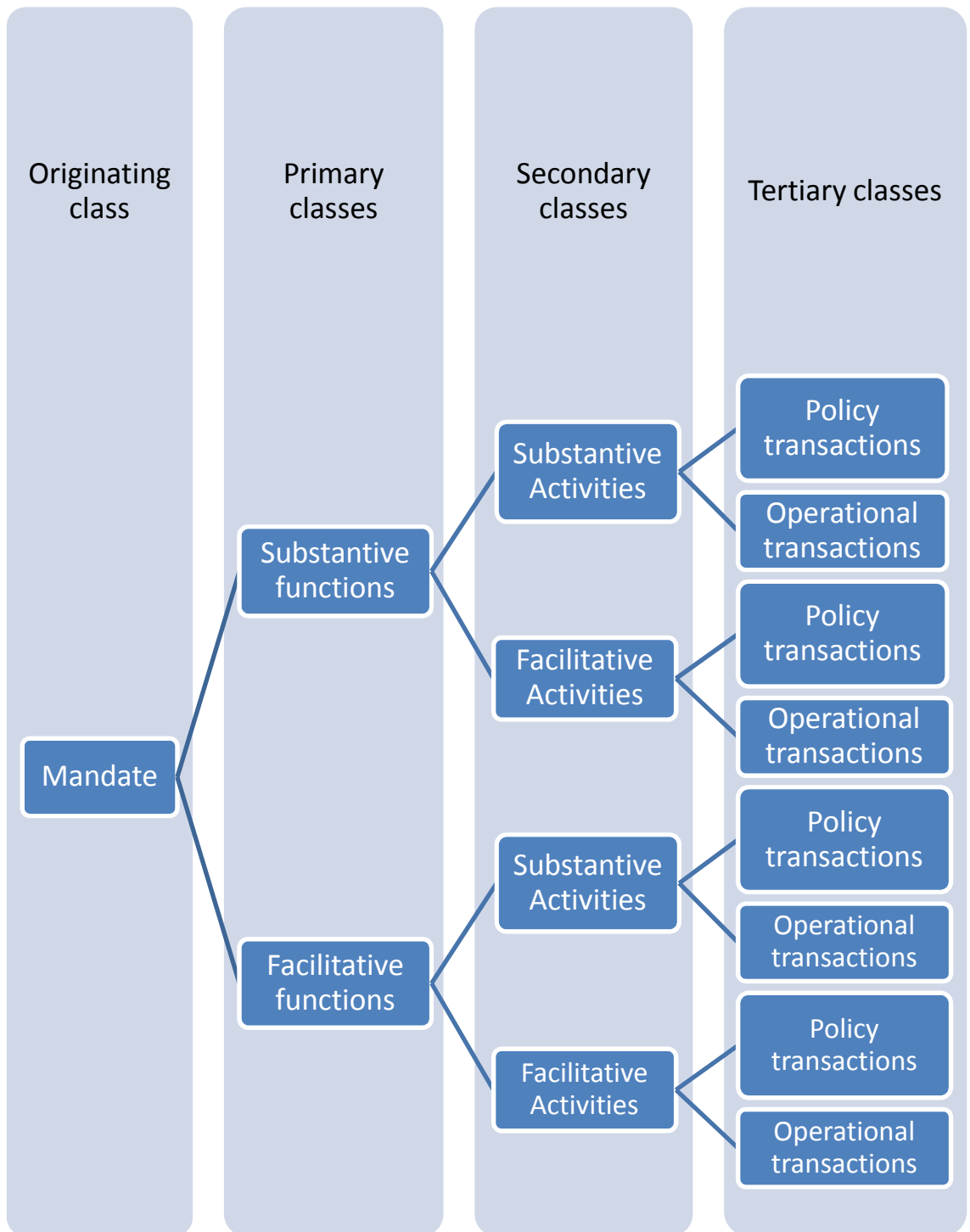


Figure 12: Another way to represent Schellenberg's theory

3.6.2.3 Michel Roberge

Another author that is being analyzed is Roberge, who since 1985 proposes a universal and purely functional classification system, based on a methodology called DFA/ALO™ [DFA = *Domaines–Fonctions–Activités* (Domains-Functions-Activities) / ALO = *Action(s)–Lien–Objet(s)* (Action(s)-Link-Object(s))].²⁶¹ According to this methodology, a classification scheme is structured in seven classification levels (Figure 13). The first divisional level is called categories, and is composed of two types of domains: 1) Internal management domain, which refer to the management of administrative activities that are common to any organization, and produce management records; and 2) Business domain, which relate to the specific objectives, functions, or activities assigned to any organization, and produce operating records.

Domains are combined with the classes, which correspond to the main management and operational functions. The management functions are eight and are common to each organization: 1) Administrative management; 2) Management of communications; 3) Management of human resources; 4) Management of financial resources; 5) Management of information resources; 6) Management of property resources (building and spaces); 7) Management of movable assets and support services; 8) Legislation and legal affairs.

The operational functions are to be defined on an ad hoc basis for each organization, according to methodological guidelines which are included in Roberge's DFA/ALO system. The third level is the sub-classes (sub-functions). The last four levels are represented by the so called divisions (activities and sub-activities): 1) Divisions that differentiate specific activities of each sub-function, 2) Divisions that correspond to sub-activities, 3) Divisions that differentiate articular elements of the activities, 4) Divisions that represent more detailed elements of the specific activities. This classification structure allows splitting these seven levels in three types of additional subdivisions, which are called uniform, specific and nominative subdivisions.²⁶²

²⁶¹ DFA/ALO™ is a proprietary methodology developed by Roberge.

²⁶² Ángel Montejo Uriol, *La clasificación de fondos archivísticos administrativos*, cit., p. 55; Mariano García Ruipérez, *El fondo documental municipal y sus cuadros de clasificación*, in *Cuadro de Clasificación de Fondos. Pilares de la E-administración: Cuadro de Clasificación y Tesauro*, XVIII Jornadas de Archivos Municipales, San Sebastián de los Reyes, 27-28 de Mayo de 2010, p. 171.

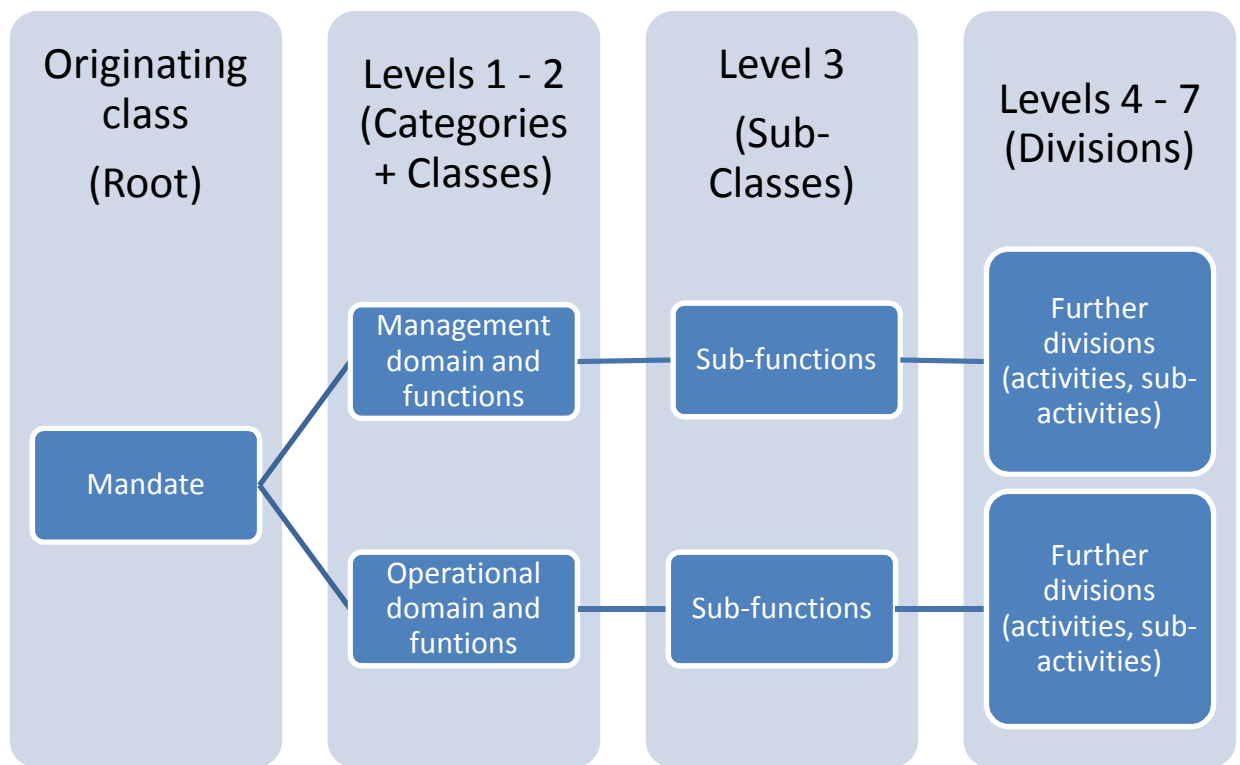


Figure 13: Seven-level structure in Roberge's functional classification system

Roberge's theory is mostly applied in the Province of Quebec, Canada, and also in some geographical areas of Spain, mainly in Universities, Provincial governments, and Municipalities of Catalonia, where Roberge was first invited in the 1990s to lecture about his universal classification methodology. Some authors think that the scheme resulting from the application of Roberge's system is too complex, and users need a good knowledge of the logic behind the classification structure. Besides, they believe that the universality of functional classifications is arguable, since archival holdings are the expression of different economic, social and cultural national realities, so it seems inadequate to classify all the administrative realities of any country, government agency or private entity, as everyone works very differently. It should be perhaps more appropriate to make functional classification schemes of entities with similar legal personality, such as central governments, regions, municipalities, or private entities.²⁶³

²⁶³ Ángel Montejo Uriol, *La clasificación de fondos archivísticos administrativos*, cit., p. 56.

3.6.3 Final considerations

At a first glance, these three theories present common classification principles and criteria, such as the distinction between operational and administrative functions. This approach can also be found in well-known classification systems, such as the one developed in Canada by the Provinces of British Columbia and Nova Scotia, respectively called ARCS (Administrative Records Classification System) and ORCS (Operational Records Classification System), and STAR (Standard for Administrative Records) and STOR (Standard for Operational Records). These systems distinguish between records resulting from common administrative activities (administrative records), and records resulting from the distinct operational functions of each agency (operational records).²⁶⁴

Archival theory in Italy also proposes to create two main primary categories according to the nature of functions: 1) primary and specific institutional functions, and 2) instrumental secondary functions that can be shared by governmental agencies as they relate to common operating activities.²⁶⁵ This bipartition can be proposed as a four division model, as it occurs for the records classification scheme of Italian Municipalities: 1) Primary function (general administration, which includes institutional scope, statutes, regulations, transversal functions), 2) Management functions (governance, management, consultancy), 3) Instrumental and support functions (personnel, legal affairs, financial resources, services, movable and immovable property), 4) Final functions (operational functions within the primary function).²⁶⁶

A further subdivision can be established between policy/management and operational activities/transactions to distinguish policy and core records from administrative and routine records. This distinction established at the creation phase would facilitate records appraisal and selection.

²⁶⁴ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 37-38.

²⁶⁵ Autorità per l'Informatica nella Pubblica Amministrazione (AIPA), *Linee guida alla realizzazione dei sistemi di protocollo informatico e gestione dei flussi documentali nelle pubbliche amministrazioni (GEDOC 2)*, 2000; Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005.

²⁶⁶ Gianni Penzo Doria, *Il fascicolo archivistico: le cinque tipologie e i modelli organizzativi*, «Archivi & Computer» (La nuova generazione dei titolari di classificazione: modelli a confronto), XVII (2007), n. 2-3, p. 22-49; Giorgetta Bonfiglio-Dosio, *Piano di classificazione (titolario)*, Treviso, 2 maggio 2013.

On the other hand, differences may also be observed between Schellenberg and De Felice and Roberge, such as the number of divisional levels. Schellenberg proposes a model of three classification levels, while the other two authors call for a classification structure with a much larger number of levels. This reflects the influence that Dobrowolski exercised on both theorists, as it will be later explained. In the case of De Felice, he proposes an originating class ('competence'), which initiates the levels of division: initial classes are primary classes (activities); and derived classes may be secondary classes (sub-classes), third classes (categories), fourth classes (sub-categories), fifth classes (sections), etc. Any of these derived classes may become the lowest class if it is not further subdivided.

The archival discipline usually corroborates Schellenberg's theory, suggesting that records classification systems are articulated with no more than three levels in order to avoid redundancy of categories and the consequent risk of their superposition and confusion. For example, the Italian theory and practice explain that the first level corresponds to functions or general subjects; the second level to macro-activities for each function; and the third level to a possible further specialization of activities or specific subjects.²⁶⁷ Also the Canadian federal government system, called BASCS (Business Activity Structure Classification System), divides broad domains of government responsibility into basically three levels: (1) function is the highest level of activity denoted by a block title, (2) sub-function is the second highest level of activity denoted by a primary title, and (3) activity, action, or transaction is the next level at the secondary, tertiary, and lower levels of activity or subject. These examples clearly reflect Schellenberg's propositions, which also influenced the structure of classification systems proposed by the ISO 15489, as seen previously.

²⁶⁷ Autorità per l'Informatica nella Pubblica Amministrazione (AIPA), *Linee guida alla realizzazione dei sistemi di protocollo informatico e gestione dei flussi documentali nelle pubbliche amministrazioni (GEDOC 2)*, 2000; Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005; Maria Guercio, *Archivistica informatica: I documenti in ambiente digitale*, Roma, Carocci editore, 2013. According to De Felice, already the Italian Royal Decree of 25 January 1900, n. 35 on "Rules for the registry offices and archives of Central Administrations," (Regolamento per gli uffici di registratura e di archivio delle Amministrazioni centrali) states in its Art. 14 that records are classified following a tripartition model: Incoming records are divided into archival titles considering the main subjects of the administration service. These titles are divided into classes and these can be subdivided in sub-classes. Raffaele De Felice, *Gli archivi correnti delle Amministrazioni centrali*, in «Rassegna degli Archivi di Stato», XXIII (1963), 3, p. 376.

The above principles are widely shared among the archival community. Nevertheless, the analysis and identification of functions, sub-functions, activities, processes, and transactions, generate difficulties, as does their organization within a structure of relationships.

3.7 Methodology for the definition and design of a classification and filing scheme: state of the art

3.7.1 Principles

Some methodological principles for the elaboration of records classification schemes can be found in the archival literature, even if not all principles are shared by archivists, as opposite opinions may also be found. For example, Cruz Mundet²⁶⁸ presents the following principles:

Delimitation

The objective of a classification scheme is to enable the organization of records of any type and period, generated, accumulated and preserved by a natural or legal entity. This means that each entity will have its own ad hoc and differentiated classification scheme. Not all authors agree with this affirmation. Páez García thinks that records aggregations should be organized following a hierarchical structure that can be applied to any competence or entity in a Public Administration. It cannot, therefore, be an ad hoc records classification scheme.²⁶⁹

Uniqueness

As records time and age limits are not defining characteristics of an archive structure, a classification scheme is designed to classify all records regardless of their chronology, from the oldest to the newest.

Stability

In order to give maximum stability, the classification scheme must be based on the functions of the entity, whose continuity over time allows for a more secure and stable classification.

²⁶⁸ José Ramón Cruz Mundet, *Archivística: Gestión de documentos y administración de archivos*, cit., 2012, p. 223.

²⁶⁹ Mateo Antonio Páez García, *El cuadro de clasificación integrado: normalización de la clasificación archivística*, cit., 2004, p. 024.

Simplification

The simplicity of the scheme guarantees its universality and flexibility. To adopt it in all possible cases, adequate and accurate divisions will be developed; those whose presence is essential and unavoidable to classify the whole of records, without going into excessive subdivisions. Schellenberg also pays attention to this aspect and remarks that “Records should not be overclassified. The normal tendency, in developing a classification scheme, is to overclassify rather than to underclassify.”²⁷⁰

Páez García²⁷¹ adds more principles to the previous general ones, such as

Integration of classification elements

The classification should be based on the integration and interaction of the three basic classification criteria. It must represent the link between organs, functions and subjects in a flexible way to easily move from one criterion to another, or to combine them. This principle is not shared by those archivists who advocate for an exclusive functional-based classification scheme.

Progressive growth

It must allow the growth and evolution of the scheme without any disturbance. The addition of new series should not imply amending the hierarchy, numbering or coding already given to a series, unless it is strictly necessary.

Schellenberg²⁷² also enumerates a series of classification principles when he mentions the rule by which public records should be classified in relation to function. In addition to the simplification principle, he notes the following:

Consistency

Subdivision levels in classification schemes need to be consistent. “Thus, if the primary division is by functions, all headings at that level should be functions; if the secondary division is by activities, all headings at that level should be activities.”²⁷³

This is a logical and coherent principle but, in practice, classification schemes tend

²⁷⁰ José Ramón Cruz Mundet, *Archivística: Gestión de documentos y administración de archivos*, cit., 2012, p. 223.

²⁷¹ Mateo Antonio Páez García, *El cuadro de clasificación integrado: normalización de la clasificación archivística*, cit., 2004, p. 024.

²⁷² Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 63-64.

²⁷³ Ivi, p. 63.

to mix structures, functions, activities, or subjects and records types at the same level.

Distinction between facilitative and substantive activities

As previously mentioned, Schellenberg considers it desirable to separate headings for facilitative and substantive activities.

Distinction between policy and operational records

Schellenberg also retains desirable to distinguish headings for important records related to policies, procedures, programs, and the like, from those related to operational activities.

Updating

Classification schemes need periodic updating to adjust to current needs, that is to the changes of the organization's functions and activities.

A posteriori

A records classification scheme should be elaborated a posteriori, not on an a priori basis. "[Classes] should be established as experience attests to their need, that is, as records are created in the performance of functions. They should not be arbitrarily set up on the basis of speculation as to the subject content of records that are yet to be produced."²⁷⁴

Cruz Mundet also thinks that the classification scheme is the result of an empirical work, based on the prior knowledge of the entity history, organization and procedures, that is, the context that allows the archivist to analyze the whole of records and later identify and establish classes and records aggregations. He also remarks that, even if this is, in essence, the methodology of work (a bottom-up or sequential analysis), the presentation or display of the scheme is reversed, as it will go from the general to the specific (top-down approach).²⁷⁵

The use of the concepts of 'a priori' and 'a posteriori' provokes some ambiguities when applied to classification. The archival literature states that classification in records management is applied on an a priori basis (preset file plans are used to classify and file active records). However, records classification schemes should be elaborated on an a posteriori basis, as an analysis of the existing entity functions, activities, work processes, and records, are needed to set up an objective

²⁷⁴ *Ibidem.*

²⁷⁵ José Ramón Cruz Mundet, *Archivística: Gestión de documentos y administración de archivos*, cit., 2012, p. 220-221.

and effective scheme. Therefore, classes and sub-classes are created depending on experience, once their need is proved, that is, as records are produced in the development of functions.²⁷⁶

Schellenberg states that *a priori* classification schemes are artificially built, as he relates it with subject-based classification (typically used by thesauri in the library field). In fact, he observes that reference and information files should be classified on the basis of an analysis of their subject matter, but they should not be forced into a scheme built on *a priori* principles, as library materials are. Records should be grouped in classes established pragmatically on an *a posteriori* basis, “as experience attests to their need.”²⁷⁷

Schellenberg’s thoughts still inform current archival theory. Anyhow, neither *a posteriori*, nor *a priori* adequately qualify the concept of classification, and mostly demonstrates an unfruitful use of the terms, creating ambiguity or misunderstanding. Definitely, classification schemes may apply to entities that already have a classification system in place, which needs to be improved, updated or maintained, or may apply to entities which lack one and need to design it from scratch (as it may be the case for newly created entities or already consolidated ones lacking this tool). Classification schemes are set up based on preliminary research on the entity, its structure, legal and regulatory framework, as well as a study of its functions, activities, processes, transactions and records. This analysis, which is both theoretical and empirical, allows to develop a logical and abstract structure, which is integrated by the identification of the records series. Therefore, preset classification schemes, which are progressively set up and gradually improved based on classification principles, conceptual parameters and data derived from experience, may be put in place before records are created, and are concretely implemented once records are produced and filed within file units, constituting the series.

3.7.2 Methodologies

As previously mentioned, the archival discipline has paid scarce attention to the elaboration of records classification schemes. The following consideration, made by Xie in 2007, is still valid: “The construction of classification system, however, has

²⁷⁶ Theodore Roosevelt Schellenberg, *Modern Archives: Principles and Techniques* (1956), Reprint: 2003, cit., p. 63.

²⁷⁷ *Ibidem*.

long been much under development as evidenced by the fact that there is up to date no standardized methodology specializing in constructing RM [Records management] classification system.”

Even so, some archivists have focused their studies and works on classification and construction of classification schemes. As a consequence, some methodologies with a standardization character have been developed. However, they are lacking of in-depth analysis and recommendations on how to identify and interrelate classification elements, such as functions, activities, processes, transactions, records series, etc. In general, they mostly provide recommendations about the informational sources that can be analyzed to identify these elements. In some other cases, methodologies focus on the logical principles and structural aspects of a hierarchical classification scheme (types of classes, types of divisions, divisional basis, divisional levels, and coding system). This is the case of the theory developed by Zygmunt Dobrowolski in 1964 for libraries of specialized scientific institutions, which was the source of inspiration for the classification theories of two archivists: Raffaele De Felice (Italy) and Michel Roberge (Canada). Both authors took as reference the classification principles, structure and, in the case of Roberge, coding system elaborated by Dobrowolski. De Felice was at the end of his career when he incorporated in his classification theories (developed since the beginning of the 1960s) the structural classification aspects proposed by Dobrowolski. Instead, Roberge was at the beginning of his professional activity, when inspired by Dobrowolski, matured a methodology for building a classification scheme structure for administrative records. There is no apparent mutual influence between De Felice and Roberge, their common link is, without a doubt, Dobrowolski. Anyhow, some elements of De Felice’s coding system (and subdivisions) may be found in Roberge’s methodology. These three authors will be analyzed in detail, starting by Dobrowolski’s methodology (1964) and followed by the theories of both Roberge (1985) and De Felice (1988).

3.7.2.1 Zygmunt Dobrowolski

Zygmunt Dobrowolski, a Polish author, engineer by training, published in 1964 the book “*Étude sur la construction des systems de classification.*” Dobrowolski’s work in the field of classification initiated in the 1930s and found its first practical

application in 1943 with the classification of welding documentation, specially elaborated for the Welding Institute of Paris. This classification was adopted in 1948 by the International Institute of Welding, and examples of this classification work are provided in his book.

The book preface, written by Eric de Grolier, who is considered the founding father of information science in France, highlights how Dobrowolski's book fills a gap in the library and documentation field, as it is a serious and technical manual to learn methods for constructing a classification system. De Grolier thinks that the newer part of Dobrowolski's work concerns the symbolization or classification coding, especially the system called "à symboles brefs" (brief symbols), invented by Dobrowolski. De Grolier also remarks how Dobrowolski's theories on the different types of classification (classification of sciences, encyclopaedic classification and autonomous classification) strongly attracted attention when they were presented at the Committee of classifications' theory of the International Federation of Documentation.

It is interesting to observe that the three types of classification outlined by Dobrowolski, are reported in De Felice's book "L'archivio contemporaneo: Titolario e classificazione sistematica di competenza nei moderni archivi correnti pubblici e private."²⁷⁸ Both authors describe classification types as follows:

- The classifications of science, which were created through the centuries by illustrious philosophers (such as Aristotle, Bacon, d'Alembert, Ampere, Comte) reflect their philosophical systems.
- The encyclopedic classifications, which content encompasses all sciences, are conceived for bibliographic complexes.
- The autonomous classifications, which are independent of any encyclopedic scheme, concern the specialized branches of knowledge, or certain activities within the field of sciences, such as industry, trade, etc.²⁷⁹

Dobrowolski's book is a manual addressed to specialized scientific documentation centers, and focuses on autonomous classifications. In this book, he theorizes on the differences between the three classification types. He remarks that certain philosophic classifications have been used by library science, such as the

²⁷⁸ Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 28.

²⁷⁹ Zygmunt Dobrowolski, *Étude sur la construction des systèmes de classification*, cit., 1964, p. 3.

classification of the English philosopher Bacon, which was arranged and adapted later by the American librarian W. Harris, and served as a starting point for the Dewey decimal classification. The latter became, at the end of the 19th century, the universal decimal classification (UDC), which Dobrowolski considers an improper model to construct classification schemes. He argues about the rigidity of the decimal system coding, which does not allow to introduce more than 10 subdivisions. He remarks that the lack of logical divisions in the UDC, which groups neighbours in packs of 10 subjects to use all coding symbols, reflects the absence of any common basis of division. This chaotic arrangement of subjects determines that one must seek the document classification codes, not in the classification scheme itself, but in its alphabetical index, where it is easier to be orientated.

According to Dobrowolski, scientific documentation, more particularly when related to technical and economic science or the various branches of industrial production, agriculture, construction, etc., is mostly constituted by journal articles, not monographs. Generally, this documentation is not catalogued, as the encyclopaedic classification used in major libraries no longer meets the precision required by this bibliography. Therefore, modern information and highly specialized documentation centres cannot work properly without the autonomous or specialized classification. Dobrowolski also mentions that with the development of technology and industry emerge innumerable classifications of objects, materials, tools, equipment, machinery, etc., as well as international efforts to standardize ways of symbolization or coding of these products for international exchanges (he refers to ISO standards for coding industrial products). Dobrowolski believes that, without classification, it is impossible to standardize coding systems and definitions of these many types of objects. And, even if he pays particular attention to classification coding in his book, he remarks that, in this standardization process, coding is the final operation that confirms the classification arrangement with the help of symbols.

Dobrowolski emphasizes that the logical principles that are the basis of classification systems apply to all types of classification. In fact, Roberge and De Felice uses Dobrowolski's basis of class division to propose hierarchical classification schemes for the archival field. The classification principles presented by Dobrowolski can be summarized as follows:

Definition of classification and classes

Classification is partition in classes; that is, the subdivision of a whole in classes and these in subordinate classes. Classes are a set of units that possess a common characteristic. These units can be objects, people, phenomena, abstract terms or concepts. The connecting element between units of the same class can be constituted by coexistence of alike elements (at the same time or in the same place), formal similarity, a common goal, organizational links, etc. The common characteristics to all units of a class (or class characters) constitute the understanding of the class, i.e. the common characters to iron, copper, zinc and other bodies belonging to the class of metals define the understanding of the metal concept.²⁸⁰ A classified whole, that is to say divided into increasingly more specific classes, becomes an ordered whole. Therefore, classify means to order wholes, objects or concepts, through their grouping in classes.

Types of classes and basis of division

Dobrowolski distinguishes several types of classes:

- Initial class (“classe initiale”), which is the class subject to the process of division.
- Derived classes (“classes dérivées”), which are those classes resulting from the division. To decompose a class in derivatives, it is necessary to choose among characteristics of the class, which may present different or varied forms. These characteristics become the “Basis of division,” and are called “Modifications.”
- Nodal classes or nodes (“classes nodales”), which are classes that ramify.
- Lowest classes (“classes extrêmes”), which are those classes remaining undivided (Figure 14).

Roberge and De Felice use the same terminology and concepts to identify types of classes and to explain their basis of division. In addition, Roberge uses the same exemplification of buttons and transportation means used by Dobrowolski to illustrate the mental process of the classificatory division.

²⁸⁰ Zygmunt Dobrowolski, *Étude sur la construction des systèmes de classification*, cit., 1964, p. 7.

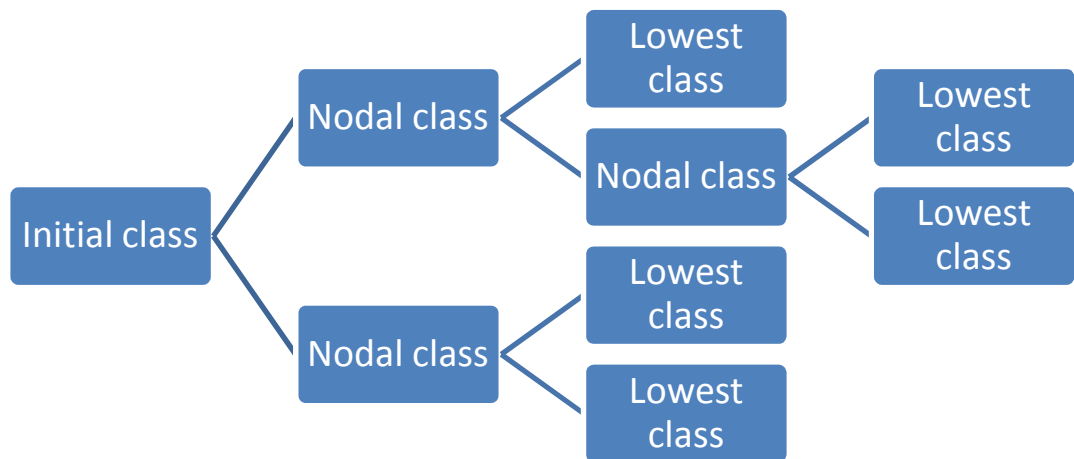


Figure 14: Example of initial, nodal and lowest classes

Types of class division

Dobrowolski identifies three types of classificatory divisions, depending on the type of characteristic taken as basis of division:

Type I. It is composed of positive modifications of a class. For example, buttons can be divided by material composition (which is a common characteristic that presents different forms or specific differences), such as metal, horn, wood, etc.²⁸¹ As De Felice reports, the basis of divisions are specific differences of a common characteristic (Figure 15).²⁸²

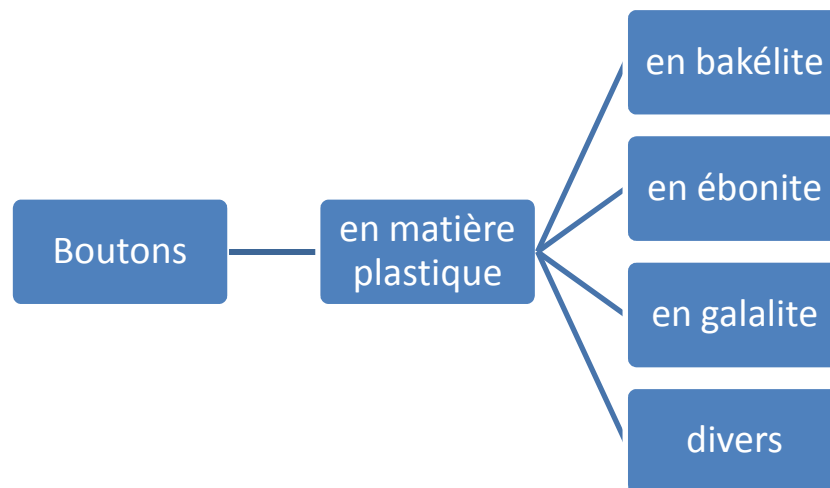


Figure 15: Class division Type I²⁸³

²⁸¹ Zygmunt Dobrowolski, *Étude sur la construction des systems de classification*, cit., 1964, p. 20.

²⁸² Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 34.

²⁸³ Example taken from Dobrowolski's book: Zygmunt Dobrowolski, *Étude sur la construction des systems de classification*, cit., 1964, Fig. B3, p. 17.

Type II. It is a dichotomous division of a class, which means that the absence of a characteristic is taken as a distinctive sign of the class (i.e., “covered” buttons and “uncovered” buttons). This absence is considered a change of that characteristic and constitutes the modification called “zero.” In this case, the absence may occur in connection with the presence of a characteristic.²⁸⁴ As De Felice remarks, each divisional level is composed of two classes of which one is the negation of the other (Figure 16).²⁸⁵

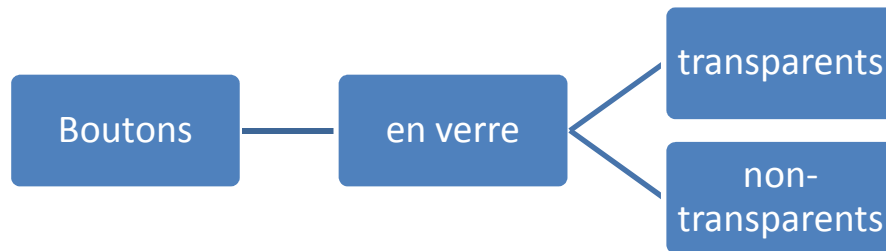


Figure 16: Class division Type II ²⁸⁶

Type III. It is a combination of type I and II. The characteristic chosen as basis of division has both positive and zero modification. In reality, this is a simplified or hybrid type of division which avoids creating further classification levels (Figure 17).

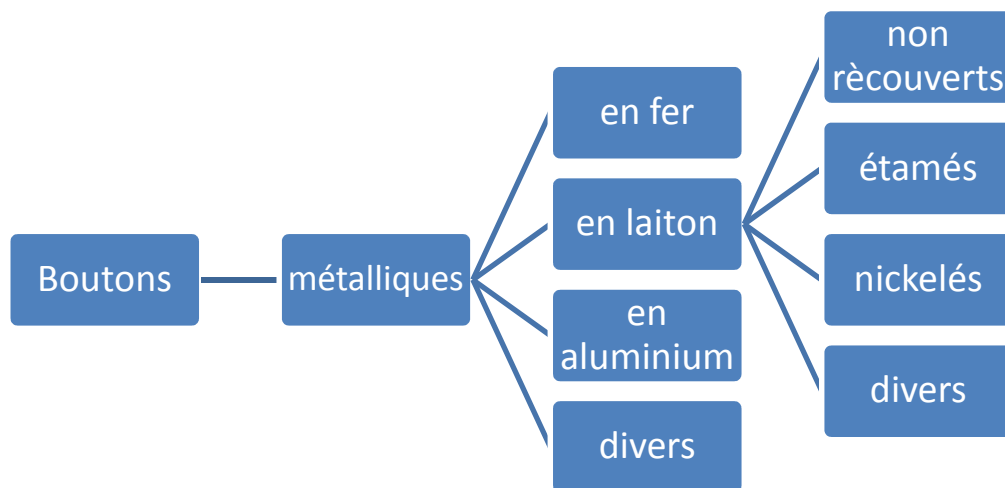


Figure 17: Class division Type III ²⁸⁷

²⁸⁴ Ivi, p. 20.

²⁸⁵ Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 34.

²⁸⁶ Example taken from Dobrowolski's book: Zygmunt Dobrowolski, *Étude sur la construction des systèmes de classification*, cit., 1964, Fig. B3, p. 17.

²⁸⁷ *Ibidem.*

Structure of a classification scheme: divisional levels

A classification scheme is composed of several divisional levels and elements:

- The head class (“classe de tête”), which is marked by level “zero,” gives birth to the first level classes. The head class constitutes the classification title or subject, and it is placed above the scheme; it forms the basis of classification and, according to Dobrowolski, its omission of the scheme may result in serious consequences. As any class, it is subject to a classification process.
- The first level classes are called principal classes (“classes principales”) and are the result of the division of the head class, which is an initial class.
- A group (“groupe”) is the ensemble of derived classes coming from the division of an initial class. As any class must be part of a determined group, except for the head class, classification is composed exclusively of groups. Related classes (“classes apparentées”) belong to the same group, as they derive from the same initial class. The nodal and lowest classes determine the position of classes in the scheme: nodal classes are intermediate classes between the head class and lowest classes (which are located at the end of the ramifications), while the initial, derived and related classes express the relationships between classes of the same group. An initial class can only be a nodal class, while a lowest class can only be a derivative one. A nodal class can be an initial class when compared to a lower level class, and it can be a derived class if compared to a higher level nodal class.²⁸⁸
- A branch (“branche”) is a part of the scheme. It starts with any nodal class and embraces all its derivatives and the derivatives of these derived classes up to the lowest classes (Figure 18).²⁸⁹
- A chain (“chaîne”) is a series of classes that starts by the head class, and in which any class is an initial class compared to the one following, and is a derivative class with respect to the one foregoing (Figure 18).²⁹⁰ The chain always ends with a lowest class. Therefore a classification scheme involves the same number of chains as lowest classes are.²⁹¹ A lowest class can be only

²⁸⁸ Ivi, p. 42; Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p. 31.

²⁸⁹ Ivi, p. 42-43; Ivi, p. 32.

²⁹⁰ Zygmunt Dobrowolski, *Étude sur la construction des systèmes de classification*, cit., 1964, p. 43.

²⁹¹ Raffaele De Felice, *L'archivio contemporaneo. Titolario e classificazione sistematica di*

matched to a single chain. As Dobrowolski remarks, this rule is not always observed in practice, provoking incorrect structures.²⁹² (Figures 19 and 20).

- Characteristic of a class (“caractéristique d’une classe”) is both a single characteristic used to name a class, or a group of characteristics linked with the cited characteristic. The most characteristic property of the object/concept to be classified is chosen as basis of division.

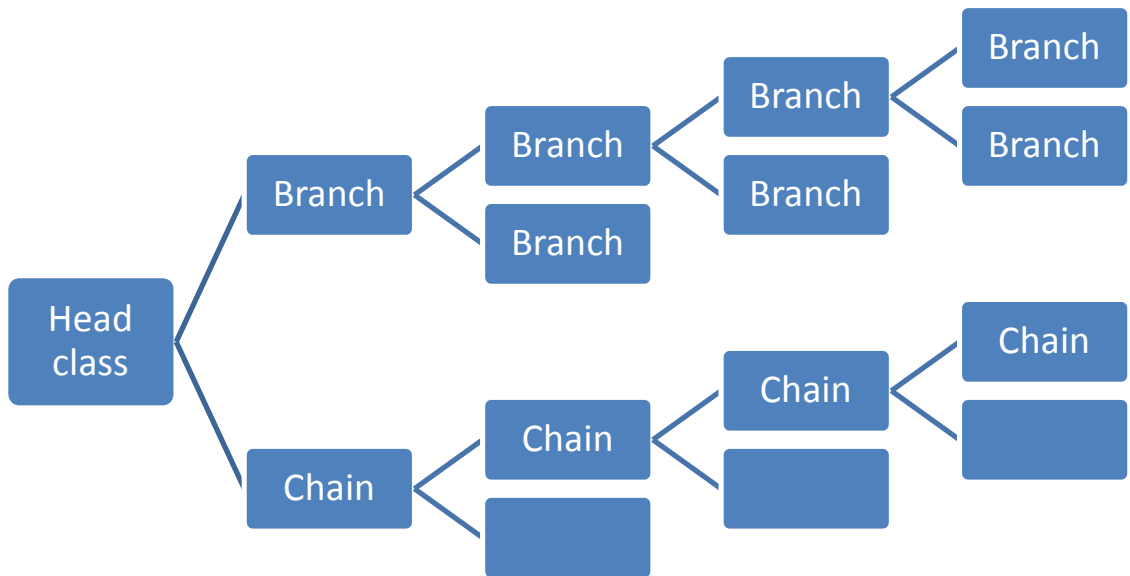


Figure 18: Examples of branch and chain ²⁹³

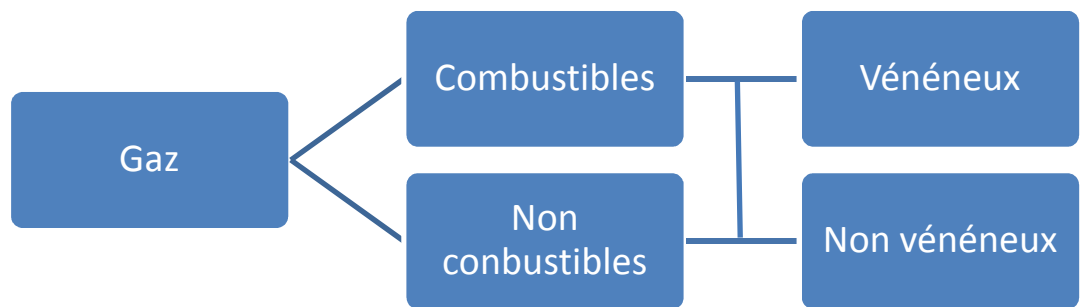


Figure 19: Incorrect classification structure ²⁹⁴

competenza nei moderni archivi correnti e privati, cit., 1988, p.32.

²⁹² Zygmunt Dobrowolski, *Étude sur la construction des systems de classification*, cit., 1964, p. 45-46.

²⁹³ Taken from Dobrowolski’s book: Ivi, Fig. E3, p. 45.

²⁹⁴ Taken from Dobrowolski’s book: Ivi, Fig. E4, p. 46.

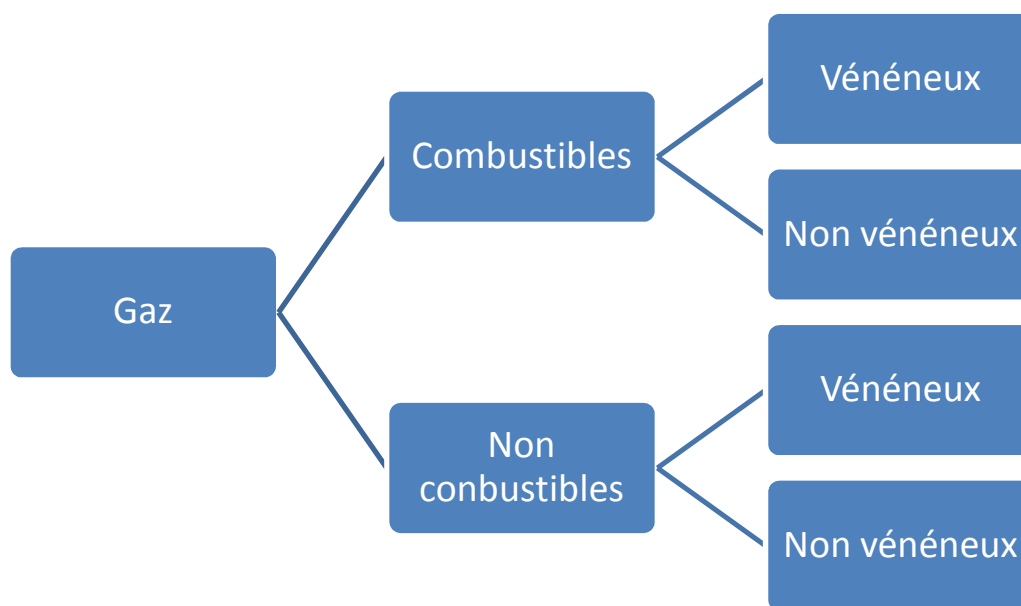


Figure 20: Correct classification structure²⁹⁵

Number of divisional levels

A classification scheme may have an unforeseeable number of divisional levels. Only in very uniform wholes, the number of classification levels could be fixed in advance (in this case, a special form of classification, called ‘analytical,’ is applied).²⁹⁶ Dobrowolski advises against the trend by which the number of levels is artificially reduced to avoid long coding systems. This is contrary to the classification rules, as codes should not have any impact on the structure of the classification scheme. The length of symbols should be reduced by other means, without touching the structure. In fact, Dobrowolski proposes a system to shorten codes, “à symboles brefs,” which is afterwards used by Roberge. Dobrowolski explains that levels should not be artificially shortened through an example in which a classification scheme is composed of 6 divisional levels and 18 lowest classes. He argues that it is impossible to find a class characteristic that would have 18 modifications and could serve as unique divisional basis. Thus, the direct division of

²⁹⁵ *Ibidem.*

²⁹⁶ The analytical form of classification is identified with the arithmetic classification, which is based on the division of classes according to an identical divisor (binary, ternary, decimal, etc.) for each divisional degree; thus, the progression of classes grows following a geometrical basis. In these structures, the divisional basis is not a common characteristic with its specific differences, but only an arithmetic criterion. They are considered rigid structures and not natural. The dichotomous classification is a type of arithmetic classification. Raffaele De Felice, *L’archivio contemporaneo. Titolare e classificazione sistematica di competenza nei moderni archivi correnti e privati*, cit., 1988, p 34.

the head class in 18 lowest classes would not have the character of a classificatory division. Dobrowolski also remarks that, even if it is less harmful, increasing in a non-justified manner the number of levels, by creating artificial nodal classes, is also inappropriate. He affirms that the number of levels does not depend on our will, as the classification scheme should reflect objectively the existing natural relationships among the classified objects/concepts.

Group size

The group size is the number of classes in which a single class is subdivided. This is not restricted a priori. However, practice shows most often classification groups of 2 to 4 classes. Groups of 5 to 10 classes are much less numerous, and it is rare that one can find groups of 15 to 20 classes. Probably, in the latter case the division has been incorrectly executed. The fact that classes are divided into a rather small number of derived classes is not arbitrary; this phenomenon is linked to the number of divisional levels. For a given number of lowest classes, a scheme will contain more groups if the number of levels is greater. The examples taken from everyday life show that the arrangement of classes in small groups facilitates orientation among wholes of objects and phenomena, and that we must consider it as natural and even desirable.²⁹⁷ It results from the natural tendency of man to establish more finely gradual divisions, in order to facilitate orientation in the surrounding nature. Therefore, it is advisable to form small groups, even if it may result in a very large number of levels. Dobrowolski demonstrates this theory with mathematical formulas, dissipating illusions about the fact that a scheme developed on a limited number of levels and, consequently, composed of rather large groups, can be more practical than a scheme with a large number of levels arranged in small groups. He therefore recommends to group classes by 2-3 because it is compatible with the nature of things.²⁹⁸ He also proposes quantitative analysis of the scheme to check the regularity of its structure and to choose an appropriate coding system.²⁹⁹

Dobrowolski provides indications on the construction process of an autonomous classification scheme for a documentation centre. Even if it is not

²⁹⁷ Zygmunt Dobrowolski, *Étude sur la construction des systèmes de classification*, cit., 1964, p. 49.

²⁹⁸ Ivi, p. 54.

²⁹⁹ Ivi, p. 61.

specifically addressed to archives, its methodology presents similarities with the process of elaboration of a records classification scheme. His recommendations are:

- The author of the scheme will find the materials for this work in his own knowledge about the subject of classification, and consulting the basic general literature on the subject: books, encyclopaedias, monographs, etc. It is important that the elaboration of the classification scheme is entrusted to a commission of specialists, who will be consulted several times by the author of the scheme, as the work requires many changes and adjustments. The classification scheme is established by successive approximation.
- The construction process begins by creating filing cards containing terms that will be considered as lowest or nodal classes. Cards will be then arranged in the form of a synoptic scheme and organized in groups.
- The classes of the first level must present a sufficiently general character so that the branches they originate embrace all subjects of classification. The first divisional level must contain from 3 to 15 classes to allow users to navigate throughout easily.
- The elaboration of a classification scheme must be pursued in parallel to the establishment of guidelines for its application. In addition, the classification scheme should be accompanied by an alphabetic index of classes.

Dobrowolski also remarks interesting aspects of the classification scheme to be taken into consideration:

- Classification must be performed in such a way that provides users, without any prior search, all the information to find out what documentation is available on each topic and what is the scientific value of these documents. In some way, De Felice has a similar perception of the main purpose of a records classification scheme. He considers records classification scheme to be not useful just to facilitate records organization, but it must mainly offer a clear and precise picture of the objectives, functions, activities and competences of an office.
- Contrary to the assertion that the UDC would be capable of an unlimited development, Dobrowolski notes that each classification is born, lives, evolves, ages and dies. Thus, the duration of classification is always limited. A

classification scheme can be updated by adding new classes up to a certain point, after which, the scheme should need a complete reshuffle. The lifetime of a classification depends of its purpose. For example, the classification of mathematics will hold a longer life than that of a modern technical speciality rapidly evolving, which will not live probably more than 25 years. The phenomenon of rapid aging of the specialized classification explains why they could not be part of an encyclopaedic classification.³⁰⁰

- Whatever the method applied in the retrospective search of information and the degree of mechanization of documentary operations, a systematic classification seems essential in any case. Classification offers many advantages, contributing to the standardization of terminology and facilitating the establishment of research work plans and others. Once in possession of a well-established classification scheme, it is difficult to imagine how it could previously do without.³⁰¹

3.7.2.2 Michel Roberge

Michel Roberge, in a 1985 publication “La classification universelle des documents administratifs,” proposes a methodological framework for elaborating and implementing a universal and hierarchical records classification scheme. In 2011, he published “Le schéma de classification hiérarchique des documents administratifs – Conception, développement, déploiement et maintenance,” an updated version of the previous publication, in which he notes that his intention had been to fill a gap existing since 1985, as no other methodological approach for the design, development, implementation and maintenance of a classification scheme had been recently published. In the updated publication, Roberge takes into consideration the recommendations made by ISO 15489:2001 and ICA-ISDF (International Standard for Describing Functions), adding further analysis on the quality of existing schemes and based on his practical experience working with them, obtained in the previous 25 years working for government agencies and private entities. In the publication, he introduces the DFA/ALO MethodologyTM [Domaines–Fonctions–Activités / Action(s)–Lien–Objet(s)], already mentioned in this chapter, which is a tool for managing an integrated records management system for both paper and electronic

³⁰⁰ Ivi, p. 245.

³⁰¹ Ivi, p. 298.

records. An unregistered trademark on DFA/ALO promotes, brands and protects Roberge's system. The methodology contains three concepts that are Roberge's registered trademarks: uniform subdivision ("subdivision uniforme®"), specific subdivision ("subdivision spécifique®") and nominative subdivision ("subdivision nominative®").

Most of the theory (and terminology) used in Roberge's methodology, such as the structural elements of a classification scheme, its coding system and quality assessment, comes from Zygmunt Dobrowolski, to whom he makes reference when analyzing the hierarchical classification scheme characteristics. Roberge believes that, after half a century, Dobrowolski's book still remains the only study of its kind that presents a set of principles for constructing and assessing the quality of a hierarchical classification scheme. Another reference made by Roberge in relation to class hierarchy is the set theory, which defines the way in which divisional levels and branches of a hierarchical tree are gradually formed, from a defined divisional basis applied to the starting point of the tree to its progressive fragmentation into derivative subsets.³⁰²

Roberge's methodology dedicates special attention to the establishment of a management project to successfully achieve the design, development, implementation and maintenance of a hierarchical records classification scheme. It provides detailed analysis of the project phases, in addition to the elaboration and approval of a project management manual, and the identification of a project leader, a Validation Committee, and other potential stakeholders. The project management manual is to be considered an official and authoritative document, approved by the Direction, that aims to guide the project orientation, implementation and follow up. It is used to define the nature and characteristics of the project, specific objectives, proposed methodology, activities to be performed, and the required human, financial

³⁰² The set theory (*teoria degli insiemi* in Italian, *teoría de conjuntos* in Spanish, *théorie des ensembles* in French) is a branch of mathematical logic that studies sets, which are collections of distinct objects. The set theory was developed in the late nineteenth century by the mathematician Georg Cantor, and it relies on the concepts of sets and set belonging: a set can be composed of subsets and sets hierarchy can be more or less limited. Sets are one of the most fundamental concepts in mathematics. The set theory is now a ubiquitous part of mathematics, and can be used as a foundation from which nearly all of mathematics can be derived. Roberge remarks that the set theory applies to other fields, such as the logical organization of physical or virtual elements on the basis of a general-to-specific pattern, and the parent-child concept. On the basis of this theory, some computer programming languages, family trees, organizational charts and hierarchical classification schemes are developed.

and material resources. The manual contains the project structure and main actors, the work schedule and the processes of validation, adoption and approval. It also may include the constraints, risks and critical factors that can determine or influence the project success.

General characteristics of a hierarchical classification scheme

A hierarchical classification scheme is considered by Roberge as a tool to structure and identify objects to be managed, and must be completed by a coding system. The characteristics of a records classification scheme can be summarized as follows:

1. Divisional basis

To divide virtually or physically a set of objects, it is necessary to determine their characteristics and to establish divisional basis. This principle is fundamental in the development of a hierarchical classification scheme, and consists of:

- a) Determining the characteristic selected as basis of division of the initial class.
- b) Applying this divisional basis to the initial class to identify the elements that meet the basis of division.
- c) Creating the new derived classes, which are composed of the elements resulting from the division. It is possible that the object characteristics (or divisional basis) vary progressively as the process of dividing sets and derivative classes moves forward.

In the case of a hierarchical classification scheme for administrative records, two types of division can be applied:

- ***Activities***

Activities are actions carried out on management objects. The divisional basis of the vast majority of classes is the concept of activity. For example, the activity "Personnel recruitment" consists of one action (recruitment) on a management object (personnel). This type of division also applies to the identification of file series (and files within them) related to processes or activities. For example,

Activity:	Administration of human resources
Sub-activity:	Personnel remuneration
Sub-sub-activity:	Payroll management

- ***Other management objects not linked to actions***

The other classes of the classification structure result from an occasional divisional basis, corresponding to a certain number of other management objects that are, for example, the series of personnel files, projects, etc. For example,

Activity:	Administration of human resources
Management object	Personnel file
Sub-activity	Personnel remuneration
Sub-sub-activity	Payroll management

2. Types of divisions

Roberge reports the same types of divisions identified by Dobrowolski:

- ***Predetermined divisions.*** They are called arithmetic classification by Dobrowolski (and also De Felice), and are based on a predetermined and constant number of elements resulting from the divisional process. For example, it could be agreed in the rules for constructing a classification structure that each divisional level is composed of 10 derivative subsets. If this number were greater than 10, a "miscellaneous" or "divers" division should be then created. The result is a perfectly balanced artificial tree, which is not necessarily the goal to be reached when building a classification structure (i.e., in the case of the UDC).
- ***Dichotomous divisions.*** This type of division, applicable to small sets, is the result of a divisional basis in which there is an absence of characteristics for the elements to be subdivided. As Dobrowolski and De Felice write, it is a type of arithmetic classification, in which each divisional level is composed of two classes of which one is the negation of the other.
- ***Aleatory divisions.*** The most natural classification trees are those that are the result of random divisions, as they allow to include all the elements to be classified, usually from a single divisional basis. This type of division, which is found in the hierarchical classification scheme of administrative records, is based both on the principle of inclusion 'parent-children' and the principle of exclusion 'child-children,' with are guarantor of the structural quality of the tree.

According to the principle ‘parent-children,’ a parent class (initial class before division) can be linked to an undetermined number of children classes (derived classes) from the root of the tree. This number can be ≥ 0 . The relationship parent-children must be inclusive: children must be true children and not parents of the parent to which they are linked. The exclusion principle ‘child-children’ consists of ensuring that the children classes under a parent class are mutually exclusive, so that none of them is a parent of other children at the same level.

3. Divisional levels

The progressive division of initial classes in derivative sets results in the creation of divisional levels in the classification structure. Usually the first level of division is that which results from the division of the root or head class. Then, according to the classification purposes, an unpredictable number of levels are progressively created until the resulting classification scheme allows categorizing all the objects according to the characteristics assigned to them. There is no ideal number of divisional levels. This number varies depending on the type and quantity of objects to be classified. Roberge exposes the same reasoning as Dobrowolski when he warns about artificially reducing or increasing the number of levels. Roberge disagrees about oversimplifying classification schemes by limiting them to three or four levels. He complains about the many poor quality classification structures that have been developed by inexperienced actors who improvise by aligning a small number of classes distributed without a precise methodology. He affirms that classification schemes need professional rigour: when precise classification schemes, with logical ramifications and structural qualities, perfectly match the business process, they integrate smoothly into the daily practices of records management of an organization.

4. Types of classes

Based on Dobrowolski, Roberge describes five types of classes: head classes (“rubriques de tête”), initial classes (“rubriques initiales”), derived classes (“rubriques dérivées”), nodal classes (“rubriques nodales”) and lowest classes (“rubriques extrêmes”).

Even if using the same concepts and terminology as Dobrowolski to identify types of classes, Roberge introduces an upper level called “root” (“racine”). The root

corresponds to Dobrowolski’s head class (“classe de tête”) and De Felice’s originating class (“classe originaria”), which is level “zero,” as it does not come from any previous division and is from where divisions originate. The root is the starting point of any hierarchical classification scheme, and should include all the objects that need to be classified. It is the basis from which the classes subjected to the process of progressive division according to the desired degree of accuracy will branch out. Head classes come out from the root and correspond to domains (a more general level). Initial classes derive from the head classes and correspond to function headings (a more specific level), from which the activity headings are ramified. Initial classes are combined with the head classes to constitute the first divisional level (Figures 21 and 22).

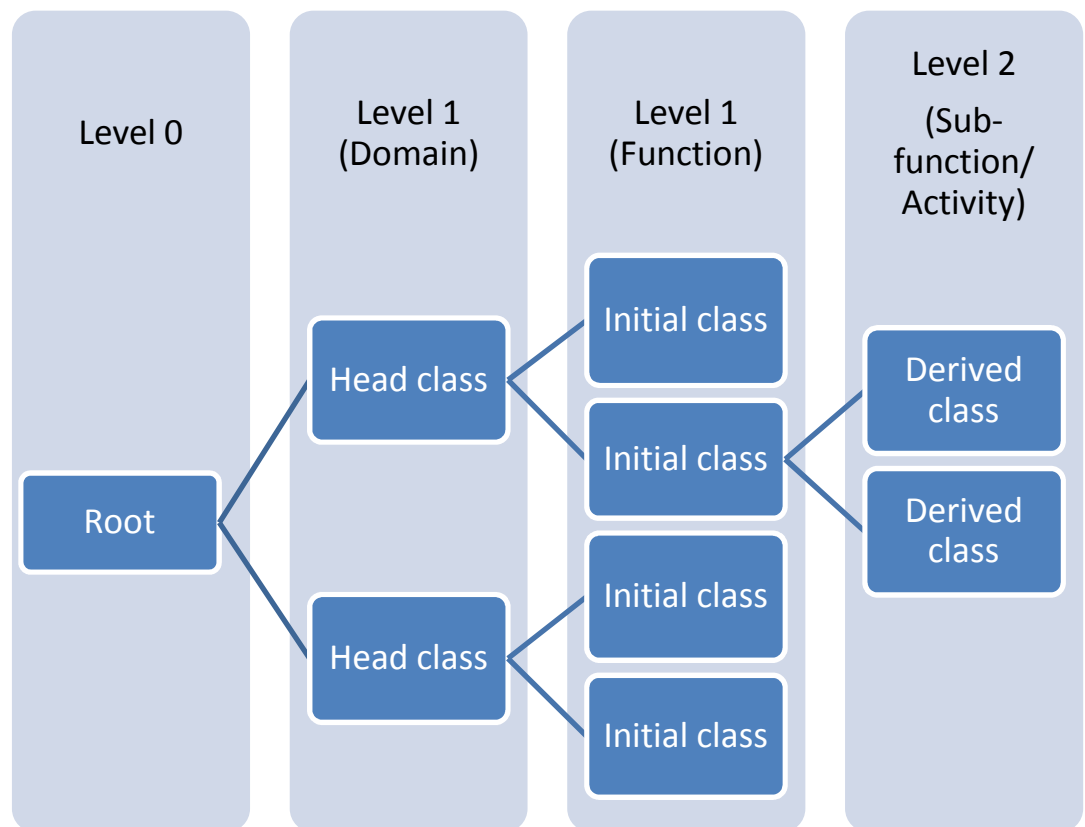


Figure 21: Types of classes by Roberge

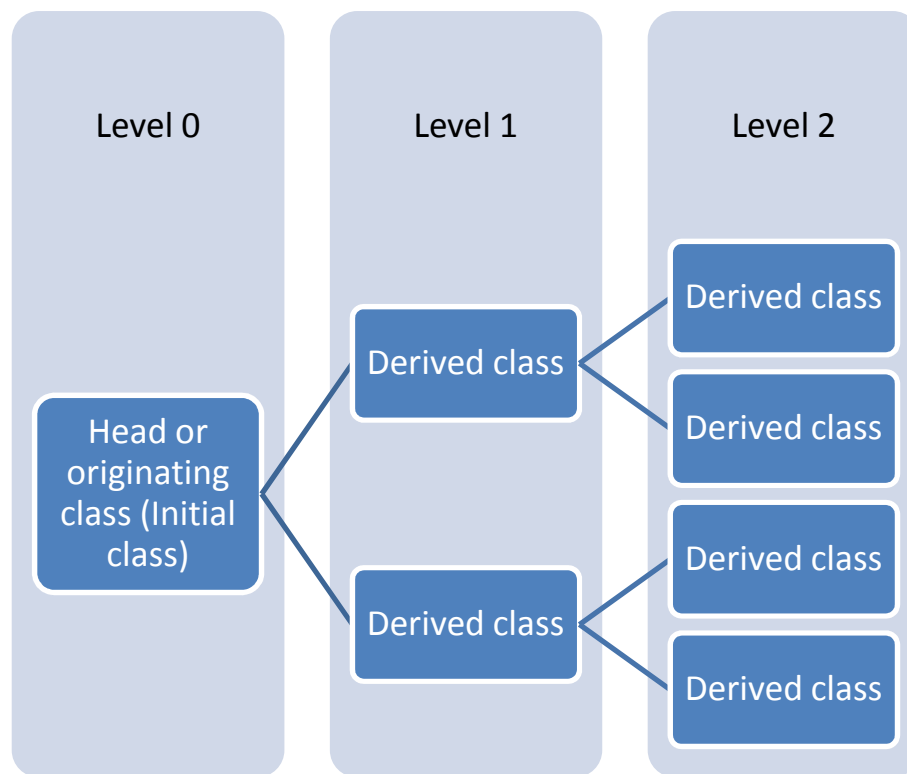


Figure 22:Types of classes by Dobrowolski and De Felice

5. The logical set of classes

The classes of a classification structure belong to sets whose internal logic contributes to the overall quality of the tree. These sets are: chains, branches, families and groups of classes. Roberge recalls Dobrowolski's set of classes, and introduces the concept of family of classes, which consists of an initial class (parent) and its derived classes (children). Some derived classes (children) can in turn be initial classes (parents).

6. Structure of classes

Roberge structures classes in different divisional levels and identifies each class with a classification element:

Head classes: Two domains

Roberge remarks that a hierarchical classification scheme of administrative records is always composed of two head classes (dichotomous division) corresponding to the two major areas of functions and activities of a public or private body: the business

domain resulting from the organizational mission and purpose of the organization, and the domain of internal management, which supports the business functions.

When classifying a record in a file, he affirms that one should ask: Is the record related to organization mission activities or internal management activities? The answer will guide the search of the precise class in a logical set of specific elements with the same characteristics.

Initial classes: Functions – First divisional level

Each domain is divided into initial classes that will be considered as being the first divisional level. These classes must correspond to functions that include the activities of the business and internal management domains.

In the case of the business domain, their identification and number depend on the specific mission of each type of organization. The amount of functions arising from the business domains is generally less than that referring to the internal management activities. If their number is greater, it must be ensured that it corresponds to a set of general functions and not to an amalgam of functions and activities within them.

Internal management activities regard a maximum of eight functions in each organization. They will be analyzed later when the identification of functions for the internal management domain is explained. Roberge clarifies that the wording of some of these classes can be directly linked to that of certain administrative units that mostly assume that responsibility. However, these are functions (i.e., human resources management) and not names of administrative units (i.e., Office of Human Resources), as these activities may also generate records and files in different departments of the organization. For example, the principal personnel files are held by the administrative unit responsible for human resources management. Partial copies of these files can also be available at the administrative units in which each personnel work.

First derived classes: Sub-functions

Under each of the business and internal management functions, an undefined number of derived classes may ramify. Roberge recommends to subdivide each function in the field of internal management (and, if applicable, in the business domain) into sub-functions following their order of accomplishment. These so-called management sub-functions are four: Planning, Organization, Administration and Control of the activities that are specific to each function.

This recommendation allows to constitute, under each function, subsets with a more limited number of elements. This facilitates the identification of the specific class that needs to be selected when classifying a file or record. Although it adds an extra level of division, it contributes to the more natural distribution of the classification tree.

Subsequent derived classes: Activities and other management objects

Derived classes are usually associated with hierarchies of activities and sub-activities. They can also correspond to other management objects (people, organizations, projects, etc.). These classes may be ramified from the management sub-functions or, in case they are not included, from the initial classes or functions.

The breakdown of activities, sub-activities and other management objects on multiple levels is justified by the documentary volume to be managed. This may require subdividing each initial class in more precise sub-classes, facilitating records management and use. Levels must ultimately be limited to identifying records series; they should never include the identification of specific files.

Lowest classes

Finally, at the end of class chains and branches, one will find the lowest classes which may correspond either to activities that do not ramify because they do not require additional divisions, or to other management objects (people, organizations, projects, buildings, etc.).

The lowest classes of a records classification scheme identify the records series. The classification scheme does not incorporate the files created, as this would require a constant update of this tool. Practically, the existence of a specific file will be formalized when registered in the records management system, where it will be linked to its group class, family and branch.

Therefore, the only classes accepted in a hierarchical records classification scheme are those relating to functions and activities or to certain management objects. Any reference to activity files, other business objects or reference documents is excluded, as well as classes called "Gènèral" or "Divers."³⁰³

³⁰³ On the contrary, Dobrowolski considers the class 'Divers' as a necessary transit point for (unclassified) new elements that have been unable to find their place in the established classes. These elements can later constitute a new class. Zygmunt Dobrowolski, *Étude sur la construction des systems de classification*, cit., 1964, p. 14.

Recurrent classes

During the development of a classification structure, some classes can be repeated, constituting subdivisions that may be associated between them. These are called uniform subdivisions (“subdivisions uniformes®”), specific subdivisions (“subdivisions spécifiques®”) and nominative subdivisions. They are repetitive branches, whose presence increases the total number of classes, levels complexity and length of the coding system. That is why it is advisable to extract these classes from the classification scheme and list them as subdivisions, usable, if needed, for the creation of subfiles. Recurrent subdivisions help to increase the flexibility of hierarchical classification schemes during their implementation. They also help to refine the life-cycle management of certain files, applying retention periods to them.

Uniform subdivision

Generally, the concept of uniform subdivision identifies types of records, the grouping of which can be useful for retrieval, consultation and life cycle management (i.e., correspondence, directives, minutes, reports, statistics, etc. can be grouped creating subfiles). Uniform subdivisions may be also used to replicate the management sub-functions (i.e., Planning, Organization, Administration and Control of the activities), if they are not included in the classification structure as first derived classes. The existence of uniform subdivisions may be more or less predictable in the entire scheme. They can be useful in branches of both the business and internal management domains.

Specific subdivision

As this recurrent class only applies to certain branches, families or classes, it is called specific subdivision. It may be necessary for the creation of subfiles related to certain activities (subdivided geographically, by theme, etc.) or to other management objects. In this last case, specific subdivisions can be used to split large files related to personnel, projects, customers, etc. For example, it may be desirable to categorize all records that compose the human resources files in functional subdivisions potentially applicable to each staff file (Career, Compensation, Health, Leave, Work accident, etc.). Similarly, it may apply to project or customer files, where recurrent subdivisions may be considered to divide these records following the logical order of the sequence of activities (the business process).

Nominative subdivision

It is a classification level that allows to standardize the names of organizations or individuals in order to identify a file on a person or organization. These subdivisions are also expected to be displayed in combination with one or two classes or other recurrent subdivision.

7. Coding system

Roberge dedicates special attention to the selection of the coding system, which allows the formation, classification and retrieval of files. Inspired by Dobrowolski, Roberge proposes two coding systems for administrative records:

- Significant and logical codes, in which each divisional level has a certain number of characters: nine characters for the seven divisional levels (i.e., X111-1111-1, which can be broken down in the following digits: 1 + 1 + 1 + 1 - 2 + 2 - 1).
- Semi-logical codes, which are composed of 1) a significant and logical part identifying functions and, if applicable, the management sub-functions; and 2) a continuous sequential number connected to the classes derived from the functions: six characters for the seven divisional levels (i.e., X1-1111, in which the first three characters correspond to the functions and sub-functions, and the last three characters are a continuous sequential number, based on intervals of 10, 25, 50, 100, etc.).

Assessment of the structural quality of the scheme

As Dobrowolski, Roberge proposes a quantitative analysis methodology for assessing hierarchical classification schemes. The quantitative analysis is based on the distribution of classes by divisional levels, and can be reported in a graph providing statistical averages. Roberge describes three types of information that can be derived from this analysis:

- 1) The distribution of the total number of classes by ramification level, which should reflect that the majority of classes are (naturally) distributed at the central levels of the classification tree; classes become less developed at the very top and bottom levels.
- 2) The proportion of nodal classes, which should assess, firstly, the number and

distribution of nodal classes by level, secondly their proportion in percentage of the total number of classes at each level. In the first case, nodal classes should be mostly distributed at the center of the tree and progressively decrease at the top and end levels; in the second case, the proportion of nodal classes in relation to the total number of classes must gradually decrease from the first to the last level.

- 3) The number of lowest classes, which should be mostly distributed at the center of the tree. If they are mostly located in the lower levels, one may question the divisional basis applied to each level.

In addition, Roberge proposes qualitative assessment of classification schemes, consisting of:

- 1) Detailed analysis of the intellectual content of all branches of the tree. This first quality control consists of checking the logic behind the hierarchy of all chains of classes from an initial class to its lowest class. Each of the sequences (or filiations) must comply the principle that the higher level is more general than its level immediately lower, which in turn should be more accurate and more specific than its higher level.
- 2) Analysis of the internal structure of each branch of classes. For example, it can be detected that a chain of classes with multiple levels includes several single divisions at the lowest class. In this sense, if more than two levels at the end of a chain are not the result of multiple ramifications, the composition and relevance of these repetitive divisions must be questioned.
- 3) Review of the creation and consistency of the class families to facilitate understanding and application of the classification structure. All the groups consisting of ten or more classes require special attention to ensure they are not composed of both children and parents, which have been artificially grouped to limit the total number of the tree levels.

After this overview of the hierarchical records classification scheme characteristics, as described by Roberge, it is interesting to note the types of files that, according to Roberge, compose the series:

Files related to processes or activities

The vast majority of files are linked to processes or activities resulting from functions. The records forming this type of files are the result of actions conducted

on management objects; for example, the activity "Hiring (action) personnel (management object)" generates different types of records on appointing new staff. This kind of file can cover general activities (as in the previous example), or more specific activities, such as those related to "Job Posting," or "Conducting the Interviews."

Files related to people

All organizations produce records related to their interrelations with people: staff, external stakeholders, customers, citizens, users of services, etc. They also find their logical place in the classification scheme, as they are produced following the completion of an activity; for example, the file of an employee who is appointed following an activity of "Employing People."

Files related to organizations

Other files concern relations or exchanges maintained with other organizations: governmental institutions, municipalities, entities in the education or health and social services, associations, companies, trade unions, non-profit organizations, etc. This type of file is ubiquitous in records classification schemes. It contains generally more informative than operational records concerning these bodies. They are directly related to activities of business areas and internal management domains.

Files related to certain management objects

There are also a number of files that relate to management objects, such as those for buildings or land owned by the organization, projects to be implemented, publications to be produced, contracts, activities to be carried out, etc.

Thematic, technical, legal files

The files related to activities, people or other organizations may be mixed with groups of thematic records (on topics of interest), technical records (additional technical documentation), legal records, or others. These files contain reference information.

As it will be observed in chapter 5, these files are similar to those normally indicated in Italian manuals, which group them into two main types: files referring to affairs, activity or administrative procedures, and to natural or legal persons. Roberge also contemplates the need for dividing files into sub-files and volumes, as pointed out in Moreq2 (2008). Roberge writes that some series of files related to the activities of different objects (buildings, projects, etc.), people (employees, users, etc.) and others, may need to be naturally divided into logical and recurrent sub-files

because of their complexity or simply for easier management. Furthermore, he observes that the large amount of records comprising files generally requires that they are divided into volumes: by support, chronological period, type of document, etc. Volumes are logical divisions, which are not part of the scheme characteristics. They are useful for managing the existence of one or more physical or virtual box files.

Methodology

The methodology proposed by Roberge for the elaboration of the hierarchical classification scheme is composed of the following steps:

Analysis of informational sources

This facilitates the identification and organization of functions, classes and recurrent classes, if applicable. The information sources may be fundamental records of the organization (constitutive law, regulations, mission statements, strategic directions, annual reports, activity reports, internal rules and procedures, websites, intranet and extranet, etc.), organizational charts, budget plans, existing classification schemes and some lists of active files maintained by the different units. These records contain much of the essential information needed to identify more specifically the activities that generate records and business files. Roberge's approach excludes the exhaustive analysis of files and records kept in the administrative units of the organization. He believes that this approach is both expensive and counter-productive. The data collected, based on different individual non-standard practices, are generally difficult to use and unnecessary, particularly as regards the field of internal management.

Tools to support the establishment and validation of a new classification scheme

Roberge recommends several tools as support mechanisms for elaborating the classification scheme, such as a) Brainstorming software solutions, such as word processing software to produce mind maps³⁰⁴ for a user-friendly graphic representation of the structure under construction; b) Quality classification scheme models that already exist in similar organizations; c) Integration of lists of potential actions and management objects to enhance or supplement the classification scheme

³⁰⁴ A mind map is a diagram used to represent words, ideas, tasks or other concepts related to each other and arranged around a keyword or central idea.

models;³⁰⁵ d) Use of a records types list to accelerate the identification, if necessary, of recurrent classes corresponding to records types.³⁰⁶

Identification of functions

Prior to the establishment of the hierarchy of classes, it is essential to identify, validate and make the Validation Committee adopt the groups of functions from which the derived set of classes logically ramify. It is important, therefore, at first, to rule about the standardized wording of functions. Then, proceed to the identification of functions, their sequential arrangement and the definition of the activity fields that they embrace.

Thus, Roberge provides instructions on how to normalize the wording of functions to ensure consistency. He recommends to always use the action "Management," supplemented by a management object or combination of objects, or an adjective. This corresponds to the ALO portion of the methodology DFA/ALO™ [Domaines–Fonctions–Activités / Action(s)–Lien–Objet(s)]. For example,

Action(s) - Link - Object(s): Management - of - Human Resources

Adjective - Action(s): Administrative - Management

The same formula can be applied to name activities, which can be expressed by a combination of, at least, one action and one object. The word "Management" is to be used only when no other term can be accepted, as the action will vary depending on the objects that are linked to it. Exceptionally, some activities can be expressed by a combination of actions and an epithet (adjective or noun). The other classes that do not correspond to functions or activities will be simply identified with the wording of the file series and their management objects (i.e., files of personnel, files of customers, etc.).

Roberge also remarks that the application of rules for writing words in the singular or plural forms are also important for maintaining consistency. Actions for activity classes and, if appropriate, uniform subdivisions® of management sub-

³⁰⁵ In the annexes of Roberge's publication, two lists are available that allow to standardize the wording of the classes related to activities or other management objects. Annex B contains a non-exhaustive list of 1.300 actions that may be related to objects of internal management [i.e., Personnel (object) selection (action); job (object) posting (action)] or to business management. Annex C is a non-exhaustive list containing more than 800 internal management objects that can be combined together [i.e., Personnel (object 1) file (object 2)] or can be associated to actions [i.e., Transfer (action) of Archives (object)].

³⁰⁶ Annex A of Roberge's publication contains a list of the principal record types for internal management or for business areas that may exist in an organization (i.e., agreements, posters, calendars, albums, speeches, etc.).

functions must always be written in the singular; i.e., Hiring of personnel (activity class); Planning (uniform subdivision). Objects of functions and specific subdivisions®, and record types for uniform subdivisions® are usually in the plural form; i.e., Management of Human Resources (function class); Digitization of files (specific subdivision); Statistics (uniform subdivision).

After these instructions on the normalization of the functions and activities wordings, Roberge identifies a maximum of eight functions related to the internal management of any type of public or private organization, as previously mentioned. They are described in detail as follows:

1. ***Administrative management***: It refers to general administration activities of the organization, such as business planning, organizational structure, management meetings, internal audit and management reports, etc.
2. ***Management of communications***: Activities of internal and external communications, publications, advertising, public relations with the media, information exchange with other organizations, etc.
3. ***Management of human resources***: Activities related to recruitment and hiring of human resources, personnel files, conditions of employment, remuneration, training and development, evaluation of personnel, etc.
4. ***Management of financial resources***: Activities on financial planning, budgeting, accounting of income and expenses, bank transactions, financial audits, etc.
5. ***Management of information resources***: Activities related to information technology, records management and archives, management of reference material, etc.
6. ***Management of property resources (buildings and spaces)***: use of spaces, maintenance, parking management, etc.
7. ***Management of movable assets and support services***: Activities on maintenance and provision of materials and equipment, storage, distribution, vehicle management, acquisition of professional services, etc.
8. ***Management of legal affairs***: Legal support activities relating to the rights and obligations of the organization, such as legal opinions, legal compliance, legal claims and proceedings, management contracts and agreements, etc.

Roberge does not provide a methodology for identifying business functions; he simply says that they should be identified from the specific mission of the organization, based on the analysis of informational sources. The total number of business functions is generally lower than the internal management functions, and are arranged following the logic or sequence of their implementation.

Once the classification scheme is elaborated, the Validation Committee should validate and adopt it. Roberge proposed several validation forms, which allow to analyze the scheme following several parameters: by function, uniform and specific subdivisions, and coding system. Validation forms are also used to record the decisions or requests for modifications. Once validated and adopted, the final version needs to be approved by the Direction. The official announcement of the records classification scheme should be foreseen in the organization's communication plan. Next steps include documentation of the scheme through a user manual, which includes an alphabetic index of the records classification scheme, the integration of definitions and notes for each class, etc. This should be completed by a lexicon, records life-cycle procedures, the adoption a retention and disposal schedule, and staff training.

As it may be observed, Roberge presents a comprehensive methodology for the construction (and implementation) of a functional (and hierarchical) records classification scheme. He makes interesting contributions, for example, in relation to the naming of the classification elements (functions, activities, series and files), through the ALO (Action(s)–Lien–Objet(s)) methodology. As Dobrowolski, he mostly focuses on structural classification aspects rather than content issues, such as an in-depth description of the top-down processes needed to identify and interrelate functions, activities and series. The indeterminate number of levels and the small number of classes at each level create complex and shallow structures, which may make difficult their construction, maintenance and use. This system inherits the concept of the natural growth of an organic structure (the archive) in which artificial groupings are not justified. In fact, the quality and quantitative assessment of classification schemes also reflects the conception by which it is necessary to avoid the development of unnatural classes, as classification schemes should objectively and logically represent existing natural relationships among classes and records.

3.7.2.3 Raffaele De Felice

De Felice is one of the Italian archivists who has in depth studied, researched and written on archival classification. In his writings, he highlights the lack of a method or criteria for establishing classification schemes, which are, in most cases, simple lists of files, useful as a means of search, but not as a classification tool.³⁰⁷

As previously mentioned, De Felice conceives classifications schemes articulated in three “titles” (or first classes): 1) activities related to the organization and functioning of services; 2) activities intended to guide the administrative action that an organization has to perform; 3) specific activities, which are expressed in affairs that specifically treat the subject matter included in the competence attributed to the institution.³⁰⁸ De Felice proposes subdivisions of “titles” in classes, sub-classes and eventually in other subdivisions, if needed (categories and sub-categories). Subdivisions represent the logical and rigorous process towards an increasingly qualification of the subject matter, until the identification of the single affair that forms the file.

In De Felice’s 1988 publication, the influence of Dobrowolski is evident. De Felice starts to make an in-depth analysis of the classification structure and elements, following Dobrowolski’s classification principles. In fact, De Felice focuses his study on the concept of classes (called “rubrique” by Dobrowolski and Roberge), which he considers as the basis of classification. Classes represent a whole of concrete or abstract entities that share a common characteristic and determine a homogeneous bond between them. Classifications are made on a divisional basis, based on the specific differences of a common characteristic that allows to proceed towards more specific wholes (or classes). De Felice theorizes on the constitutive elements of a hierarchical classification scheme, identifying the same components as Dobrowolski (and Roberge): 1) originating class; 2) derived classes, which may be composed of initial, nodal or lowest classes; and 3) divisional level. De Felice also introduces the concepts of class groups, branches and chains, as per Dobrowolski’s postulate.

³⁰⁷ Raffaele De Felice, *Per la formazione dei titolari di archivio* (1967), Reprint in *Antologia di scritti archivistici – parte I*, Giuffrida, Romualdo (Ed.), Roma, Ministero per i beni e le attività culturali, Saggi 3, 1985, p. 387-388.

³⁰⁸ Ivi, p. 388.

Up to 1988, De Felice recommends that subdivisions be limited to three levels and eventually, when needed, up to five levels.³⁰⁹ In his 1988 publication, where De Felice reflects Dobrowolski's theory, he reports that divisional levels are unpredictable and composed of an undetermined number of partitions. In natural (not arithmetic) classification structures, the number of classes is not predetermined because it directly derives from the variations of the specific differences of each class. In some aspects, such as this one, De Felice adapts his theories to Dobrowolski's structural classification principles. In others, such as the coding system, De Felice maintains his previous theories and concepts, and no influence of Dobrowolski's symbolization or notation principles is observed. Dobrowolski's chapter on notation systems is extensive (the longest one) and not easy to decrypt by 'non-mathematicians,' due to the use of numerous algorithms that explain the encoding logic, among others, of the brief symbols system (Système de notation à symboles brefs). Perhaps De Felice preferred to support a coding system that he had theorized himself, and had already been consolidated by practice over the years. De Felice's coding system is characterized by three indexes:

1. Primary index

The primary index is composed of two, three, four or five numbers, plus a slash followed by the file number. To have a coding system of a maximum five numbers (which is the maximum number of classification levels initially proposed by De Felice), each classification scheme subdivision should not have more than nine children or partitions (as seen in the Universal Decimal Classification, from which De Felice was also inspired). This results in an easy-to-read coding index and a clear interpretation of its meaning. If a subdivision exceeds nine children or partitions, the index coding will have two digits. It is then necessary to use a dot to separate the primary index groups. In this way, the interpretation and the distinction of the title partitions are easier; for example, the index: 1.12.34/3, indicates: 1 = title; 12 = class; 3 = sub-class; 4 = category; /3 = file.³¹⁰

2. Archive index

This index indicates the creating office with a roman numeral, an acronym or a symbol, which precedes the primary index, and from which it is separated by a dash.

³⁰⁹ *Ibidem.*

³¹⁰ Ivi, p. 395.

For example, the index: PER-115/3, indicates: PER- = Personnel Office; 1 = title; 1 = class; 5 = sub-class; /3 = file.³¹¹

3. Common index

This is a particular coding index, which has a constant meaning in any classification scheme. De Felice identifies two types: the common index of places (geographical locations), and the common index of subject matters. Common indexes are enclosed in parentheses and follow the primary index. They normally find place after the indication of the file number. For example, the index (coding or notation) 257/3 (NA) indicates: 2 = title; 5 = class; 7 = sub-class; /3 = file; (NA) = geographical area of Napoli. An example of a common index of subject matter may be the constant partition of personnel records as follows:³¹²

- (1) Recruitment
- (2) Career development, retirement
- (3) Technical and professional training
- (4) Status position
- (5) Discipline and litigation
- (6) Register of state employees
- (7) Economic treatment
- (8) Personnel files
- (9) Pension and insurance

One of the above indexes, added to a primary index, specifies the matter to which the record refers. For example, 122/15(07) means: 1 = title; 2 = class; 2 = sub-class; /15 = file; (07) = common index of subject matter, which refers to 'Economic treatment.' Common indexes of locations and subject matters can be contained simultaneously in the same parenthesis, distinguished from each other by a dot. For example, (NA.07) indicates a place (Napoli) and a subject matter (Economic treatment).

It is interesting to note that these types of subdivisions (codified through common indexes) are later used and further developed by Roberge with his recurrent classes, specifically the specific subdivisions. Like De Felice, Roberge exemplifies this type of subdivision through the categorization of staff files into: Career,

³¹¹ Ivi, p. 397.

³¹² Ivi, p. 399.

Compensation, Health, Leave, etc. Roberge also foresees that files can be integrated by either uniform subdivisions or specific subdivisions.

Other methodological sources

Some general methodological indications are provided by other sources when the process for designing and implementing a records management system is described, as the elaboration of a file plan is generally one of the process steps. For example, many archival manuals, such as the one of Cruz Mundet (2011), report the phases illustrated in the ISO 15489 (2001), which in turn is based on the Australian Records Management Standard, AS 4390 (1996). This Australian standard was the precursor of the eight steps methodology known as DIRKS (*Designing and Implementing Record Keeping Systems: Manual for Commonwealth Agencies*),³¹³ developed by the National Archives of Australia. The methodology described in these standards and other sources will be analyzed below.

3.7.2.4 ISO 15489 on Records Management

ISO 15489 describes the essential characteristics of records systems and provides guidance about the eight steps foreseen in the process of designing and implementing systems for managing records. Particularly step B, which aims to analyze the business activities and processes carried out by an institution, involves establishing a classification structure known as a business classification scheme. This scheme is presented as a hierarchy of functions, activities and transactions, which reflects what an organization does. The business classification scheme is the foundation from which a records classification scheme is developed.³¹⁴

ISO 15489 gives general methodological input for the development of business activity analysis, and its findings are used to elaborate a business activity classification and, in consequence, a records classification scheme. The

³¹³ DIRKS is outlined in the Australian standard AS ISO 15489-2002 on Records Management (an Australian codification of the International Standard on Records Management, ISO 15489-2001), which replaced AS 4390.

³¹⁴ A business classification scheme and a records classification scheme are two different tools, whose distinction may not appear so clear, inducing users to some confusion. According to DIRKS, a business classification scheme is a conceptual representation of the business activity performed by an organisation. It is a by-product of the analysis of business activity; thus, a hierarchical model of what an organisation does. Stemming from the organisation's business classification scheme, a records classification scheme is a tool for classifying records and other business information, based on the business activities that generate records.

methodology that is proposed by ISO 15489 to identify business activities involves the analysis of: a) the goals and strategies of the organization; b) the functions that support the pursuit of those goals and strategies; c) the activities that constitute the functions; d) the work processes performed to carry out specific activities and transactions; e) the steps of those processes or activities; f) the transactions that make up each step; g) the groups of recurring transactions within each activity; and h) existing records.³¹⁵ ISO 15489 explains that the results of these several analyses are used to elaborate a hierarchy of business activities, which may be supplemented by sequential representations of business processes.

3.7.2.5 DIRKS (Designing and Implementing Record Keeping Systems: Manual for Commonwealth Agencies)³¹⁶

DIRKS, from which ISO 15489 derives, outlines an eight step process for creating records management systems. It gives more extensive recommendations and examples to identify the organization's functions, activities and transactions than ISO 15489. Step A describes the sources used for preliminary investigations, which are pertinent to the analysis of the business activities (Step B). The informational resources pointed out by DIRKS for Step B are: a) Internal sources such as mission statements, corporate plans, annual reports, organizational charts, policy statements, procedure manuals, information systems documentation, records and forms; b) External sources such as legislation, regulations, instructions and circulars; c) Interviews to be conducted with staff. DIRKS facilitates a guide to interviews, which includes determining who to interview, structuring the interview, preparing interviewees for discussions, preparing the interviewer and writing up notes, as well as sample interview questions.

DIRKS utilizes two types of analysis to understand business activities, and identify functions, activities and transactions. The hierarchical analysis is a 'top-down' approach that starts examining goals and strategies and subsequently how

³¹⁵ International Organization for Standardization, *ISO 15489-2:2001: Information and Documentation – Records Management, Part 2: Guidelines*, cit., 2001, p. 9.

³¹⁶ The DIRKS manual is currently available at the State Records of the New South Wales government website: <https://www.records.nsw.gov.au/recordkeeping/advice/dirks>. (Accessed on 31/01/2017).

these are achieved. Instead, the sequential analysis is a ‘bottom-up’ approach that starts examining work processes and their transactions, and gradually relate them to broader classification levels. As ‘top-down’ analysis gives the organizational context in which the activities and processes take place, DIRKS recommends that the sequential analysis is carried out after, or as part of the hierarchical analysis. Indeed, the identification of transactions help define the boundaries of activities and therefore the scope of functions, as well as the examination of records provide information that is relevant to upper levels. Therefore, both types of analysis can be alternately used depending on circumstantial needs.

When describing the hierarchical analysis, DIRKS provides one recommended approach to identify the organization’s functions, activities and transactions, their review and testing. This approach is presented in five stages, based on the use of the informational sources seen in Step A.

Stage 1: Identify the organization’s functions

DIRKS provides possible sources in which the organization’s functions may be mentioned, and gives concrete examples; i.e., legislation identifies functions or the purpose for which the organization was established; annual budgets list the organization’s outputs; annual reports summarize key achievements; recent action plans identify key corporate objectives; website and intranet main subject headings may list the organization’s functions. The functions that emerge from these sources are then listed, compared and grouped. Each function is also described, stating what the term includes or excludes. In addition, the business units that are involved in delivering each function are identified.

Stage 2: Identify the organization’s activities

DIRKS provides tables exemplifying the actions that should be undertaken in this stage, i.e., examination of the previous sources to identify specific activities undertaken to accomplish the functions. It also proposes to interview key staff of business units that deliver each function to discuss the activities that their unit carries out. At this point, a list of activities for each function can be compiled and consolidated, ensuring that no activities overlap.

Stage 3: Identify the organization’s transactions

At this stage, DIRKS proposes to review the organization's lists of records series (if available) and to identify the transactions that produce those records. Interviews should also be arranged with key staff to discuss the transactions undertaken by their

business unit. The output, in this case, is to draft a list of transactions (or sequence of steps) that makes up each activity. After this step, it may be necessary to further refine the activity descriptions developed in Stage 2.

Stage 4: Review functions, activities and transactions

This entails the review of the draft list of functions, including their activities and specific transactions. At this point, it should be clear as to which function an activity belongs.

Stage 5: Testing functions, activities and transactions

The list of functions, activities and transactions with descriptions of the scope of each function and activity needs to be tested in interviews and workshops with relevant staff members.

This is the sequence of stages described by DIRKS for conducting a hierarchical analysis. For a sequential analysis, however, DIRKS recommends to investigate processes to find relevant information, such as the sequence of steps within the process; the actions which need to be completed before steps can occur; the inputs or dependencies from other systems (such as the need for authorisation, signature, etc.); the people managing and performing the process; the offices in which the process is being carried out; the rules affecting the process; and the records generated as a by-product of transactions. DIRKS points out that these stages can be applied to those cases in which a process is composed of a sequence of steps. However, there may be processes in which a step by step path is not identifiable, due to contingencies derived from certain decisions or actions, which should also be examined. Further guidance on how to identify the sequence of transactions in a process and variations of the routine process may be found in the Australian Standard 5090-2003, Work Process Analysis for Recordkeeping, subsequently issued as an ISO standard (ISO/TR 26122:2008).

After this analytical phase, a business classification scheme can be produced. To check if there have been inconsistencies or overlapping in the analysis outcomes, DIRKS recommends verifying a series of aspects, such as 1) the functions represent all of the business of the organisation; 2) each function, activity and transaction has meaningful headings, a definition and date ranges (if available); 3) the boundaries of each function and of each activity mutually exclude the other functions and activities, respectively.

As it may be observed, DIRKS is an exemplary methodological approach to develop and implement a record-keeping system, in which a classification scheme is conceived as a key tool. It pays particular attention to the elaboration phases of a hierarchical business classification scheme through the identification of business functions, activities and transactions. The only observation that can be made is that the inter-connection and arrangement between functions, or among activities, or between transactions are not clearly addressed. For example, Xie affirms that, in the DIRKS records classification scheme, “activities are listed under function in alphabetical order, just as the manner of organizing subject terms in subject-based classification systems.”³¹⁷ Xie makes a comparison between two types of function-based classification systems: the Australian DIRKS-type and the Canadian BASCS-type. She recognizes that the organization of activities or sub-functions is a major difference between these two models. BASCS considers an alphabetical arrangement of activities (and transactions) to be less meaningful, and emphasizes the sequential order of carrying out processes. When no logical sequence can be identified, BASCS advocates for the use of subjects or other sorting schemes, which can be alphabetically arranged, as it may occur for sorting out file units. The example of a business classification scheme provided by ISO 15489 also neglects the arrangement aspects existing between classification elements. In the ISO 15489 example of a hierarchy for personnel, the activities within the function “Managing Human Resources” do not seem to follow a linear or cyclical sequence or order; on the other hand, transactions are alphabetically organized.

3.7.2.6 BASCS (Business Activity Structure Classification System)

The Canadian BASCS methodology is also a hierarchical function-based classification system, developed by Library and Archives Canada. Since the late 1990s, the Government of Canada promoted a macro-appraisal model, which influenced the move from a subject-based to a function-based approach (BASCS) for all public records.³¹⁸ BASCS, like DIRKS, foresees three classification levels (even if the classification elements in both systems are differently subdivided): a) Function, which is the highest level of activity denoted by a block title; b) Sub-

³¹⁷ Li Xie, *Function-Based Records Classification System: A Comparative Study*, 2007, p. 4.

³¹⁸ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 56.

function, which is the second highest level of activity denoted by a primary title; c) Activity, that is the next level at the secondary, tertiary, and lower levels of activity, in which records can be organized by transaction, project, object (case file), or subject content.

As Xie writes, “BASCS focuses more on decomposing sub-functions (which are the activity level in the DIRKS records classification scheme) than activities (which are the transaction level in the DIRKS records classification scheme).”³¹⁹ In fact, BASCS requires a 'top-down' analysis of business activities to construct a classification system, rather than a 'bottom-up' analysis focused on end products (records), as proposed by DIRKS to analyze the sequential processes at the transaction level. In addition, BASCS differs from DIRKS and ISO 15489 by the fact that it makes a distinction between classification and filing structures. The BASCS file system has two components: “the first reflecting the business activity structured sequence, and the second reflecting the records classification system. One can construct the first component, [...] without ever constructing the second.”³²⁰ The first component (the business activity structure) is formed by functions (the block level) and sub-functions (primary level), which derive from the analysis of the business process. No files or records exist at these first two levels. The second component for the BASCS file system is formed by secondary and tertiary file levels, which correspond to the third, fourth and lower levels. They can be about activities, subjects, projects, client or other types of records. File units are listed in descending order from these secondary and tertiary titles and, as previously said, they are arranged following a sequence of actions, not an alphabetical order. From a theoretical perspective, this system composed of an abstract activity structure and a file plan in which records are connected to file units, is very close to the traditional (and still current) classification practices in Italy and also Spain.

As in DIRKS for determining business activities, BASCS proposes the use of the business process analysis to identify functions, sub-functions and activities for elaborating a records classification system. BASCS briefly describes the process as follows:

³¹⁹ Li Xie, *Function-Based Records Classification System: A Comparative Study*, 2007, p. 5.

³²⁰ Paul Sabourin, *Constructing a Function-Based Classification System: Business Activity Structure Classification System*, cit., 2001, p. 149.

Identification of functions

The identification of functions starts with background research about the functions that are stated in: laws; regulations; existing business process models; and policies, processes, and procedures that relate to the institution's basic responsibilities. BASCS proposes checking the results of the research against 1) the strategic outcomes available in the institution's main budget and annual reports; 2) the program review, evaluation, and audit reports; and 3) the information about the institution available on its Internet or intranet sites. BASCS identifies five administrative functions that are common to all Government of Canada institutions: 1) General Administration (including management of government information, security, and administrative support); 2) Real Property Management; 3) Material Management; 4) Finance Management; 5) Human Resources Management.

Identification of sub-functions and activities

The identification of sub-functions foresees to use the information gathered during the previous research, write a description of the function and its sub-functions, and attach the business process model (made for the function) to arrange functions and sub-functions, based on what happens first, what happens next, and so on. The same process applies to identify activities.

3.7.2.7 Rules for identifying and formalizing classification categories

Among the most recent publications dealing with a methodological approach for identifying and formalizing the categories of a records classification scheme, there is a paper entitled *Normalizando la clasificación de documentos: Propuesta de reglas* (Normalizing records classification: Proposed rules), authored by C. Fernández Vega, A. Hernández Martín and A.B. de los Toyos de Castro, who are archivists from the Government of Asturias (Spain). The paper was presented in 2014 at the *VII Jornadas Archivando: la nueva gestión de archivos*, organized in León (Spain) by Fundación Sierra Pambley. This article introduces a methodology to identify, define, build, maintain and update in a standardized way categories or classes of a classification scheme. The authors assert that an objective classification process requires the use of reliable information sources, such as those of legal character. For this reason, they propose to use the General Budget of the public sector organizations, including their elaboration rules. Both are legal Spanish texts that provide a functional classification of expenditures, structuring, at different levels of

aggregation, the activities carried out by each organization in the exercise of the functions assigned. This structure is the one that will support the identification of the classification scheme higher levels. As a secondary informational source, they propose the use of the inventory or registry of administrative procedures and services that all Spanish public administrations are obliged to maintain.³²¹

From these sources and assumptions, and following the proposals contained in the Technical Report ISO / TR 26122: 2008 on the analysis of work processes for records management, the functional analytical method from general to specific, combined with the sequential analysis, is applied to determine the flow required for the identification and definition of the categories of a functional classification scheme. As a result of this analysis, six entities are considered substantive to identify records series: institution, function, sub-function, activity, administrative procedure and document type. Thus, the resulting sequence of operations required to identify the categories of a classification scheme consists of the following procedural rules: 1. Identification and naming of institution; 2. Identification and naming of function; 3. Identification and naming of sub-function; 4. Identification of activity; 5. Identification of administrative procedure; 6. Identification of document type; 7. Identification and naming of records series. Each of these entities should be identified and named based on an analysis carried out through a data model,³²² which is structured through the following six parameters: Object; Actors; Previous conditions; Flow of events; Results; and Formalization. The following are two examples, illustrated in the paper, on the methodology to be followed to identify and name two of the seven entities: a function and a record series:³²³

³²¹ These sources are also taken into consideration by DIRKS, BASCS and Roberge. Specifically, the use of the Annual Budget to identify the organization's functions is recommended by DIRKS in its Stage 1.

³²² The data model that formalizes these rules follows the use case technique of the METRICA methodology (METER, version 3, 2001). METRICA was designed and is promoted since 1989 by the Spanish Ministry of Public Administration (now the Ministry of Finance and Public Administration). METRICA provides a set of methods and techniques aimed at obtaining final software products, which can be used by organizations in the planning, development and maintenance of information systems.

³²³ Carmen Fernández Vega, Alicia Hernández Martín, Ana Belén de los Toyos de Castro, *Normalizando la clasificación de documentos: Propuesta de reglas*, in *Jornadas Archivando: la nueva gestión de archivos*, León, 6 y 7 de noviembre 2014, León: Fundación Sierra-Pambley, 2014, respectively p. 202 and 207.

Identification and naming of functions	
OBJECT (Scope)	To identify and name in a univocal manner each function that has to be part of the classification scheme. In the context of this rule, the functions represent the main competences conferred to the institution by the law for the fulfilment of its objectives.
ACTORS (Professionals who have to intervene to put the rule into practice)	Records managers with skills in managing records series, and records managers with skills in administering or managing description.
PREVIOUS CONDITIONS (Conditions that must be fulfilled to put the rules into practice)	The legal information source that determines the functions assigned to the institution.
FLOW OF EVENTS (Steps to be followed to apply the rule and get the expected result)	To use, as an informational source, the functional structure of expenditure that the rules have established for the preparation of the institution's General Budget.
RESULT	The function and its formal name are identified from a legal informational source.
FORMALIZATION (The obtained result is materialized in an authorized form)	<ol style="list-style-type: none"> 1. The function name will follow the one used in the legal informational source. In general, it will take the name that appears in the rules for elaborating the institution's general budget. 2. Exceptions to this rule must be justified and an appropriate new rule should be drafted. 3. For the maintenance of the classification scheme, each new function will be incorporated at the end of the structure, so as not to alter the digits representing the location of the function element in the structure of the records classification scheme.

Identification and naming of records series	
OBJECT (Scope)	To determine whether it is necessary or not to create a new records series to classify a group of related records.
ACTORS (Professionals who have to intervene to put the rule into practice)	Records managers with skills in administration or management of records series.
PREVIOUS CONDITIONS (Conditions that must be fulfilled to put the rule into practice)	<p>To have identified the institution.</p> <p>To have identified a function.</p> <p>To have identified a sub-function.</p> <p>To have identified an activity.</p> <p>To have the inventory of administrative procedures.</p> <p>To have an administrative procedure identified.</p> <p>To have administrative files already processed.</p> <p>To have identified the documentary type.</p>
FLOW OF EVENTS (Steps to be followed to apply the rule and get the expected result)	<ol style="list-style-type: none"> 1. As a result of the analysis done, it should be determined whether or not it is necessary to create a new records series. 2. If not necessary, it should be determined in which existing series the identified records should be classified. 3. If necessary, the series is named in accordance with the naming formalization guidelines established by this rule.
RESULT	A records series and its naming.
FORMALIZATION (The obtained result is materialized in an authorized form)	<p>The records series naming is composed of the following elements:</p> <ol style="list-style-type: none"> 1. The documentary type. 2. The activity in the execution of a specific conferred competence. <p>Example: Disciplinary files on transport.</p>

This is an example of systematizing, through procedural rules, the identification of the elements of a records classification scheme that, in this specific case, is composed of three levels: functions, sub-functions, and activities (the latter, corresponding to the records series level). As it may be observed, this structure presents many similarities with the BASCS three-level classification system. The

systematization process, presented in the above analyzed paper, is a very interesting exercise, even if the basic informational sources from which the definition of the upper classification levels is derived, may not be the more comprehensive references in many institutions: structure of expenditures in General Budgets are not always function-based, not all the institutions have clearly identified administrative processes and procedures.

3.7.3 Final considerations

The functional approach to classification is considered by the archival scholars analyzed in this dissertation the most appropriate means to classify records. Nonetheless, a purely functional classification system is apparently only addressed by Roberge's methodology. The classification schemes that this researcher has analyzed during the investigation work are hybrid systems in which the functional systematization prevails at higher classification levels, even if many times main functions adopt the name and embrace the competences of administrative units. Lower levels also reflect activities and transactions in which sequential processes are determined by the specific responsibilities of offices or, in more strictly functional systems, a transaction carried out by several offices creates files that are identified by the office name (to allow each office to classify its own records in a separate file). In other cases, the subject of a competence may prevail over the function. This hybridism reflects two main features: 1) the lack of comprehensive procedures to identify and interrelate the elements composing a records classification scheme: function, activity and transaction, including competence; 2) the possibility that the functional and organic approach needs to coexist, as institutions are, in a higher or lower degree, compartmentalized and each section/unit works without appropriate integration and interrelation with others, so they manifest the need to create their own separate files to conduct their business. This latter aspect also reflects that, without a re-engineering aimed at simplifying and efficiently organizing the institution's business processes, it becomes difficult to plan and implement a purely functional-based classification system.

As seen in this chapter, the archival discipline has adopted two main methodological approaches to develop functional-based classification systems: 'top-down' and 'bottom-up.' Both approaches used together, as DIRKS remarks, provide

a broad-based perspective from which to develop a classification scheme. Orr affirms that “developing a functions-based classification appears generally to be a time consuming process and this use of resources may need to be weighed against the benefits.”³²⁴ In particular, the bottom-up approach, also recommended by Shepherd and Yeo, employs system or process modeling to represent business transactions and their relationships. Business process modeling is a technique mostly developed by systems analysts, which aims at redesigning or reengineering processes to improve business quality and efficiency. The application of this technique requires an expertise that archivists do not have. Furthermore, any re-engineering process is costly and lengthy, and may fail if not well planned and implemented among users. Therefore, pure functional classification is tightly linked to business process analysis, which requires considerable investments that are not affordable to many institutions. This is a vicious circle in which the lack of specific system analyses or assessments prevents reorganization and development of logical and functional flows that can be adequately reflected in a consistent classification system.

³²⁴ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 112.

4. ANALYSIS OF FUNCTIONAL REQUIREMENTS FOR ARCHIVAL SEDIMENTATION IN ELECTRONIC RECORDS MANAGEMENT SYSTEMS

Nowadays, records creation occurs mostly in a digital environment, even though analogue records are still part of official and formal methods of communication. For this reason, institutions need to consider the implementation of hybrid records management systems to organize and exercise control over their entire records production. One objective of this thesis was to analyze the requirements that international standards and *de-facto* specifications propose for designing and implementing electronic records management systems, specifically in relation to records sedimentation in hybrid environments. The analysis of standards and specifications has been complemented by visits to national and international institutions based in Rome, which have implemented electronic systems. The scope of the visits was to obtain an overview of their system characteristics and technical issues. The analysis has primarily focused on how these systems are dealing with archival functions, such as the management of archival flows, particularly registration, and/or classification/filing. The visits were intended to be a complementary support to this specific chapter.

4.1 Comparative analysis of records management standards

The main policies, specifications and quality standards that have been analyzed identify the functional and non-functional requirements that records management systems must meet to ensure the management of appropriate records processes. These standards and policies are as follows:

- ISO 15489: Information and documentation: Records Management, 2001 (Part 1: General; Part 2: Guidelines).
- DoD 5015.02-STD: Design Criteria Standard for Records Management Software Applications, 2007.
- ICA-Req: Principles and Functional Requirements for Records in Electronic Office Environments, 2008. (Module 1: Overview and Statement of Principles; Module 2: Guidelines and Functional Requirements for Electronic Records Management Systems; Module 3: Guidelines and Functional Requirements for Records in Business Systems).

- MoReq2: Model Requirements for the Management of Electronic Records, 2008.
- MoReq2010: Model Requirements for Records Systems, Version 1.1, 2011.

The study was carried out through a comparative analysis of these standards, starting from the processes or functions identified by ISO 15489 as necessary for proper records management: 1) Capture; 2) Registration; 3) Classification; 4) Retention and Disposal; 5) Storage and Handling; 6) Access and Security Controls; 7) Monitoring and Auditing; and 8) Documenting Records Management Processes. The analysis of these processes revealed accentuated inconsistencies in terminology and concept in the different standards. For this reason, the processes will be described, emphasizing the similarities and differences that each of these concepts presents in the various standards.

4.1.1 Capture

[Related terms: *Declare / Creation / Registration / Classification / Filing*]

‘Capture’ is not a term traditionally used in the archival field. However, with the proliferation of electronic records management systems, the concept of ‘capture’ has been introduced to signify that these systems should have the functionality of records acquisition (regardless of record format, encoding method or other record technological specificity), including the possibility of making records content non-modifiable, so as to ensure records authenticity.

ISO 15489 points out that, in traditional paper-based records systems, records ‘capture’ took place through the process of classification and filing, specifically at the time of the physical placing of a record within a file.³²⁵ Therefore, ‘capture’ can be synonymous with filing in a paper-based environment. In the digital context, however, the term has acquired a much broader and imprecise meaning.

In MoReq 2, ‘capture’ includes both the act of uploading records into the system, and the processes of registration, classification, addition of metadata and freezing records content.³²⁶ For ICA-Req, ‘capture’ is the process of introducing a

³²⁵ "In paper records systems, capture can be effected by physically placing a document into a chronological sequence within a file or folder that contains a title. Adding papers to a file (capturing the record) becomes a conscious process of determining which classification best suits the particular document, and deliberately placing it in a predefined and known sequence of documents." International Organization for Standardization, *ISO 15489-2:2001: Information and Documentation – Records Management, Part 2: Guidelines*, cit., 2001, p. 14.

³²⁶ "Capture (verb): 1. The act of recording or saving a particular instantiation of a digital object

record or digital object within a management system, involving also the assignment of metadata that describe and contextualize the record. Once a record is captured, its content, structure and context become stable and not modifiable, in order to ensure that it is the authentic and reliable representation of the activities or operations for which the record was created or transmitted.³²⁷

Another somewhat imprecise concept is ‘declare,’ which is often used as a synonym of ‘capture.’ In DoD, ‘declare’ is associated with the filing process, and therefore, with records capture and storage, which involves actions such as assigning a unique identifier (DoD does not use the term registration) or filing and adding metadata to records within the system. In this context, the record is captured in the system through a series of obligatory metadata that allow to declare (identify/register) it as an authentic archival document.

For MoReq2, the declaring process is used for non-archival documents. MoReq points out that records management systems can handle both non-archival documents (through the document management module) and archival documents (through the records management module). Through the process of declaring, the non-archival document is declared a record or archival document.³²⁸ ‘Declaring’ forms part of the capture process, which in turn includes the functions of records registration, classification and addition of metadata. In this way, once acquired, the document may be declared official, becoming an authentic archival document, non-modifiable either in its content or in its metadata.

MoReq2010 defines ‘declare’ as a term (linked to ‘capture’) that describes a user action that may precede the creation of a record within the records management system. ‘Declare’ (like ‘capture’) leads to the creation of a record within the system.

(source: InterPARES 2). It follows that ERMSs can capture a variety of information. An ERMS can capture records, metadata, and in some cases documents, among others; 2. Saving information in a computer system. 3. In the context of MoReq2, capturing records is used to mean all the processes involved in getting a record into an ERMS, namely registration, classification, addition of metadata, and freezing the contents of the source document. The term is used more generally to mean inputting to the ERMS and storing other information such as metadata values." DLM Forum - European Commission, *MoReq2: Model Requirements for the Management of Electronic Records*, Luxembourg, European Communities, 2008, p. 15.

³²⁷ The process of fixing the content, structure and context of a record to ensure that it is reliable and authentic representation of the business activities or transactions in which it was created or transmitted. Once captured within an electronic records management system, users should not be able to alter the content, structure and context of a record. International Council on Archives, *ICA-Req: Principles and Functional Requirements for Records in Electronic Office Environments*, Module 2: Guidelines and Functional Requirements for Electronic Records Management Systems, 2008, p. 24.

³²⁸ Geoffrey Yeo, *Rising to the level of a record? Some thoughts on records and documents*, «Records Management Journal», 21 (2011), n. 1, p. 8.

The use of one or the other term depends on the user's perception in considering whether the record is transferred and uploaded (captured) into the records management system, or rather if the record is created (declared) within the system.³²⁹ Practically, this last action (declare) implies filling out a pre-established form with some compulsory metadata, and uploading the new record (which is a file created outside the system).

As it may be observed from what has been said so far, 'creation' and 'capture' are used as synonymous terms in the context of records management systems. 'Create' is defined by MoReq2010 as "The function of adding a new entity to an MCRS,"³³⁰ and 'capture' as "An activity leading up to the creation of a record in an MCRS."³³¹ The meaning of records creation is therefore very different from the one used traditionally in the archival field, and this may cause misunderstandings. Typically, what is acquired by the electronic management system is a record reproduction or copy,³³² and this is done through the upload or drag and drop of existing records, which have been created outside the system on office productivity software or office suites. Records management systems have very limited functionalities with regard to the making of records, which for the most part are reduced to txt, html and xml formats. The integration of plug-ins for office suites allows to modify or make versioning of the records previously acquired by the system. Therefore, the creation of records is not a well-developed functionality in these systems, which are conceived to carry out storage activities of authentic records copies.

³²⁹ "Declare (concept): A related term to capture that describes the user action that may precede the creation of a record in an MCRS." DLM Forum Foundation, *MoReq2010: Modular Requirements for Records Systems, Volume 1, Core Services & Plug-in Modules*, Version 1.1, 2011, p. 201, p. 205. "Capture (concept): An activity leading up to the creation of a record in an MCRS. Other terms may also be used for this, such as declaring a record. Often this is dependent on the user's perception as to whether the content of the record must be moved into a new storage facility (capture), or it can be made a record in place (declare)." Ivi, p. 200.

³³⁰ DLM Forum Foundation, *MoReq2010: Modular Requirements for Records Systems, cit.*, 2011, p. 204.

³³¹ Ivi, p. 200.

³³² As the US National Archives remarks, "the term "records creation" means the production or reproduction of any record." Records Management by the Archivist of the United States, *44 U.S.C. Chapter 29*, § 2901. Definitions. <http://www.archives.gov/about/laws/records-management.html>. (Accessed on 31/01/2017).

4.1.2 Registration

[Related terms: *Capture / Declare / Identification / Classification / Disposition*]

The registration process is defined by ISO 15489 as the act of assigning a unique identification to a record at the time of its capture in the system to provide evidence that it has been produced or acquired. Records capture by electronic records management systems takes place through a process that is equivalent to registration. Besides assigning a unique identifier, the registration involves the addition of short descriptive information about the record. Registration is a way to formalize the capture of a record in a records system. Records can be registered in more than one aggregation level within a system. This means that in electronic records systems the registration process may involve classification, and also the identification of records final disposition and access conditions.

MoReq2 and MoReq2010 use the terms ‘capture’ and ‘declaring,’ not ‘registration.’ Similarly, DoD 5015.02 uses the term ‘declaring’ (and not ‘registration’). ICA-Req, instead of ‘registration,’ uses the term ‘identification,’ which is defined as the process of assigning (in persistent form) a unique identifier to a record or aggregations of records. ‘Identification’ aims to facilitate records retrieval and to help distinguish between their different versions. The addition of descriptive information occurs at the time of records capturing in the management system, when metadata are assigned to describe and contextualize the records.

4.1.3 Classification

[Related terms: *Filing / Aggregation / Declare / Capture*]

As with the processes of capture and registration, the terminology used to express the concepts of classification and filing is inconsistent in the standards. Often, the term ‘classification’ encompasses the concept of ‘filing’, which in general, is not used as a term (with the DoD exception, which does not use the term ‘classification’ but only ‘filing,’ as ‘classification’ is intended to mean the level of records secrecy at the Department of Defense). In ICA-Req, MoReq2 and MoReq2010, instead of ‘filing,’ the concept of ‘aggregation’ is used, which can be applied to records (to create files) or other documentary entities (to create series, collections, or archives).

Classification is defined by ISO 15489, ICA-Req and MoReq2 as the “Systematic identification and arrangement of business activities and/or records into categories according to logically structured conventions, methods, and procedural

rules represented in a classification system.”³³³

In ISO 15489, ‘classification’ is a process in which records are aggregated, where possible, in files to facilitate their description, control and relationship; to determine their retention period and access privileges; and to assign responsibilities for their management. The standard also describes the process for the elaboration of a hierarchical records classification scheme, and the actions needed to classify records in the classification scheme. The concepts of filing or filing plan are not developed in this standard, since ‘classification’ is treated as a broad concept, which includes the aggregation of records in files, but also into classes.

ICA-Req introduces the concept of aggregation, which is defined as the accumulation of related records that, if combined, can constitute different aggregations, such as files or series.³³⁴ ICA-Req distinguishes between classification levels and electronic aggregations, which should have different naming mechanisms: alphanumeric codes for classification levels, and a textual name for each aggregation. Aggregations are controlled through a classification scheme. The term filing is not used by ICA-Req, however, the act of filing (“to file”) is defined in its glossary as “The action of placing documents in a predetermined location according to a scheme of control.”³³⁵

MoReq2 clearly distinguishes the concepts of classification and filing, arguing that classes and files are different types of structure. Classes provide a classification framework, while files are used to aggregate records. Files can be divided into sub-files and these, in turn, into volumes, in order to better manage particularly voluminous file contents. These subdivisions facilitate navigation within the file and

³³³ ICA-Req and MoReq2 reuse the ISO 15489 definition of classification: "Systematic identification and arrangement of business activities and/or records into categories according to logically structured conventions, methods, and procedural rules represented in a classification system." International Organization for Standardization, *ISO 15489-1:2001: Information and Documentation – Records Management, Part 1: General*, Geneva, 2001, p. 2. MoReq2010 defines classification as "The act of associating a class from a classification scheme to an aggregation or record." DLM Forum Foundation, *MoReq2010: Modular Requirements for Records Systems, cit.*, 2011, p. 201.

³³⁴ "Aggregation of records are accumulations of related record entities that when combined may exist at a level above that of a singular record object, i.e., a file or series. These relationships are reflected in the metadata links and associations that exist between the related records, and between the records and the system. The aggregations are controlled within a classification scheme." International Council on Archives, *ICA-Req: Principles and Functional Requirements for Records in Electronic Office Environments*, Module 2: Guidelines and Functional Requirements for Electronic Records Management Systems, 2008, p. 26.

³³⁵ "File (Verb): The action of placing documents in a predetermined location according to a scheme of control. Source: Adapted from J. Ellis (de)., *Keeping Archives*, 2nd edition, Australian Society of Archivists and Thorpe, Melbourne 1993, p. 470." Ivi, p. 61.

the assignment of different retention periods.³³⁶ Sub-files are divisions based on the intellectual records content; instead, volumes are mechanical divisions based on size, weight or records time periods. This makes them easier to handle at the time of their appraisal, selection and transfer to the records centre.

The first version of MoReq (MoReq1) did not foresee the division of files into sub-files, nor classification (understood as ‘declaring’ or ‘capture’) of records into classes, but exclusively within files. Instead, MoReq2 allows the classification (‘declaring’) inside a class and within a file.³³⁷

MoReq2010 distinguishes between classification and aggregation. While ‘classification’ deals with providing context to a record and establishing relationships between a record and the activity for which it was created, ‘aggregation’ describes the act of grouping together related records. Unlike ‘classification,’ ‘aggregation’ can answer to any policy or organizational need, not only to the functions, activities or operations that generate the records. The aggregation is stratified, with high level aggregations composed of lower level aggregations. Each record in a management system must be classified; this means that, from its creation, each record must be associated with an aggregation (file). This provision preserves the integrity and identity of each aggregation level, keeping them clearly separated. It also enables coherent management policies to be applied uniformly to each level of aggregation, and ensures that there is no ambiguity about where records should be formed. As in traditional hierarchical classification, only classes at the lowest classification level are used to classify aggregations and records. MoReq 2010 mentions other types of classifications, such as Keyword AAA, a functional classification scheme with a poly-hierarchical structure derived from ISO 2788:1986 Documentation - Guidelines for the establishment and

³³⁶ "Classes and files are different kinds of construct. Classes provide a framework for classification, while files aggregate records; classes are building blocks of classification schemes, while files are not." DLM Forum - European Commission, *MoReq2: Model Requirements for the Management of Electronic Records*, cit., 2008, p. 30. "Volumes and sub-files are typically used to subdivide files which might otherwise be unmanageably large. [...] Paper files are often divided into sub-files to organize the file contents, often according to document type. Correspondingly, there are benefits in dividing electronic files into sub-files: improving the ease of navigation through a file; providing a means to manage records that have retention requirements that differ from others in the file, such as those covered by privacy legislation. Each file may contain one or many sub-files; each sub-file may contain one or many volumes." Ivi, p. 32.

³³⁷ "MoReq 2 allows the declaring of a record directly into a class, as well as into a file. The original MoReq did not allow declaration directly into a class; it allowed only declaration into a file. In relatively rare cases, records may be stored outside of files – by being assigned to a class." Ivi, p. 25.

development of monolingual thesauri. Keyword AAA uses further links between classes, for example through related terms. In this way, MoReq2010 provides functional requirements to support both traditional classification/aggregation approaches, and heterogeneous aggregations containing records linked to different classes, such as those generated as the result of a complex activity or by different functions.

DoD reports the necessary requirements for filing, which is defined as the act of assigning and storing records according to a classification scheme.³³⁸ Among the requirements, it is foreseen that the attributes of the classification scheme components are associated to files (records folders), or to records when these are not associated to the files. Therefore, records can be classified within files and also outside files.

4.1.4 Retention and disposal

[Related terms: *Disposition / Classification / Registration / Capture*]

Disposition (final destination) is defined by ISO 15489, ICA-Req and MoReq2 as the processes that implement decisions on records retention, destruction or transfer, according to the provisions on their final destination.³³⁹ The ISO 15489 standard states that many records systems, particularly electronic ones, determine the retention period and the final destination of records at the time of capturing and registration. Furthermore, it describes the process of development of a retention schedule and identification of the final destination of records.

DoD defines ‘disposition’ as the set of actions regarding records that are no longer required to conduct the business of an institution. These actions include: the transfer of semi-active records to a records centre, the transfer of records to be kept permanently in historical archives, and the destruction of those records with a temporary retention that are no longer needed to carry out the institutional activities.

For ICA-Req, the retention and disposal schedules are applied to aggregations of records and related metadata. Instead, MoReq2 applies them to classes, files and/or sub-files and/or volumes, including documentary types. MoReq2010 closely associates classification with retention and disposal, so that each class has associated

³³⁸ "File: "When used as a verb, this term is used to define the act of assigning and storing records in accordance with the file plan." United States Department of Defense, *DoD 5015.2-STD on Design Criteria Standard for Electronic Records Management Software Applications*, 2007, p. 16.

retention periods, and each record inherits them by default from the class to which it belongs. Furthermore, MoReq2010 allows to apply retention periods individually to each record or to extend them to the belonging aggregations.

4.1.5 Storage and Handling

[Related terms: *Maintenance / Long-term preservation / Access / Security*]

These standards analyze in a superficial manner and unsatisfactory structured form the technical and technological aspects related to the repository or storage support of digital records, and the strategies that can be adopted to ensure records integrity and accessibility over time. In general terms, the standards do not provide definitions or indications to discern between the properties of the storage media, the maintenance strategies applied on the hardware and software to guarantee records accessibility in their active phase, and the strategies for the long-term preservation of records.³⁴⁰ Digital preservation is not treated as a combined and coordinated system of rules, processes, methods, technical infrastructure, and human and economic resources. Mostly, it refers to other standards or more specific guidelines on the topic.

For ISO 15489, “records should be stored on media that ensure their usability, reliability, authenticity and preservation for as long as they are needed. [...] Issues relating to the maintenance, handling and storage of records arise throughout their existence, not only when they become inactive.”³⁴¹ This means that special attention and care should be paid to these issues from the records creation phase. ISO15489 reports that “storage conditions and handling processes should be designed to protect records from unauthorized access, loss and destruction, and from theft and disasters.”³⁴² It adds that organizations should have policies and guidelines for converting or migrating records from one records management system to another,

³³⁹ “Disposition: Range of processes associated with implementing records retention, destruction or transfer decisions which are documented in disposition authorities or other instruments.” International Organization for Standardization, *ISO 15489-2:2001: Information and Documentation – Records Management, Part 2: Guidelines*, cit., 2001, p. 3.

³⁴⁰ InterPARES defines maintenance strategies as “A coherent set of objectives and methods for protecting and maintaining accessibility of authentic copies of digital records through their early stages in the chain of preservation.” Instead, preservation strategies are “A coherent set of objectives and methods for maintaining digital components and related information over time, and for reproducing the related authentic records and/or archival aggregations.” InterPARES 2 Project, *Preserver Guidelines. Preserving digital records: Guidelines for organizations*, p. 11.

³⁴¹ International Organization for Standardization, *ISO 15489-2:2001: Information and Documentation – Records Management, Part 2: Guidelines*, cit., 2001, p. 14).

³⁴² *Ibidem*.

and for the survival of emulation formats or any other future records reproduction modality. When such system changes occur, proof of change processes, along with details of any changes to the records structure and format, should be retained. Preservation is understood by ISO 15489 as the set of processes and operations needed to ensure the permanence of authentic records in their physical/technical and intellectual aspects over time.³⁴³

DoD lists the technological requirements that are needed to store digital records in suitable repositories and to protect records integrity, such as backup of stored records; storage of backup copies; disaster recovery capability through the system evaluation; data validation and data integrity checks; and storage availability and monitoring. It also provides requirements to keep the ability to read and process records for as long as those records should be retained, for example, maintaining the hardware and software used to create or capture records in the system; maintaining hardware and software that are able to view records in their native format; the migration of records to a new format before the old format becomes obsolete; etc.³⁴⁴

ICA-Req simply lists a number of requirements, such as back-up and data recovery, to prevent the loss of records. The creation of a regular back-up of records and administrative metadata is necessary to be able to quickly retrieve records in case any of them is lost due to system failure, accident or security breach. It adds that responsibilities for these functions of back-up and recovery should be divided between the administrator of the records management system and IT staff.

MoReq2 presents the long-term preservation of records and technological obsolescence among the non-functional requirements that must characterize a records management system. Therefore, preservation is not a process foreseen by the system, but it is a qualitative aspect of the system to facilitate the implementation of preservation strategies. MoReq 2 also remarks how digital records that must be retained for a long period face technological risks, such as media degradation, and hardware and format obsolescence. For this reason, it lists precautionary measures, strategies and requirements to be adopted to prevent the loss of information and to reduce the above technological risks.

³⁴³ Ivi, p. 3.

³⁴⁴ United States Department of Defense, *DoD 5015.2-STD on Design Criteria Standard for Electronic Records Management Software Applications*, 2007, p. 55-57.

MoReq2010 does not address the issue of digital preservation, but presents maintenance actions, such as backup and data recovery. In contrast to ICA-Req, it indicates that these actions/functions should be the responsibility of IT services and not divided among other system administration roles.

4.1.6 Access and Security

[Related terms: *Tracking, Monitoring and Control / Auditing / Maintenance / Long-term preservation*]

These functions are part of the records handling processes and the maintenance strategies for records management systems. The purpose of the functionality of access and security is to protect the content, structure and context of the records against intentional or accidental alterations, in order to ensure records authenticity throughout their life-cycle. ISO 15489 remarks that it is necessary to prepare an official tool that identifies the access rights and the restrictions applicable to records and people. It also illustrates the process of developing a security and access classification plan. In this line, ICA-Req presents functional requirements for the management of classified records or records to which security categories are applied ("unclassified; in confidence; sensitive, restricted, confidential, secret, top secret").

The policies and standards analyzed in this chapter present, as a security measure, the tracking of the movement and use of records within a management system, which ensures that only users who have appropriate permissions carry out tasks (on records) for which they are authorized. The tracking systems should be able to locate any record when required and ensure that each movement is traceable.

MoReq2010 includes security among the non-functional requirements. Safety issues concern the external integrity of the management system and its ability to prevent unauthorized access, hacking or tampering, computer viruses, and other forms of accidental or malicious damage. It recommends the use of the ISO 27000 standard for the system security evaluation through penetration tests that simulate attack by a malicious user. Finally, MoReq2010 describes the characteristics that a records system should have, such as: 1) it should be physically secure, with limited access to hardware, equipment and installed software; 2) it should be secure in its data, ensuring that the information stored on the server and client devices is not accessible except through the application itself; 3) secure from unauthorized access,

which requires one or more authentication factors; 4) secure in its communications, using digital certificates and encryption, wherever possible, to ensure that information is exchanged only with the recipient; and 5) internally secure, applying access controls that do not allow multiple users to perform functions where they are not granted permission to do so.³⁴⁵

4.1.7 Monitoring and Control

[Related terms: *Auditing / Tracking / Maintenance / Long-term preservation*]

Again, the steps taken to monitor records systems are part of the maintenance strategies used to ensure the accessibility to authentic records.

For ISO 15489, the monitoring and control of documentary systems aim to ensure their compliance with the security criteria adopted for records and with the proper functioning of the business processes and technologies. If the integrity or authenticity of a record is being questioned for suspicion of tampering, incompetence, or malfunction of the system, the evidential value attributed to the record can be diminished. Systematic monitoring programs help to ensure a consistent legal reliability of the documentary system and improve the organization's performance.

DoD identifies requirements for the control and verification of systems, such as the ability to register actions, date, time, unique object identifier and user identifier for actions performed on user accounts, on user groups, files and records, associated metadata elements and the components of the classification scheme. The control activities include recovery, creation, deleting, search and modification actions.

In the case of MoReq2, the audit trail is contemplated as a measure for security control, along with access control and back-up. Any access to records must be registered in order to ensure legal admissibility and to assist in data recovery.

³⁴⁵ DLM Forum Foundation, *MoReq2010: Modular Requirements for Records Systems, cit.*, 2011, p. 179-180.

4.1.8 Documenting records management processes

[Related terms: *Manual*]

ISO 15489 expresses the need for producing documentation that describes the records management processes and systems, indicating the legal, organizational and technical aspects that concern them. Similarly, the documentation should clearly enunciate the responsibilities for the records management processes, such as classification, indexing, review and final destination. All decisions pertaining to which records should be captured and for how long should be clearly documented and preserved. The documentation should also specify unequivocally the actions related to the final destination of records. Whenever necessary, such documentation should be submitted for approval to an external authority (archival authority, auditors, etc.). This function is the one that comes closest to the records management manual, which the Italian public administrations are obliged to draw up and adopt.

The other standards mention the documentation of the system and operating methods, not reserving a specific space to documenting the records management processes.

4.1.9 Conclusions

The functional requirements for records management systems have introduced new processes, from which a new terminology not codified as such in traditional records management derives. These processes may have similarities in the traditional archives context (for example, capture may be comparable to filing), but these parallelisms cannot always be made as these processes derive from the operational and functional requirements of new archival management tools. Thus, it is difficult to identify the equivalent of the declaring process or the tracking function in the paper field.

This new terminology used by the standards on records management, which is derived from different archival contexts and the introduction of the computer science language in the management of electronic records, is inhomogeneous and not always clear. Terms such as creation, capture, declaring, identification, registration, and even classification, are processes often used as synonyms in the framework of records management system functionalities. Similarly, these terms may have different connotations depending on the documentary context in which they are used.

There is also another set of system functionalities, which do not concern aspects of records organization, but which are more related to technological aspects such as storage media for digital records or the hardware and software infrastructure of the system. Even in this case, the mechanisms and the technical and technological tools necessary to maintain the intellectual and physical control of records, and the access and long-term preservation of authentic records, are treated in an inhomogeneous and unclear way. For example, the back-up operation may be referenced among the storage requirements or among the access and security measures, depending on the standard. As highlighted earlier, there are no indications on what the properties of the storage media should be, which maintenance measures may be considered, or which long-term preservation strategies for records could be applied. Regarding this last aspect, the standards do not systematically address digital preservation, but refer to other standards or guidelines which provide more specific guidance on the subject.

The fundamental aspect of the roles, skills and responsibilities required to implement the various records management processes is a topic highlighted by ISO 15489 and ICA-Req, and scarcely pointed out by the other standards. Even the importance of the manuals and the documentation of management processes is not put in due emphasis by the standards, with the exception of ISO 15489.

4.2 Experiences encountered in other organizations in the use of records management systems

In 2015, the Records Management Units of four entities located in Rome were visited for the purposes of this research. The aim was to learn how other institutions that had implemented electronic records management systems were managing their current records. Of particular interest were issues relating to application of archival principles and tools (registry, classification scheme, classification/filing criteria, etc.) and technological functionalities in their records management software, in addition to issues or technical nodes presented by their records workflow management.

The data obtained during the visits remain anonymous, as required by the institutions. A summary of the study is presented in the table below, and conclusions follow.

	Institution 1	Institution 2	Institution 3	Institution 4
Number of staff	3,500 employees in Rome	3,000 employees in Rome	800 employees	650 employees
Staff allocated to the Records and Archives Unit	2 records managers; 2 archivists	30 staff in the Management and Documentation Unit. The Archives are part of another unit and have their own staff	3 records managers; 1 part-time archivist	3 staff in the Protocol Register Office; 3 staff in the Electronic Records Management Office; 2 staff in the Archives
Previous characteristics of records management	<p>Each department had a centralized registry office which registered and classified mail/e-mail and internal records. Digital records were sent through e-mail by users to the registry office for classification and storage in the e-mail client system (called Digital Records Management System).</p> <p>Use of a hybrid classification system (subject-based and organic) with three divisional levels and an alpha-numeric</p>			

	coding system. The first heading was arranged alphabetically.			
	Records retention schedules were regularly applied following their records retention and disposal schedule.			
Current characteristics of records management	Records management is decentralized. Registries are considerably reduced; these have acquired a supervisory role (less operational).	Centralized registration of incoming and outgoing mail/e-mail.	Centralized registration of incoming and outgoing mail/e-mail, and internal records, by the Records Management Team (RMT).	Centralized registration of incoming mail/e-mail, and decentralized registration of outgoing mail/e-mail. E-mails are mostly automatically registered.
	.	Paper incoming mail (and their envelopes) are classified and stored in chronological order in the Division of Management and Documentation. The division that is responsible for the administrative procedure only receives the scanned version.	Paper incoming mail is classified and stored in the Records and Archives Division. The office responsible for the administrative procedure only receives the scanned version.	Paper incoming mail is classified and stored in chronological order by the Protocol Register Office. The division responsible for the administrative procedure only receives the scanned version.

	<p>Each user is responsible for introducing their official records into the records management system. Records are acquired by the system via e-mail.</p>	<p>The secretary's office of the division to which the mail/e-mail is assigned classifies the record in the system.</p> <p>Official internal records are registered and classified within the records management system by the office that produced them.</p>	<p>The RMT classifies incoming and outgoing mail/e-mail and internal records. The official e-mails are sent by the users to the RMT for registration and filing.</p> <p>When the paper (internal) records produced in the offices are transferred to the Archives, records dealing with the same activity need to be realigned with the files initially opened by the RMT in the Records and Archives Division.</p>	<p>The office producing them classifies incoming and outgoing mail/e-mail and internal records in the system.</p> <p>Each division has a contact person and key user for the system, who has undertaken specific training.</p>
	<p>The previous classification scheme has been abandoned and replaced by tag categorization, which identifies the different departments of the institution. They are called Team Tags.</p>	<p>A new classification scheme was introduced when the electronic records management system was implemented. It is composed of three classification levels.</p>	<p>Use of a hybrid records classification scheme (organic, functional and subject-based), composed of two macro-areas: Operational Activities and Administrative Records. The records</p>	<p>The classification scheme is composed of two classification levels. The Electronic Records Management Office feels that a third level is needed.</p>

			classification scheme is used by the RMT, not by users (whose working documents are organized ad hoc and stored in a SharePoint server).	
	The system functionalities are basically ‘Capture’ and ‘Appraisal and disposition’, although the latter is not yet activated.	The records retention and disposal schedule still needs to be integrated with the classification scheme. Records retention schedules are applied to paper records (not to digital ones).	Records retention schedules are applied to paper records (not to digital ones yet).	The records retention and disposal schedule is under development.
		A records management manual is available. A preservation manual is under development.		A records management manual is available. A preservation manual is under development.
				Records, including e-mails, introduced in the records management system are converted to PDF/A. Only records that are registered and classified in the records management

				system are stored in a preservation repository. This digital preservation system creates daily submission information packages (SIP), and remote geographic redundancy replication.
Previous Records Management System	From 2000 to 2010, Microsoft Outlook e-mail application.		DOCS Open Document Management, combined with Foremost.	IBM FileNet (for temporary files); Alfresco (as repository for registered records).
Current Records Management System	Since 2010, IBM FileNet (as e-mail repository); Outlook (as e-mail management software).	Since 2006, Archiflow (for records management); SharePoint (for sharing records).	Since 2006, SharePoint.	Since 2012, Archiflow.
Future developments	A new records management system to replace the current one is under development by the Information Technology Department.		The archivist would prefer to change the records management system and use OpenText, which easily integrates with other in-house programs, including the e-mail client software.	

			<p>The archivist would like to replace the records classification scheme with a fully functional one, composed of three levels of classification and accompanied by a filing plan. Files would be pre-defined, and sub-files would be freely created by users.</p>	
			<p>The archivist believes that registration, classification and filing should be partially decentralized.</p>	

From the analysis of these four institutional case studies some observations can be made:

Records management is administered and practiced in a centralized, partially centralized or decentralized manner

These different management options show that the archival functions of records registration and classification/filing may be the responsibility of:

- A unique records office (A centralized system adopted by Institution 3; and also by Institution 1 when its previous system was in effect. In this latter case, records management was the responsibility of records offices placed in the different departments, due to the large size of the institution).
- A records office which registers incoming and outgoing mail, and a Secretary's office for departments which classify/file records, as they also have responsibilities for records management (A partially centralized/decentralized system adopted by Institution 2).
- A records office which only registers incoming mail; and users (individuals or offices of departments) who register outgoing mail, and perform classification and filing operations (A partially centralized/decentralized system adopted by Institution 4).
- The records office is a supervisory body, and users are responsible for archiving records in the electronic system. Automatic registration prevails, as any record that is introduced into the system via e-mail, automatically acquires the e-mail headers as descriptive metadata. In addition, classification is extremely simplified through the use of metadata tags (A decentralized system adopted by Institution 1).

None of these institutions has adopted the same model. Each one has different characteristics derived from the context and circumstances in which they operate. The most risky solution is, without a doubt, the last one. In this specific case, a critical issue is the abandonment of records classification and filing. Records are only aggregated by department (through the Team Tag); they are not classified into a logical scheme of categories related to the institution's functions, nor filed by activity or other criteria. A search is mostly made through the e-mail header fields (From, To, Subject, Date), the e-mail content (with full-text search), and the Team Tag. The documentary volume of the institution is so vast that, in the opinion of the interviewee, an open search becomes unfruitful for users. Retrieval is unsuccessful due to the enormous, variable and inconsistent results. Another issue remarked by the interviewee is the use of a decentralized and non-mandatory system, which favours the non-use or misuse of the

platform, as it becomes difficult to apply control over the recordkeeping work done by users. A conclusion that can be drawn from this experience is the need of dedicated time and specific training for archiving records in the system when this task is the responsibility of records producers. Even if guidelines are developed to instruct users, continuous training and follow-up needs to be undertaken. If this is not possible, records management tasks should mostly be automated, and this involves other types of issues, which will be analyzed later.

Based on these considerations, it may be concluded that a completely decentralized system is not advisable. On the other hand, the centralization of records management tasks, in which dedicated and trained staff have the specific role of managing records, is hardly practicable these days, due to the reduction of personnel and lack of awareness of the need to invest resources to organize and manage records. Very likely, a partially centralized system is a better solution, but it is necessary to accurately plan and design work processes, as the specific tasks of registration and classification/filing should be preferably done by dedicated staff within offices to provide consistency and homogeneity to the archiving tasks (i.e., administrative assistants who may also have a recordkeeping role).³⁴⁶

Registration of incoming and outgoing mail/e-mail is (or was) foreseen in the analyzed institutions

These institutions reflect the Italian archival practice of registering the records that come in and go out of the entity. In Italy, the mail register is a legal tool, which provides certainty about the existence of the records and their authenticity. It is used as a means to certify when an external request is received. The request may initiate an administrative procedure in public administrations, to which an answer or resolution must generally be concluded within 30 days (this will depend of the type of procedure). In this way, the service offered by the Public Administration to citizens becomes more transparent and efficient.

Even if some of the analyzed institutions are not Italian entities, but have an international legal status, the influence of Italian archival traditions is evident, both in the case of registration and classification/filing practices. The main difference between them resides in the type of tool designed to provide classification/filing, in which either a

³⁴⁶ Similar consideration are made by Susan Hart, who writes about centralized versus decentralized saying that: “The former approach provides uniformity of filing and contributes to the standardization of an organization’s processes, whereas the latter is convenient for users but can make records searches difficult and can lead to inconsistent practice. A combined approach is possible – for example, policy and procedures may be centralized and other records managed in individual offices.” Susan Hart, *Entry: Records Classification*, in *Encyclopedia of Archival Science*, cit., 2015, p. 331.

functional/organic scheme, or an alphabetically organized subject-based/organic scheme may prevail. Regardless, the similarity in archival practices may mostly depend on the provenance and archival curricula of the archivists working in those international institutions, who, in many cases, come from Italy or were trained in Italy.

In one of the analyzed institutions, there is a misperception of what a record is and what a records management system is about

All the official records produced by the entity (including internal records) are sent as e-mail attachments to the e-mail client system for their acquisition and management. Therefore, the e-mail client system acts as a records management system. Perhaps the idea of automating the metadata acquisition has prompted proposals for this type of solution, but it is hard to understand why any record (reports, minutes, certificates, financial records, etc.) is treated as an e-mail or as an e-mail attachment.

Digital preservation practices are still immature

As a side note, it may be observed that digital preservation practices are still in their initial stages. Only one institution stresses the actions that they are undertaking to preserve digital records in the long-term, following current Italian rules for digital preservation.³⁴⁷

³⁴⁷ In Italian law, the general principles for digital preservation are discussed in the 'Digital Administration Code' (Codice dell'Amministrazione Digitale (CAD), DL 82/2005), while the details are specified by technical rules (Regole tecniche in materia di sistema di conservazione, DPCM 3/12/2013).

5. OPERATIONAL INDICATIONS OR GUIDELINES FOR ARCHIVAL SEDIMENTATION

5.1 Introduction

This chapter will include indications or recommendations that should be taken into account during the archival sedimentation process, thus when classification/filing and arrangement practices are applied to records. Traditionally, the tool that allows the implementation of organizational practices is known as a records classification scheme. As Aga Rossi - Guercio write, a records classification scheme guides records sedimentation according to modalities and rules that reflect the specific functions of a records creator.³⁴⁸ The classification scheme is a very useful tool to guide the work of individual users/records creators, facilitating input and searching tasks, and ensuring the quality and consistency of the information available. Classification is still a relevant function in records management. Even if computer-based records systems facilitate retrieval and increase the number of records relationships, and automated processes can be used at the time of records capture, registration and classification/filing, the grouping of related records (according to previously established classification criteria) has not lost its significance. Classification is necessary not only to manage and have control over the documentary system, but mostly to create aggregations/records series that meet the administrative and legal requirements that records are called to exercise according to national/international legislation.

This chapter will particularly focus on concrete aspects of constructing and using a classification system, as well as procedures for classification and filing, as users need guidance on how these operations should be properly executed. In fact, doubts may be raised by users about the assignment of a record to a file, mostly due to incorrect identification of the types of records that define the files, which may be too general or too specific, or additionally due to the lack of awareness of the administrative history or functioning of the organization involved. These difficulties are inevitable and increase as the complexity of the organization grows.³⁴⁹

Before describing some common provisions identified in the archival theory for constructing records classification schemes, an overview of the characteristics of personal

³⁴⁸ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 15.

³⁴⁹ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 12.

classification schemes, that is, those not produced by archival professionals, will be presented. This will help to understand the importance of constructing well-informed schemes, as well as the relevance of providing guidance and training to users for an effective records organization.

5.2 Personal records classification schemes

Digital (or non-digital) environments in which users classify records in the absence of a pre-established structure present similar characteristics and issues. Sabine Mas³⁵⁰ distinguishes between professional and non-professional or personal records classification schemes, which she also qualifies as “naifs.” She affirms that the latter do not privilege deep structures. They are characterized by an expanded macro-structure of classes/folders at the first classification level, which favours horizontal reading to easily navigate or locate records (as they are visible immediately), and determines a spatial location of classes based on memory capacity. Moreover, the second and further classification levels hold shallow, complex and unbalanced micro-structures. These classification structures have on average two hierarchical levels; thus, a less than the maximum number of hierarchical levels recommended by archival theory (i.e., three to four). According to Mas, personal classification generally does not apply the principle of logical division based on common characteristics. Instead, variable divisional criteria are used at the same hierarchical level, generating classes that are not mutually exclusive and promoting uncertainty when users need to select a file for classifying a record. This also generates difficulties for records retrieval by the same creators and by third parties who have not been directly involved in records filing. This may also cause duplication of classes within the classification scheme and a high proportion of redundant or equivalent main classes. The use of several divisional criteria may be due to the nature of tasks to be carried out (tasks that need to be frequently and quickly accessed are generally conceived at the first divisional class level) or to time constraints (which may require quick organization or saving of the records produced). The divisional criteria most commonly used in personal classification is by subject, alphabetically arranged. Other frequent divisional criteria are record type and the activity to which records are related. Thus, personal practices confirm several issues, such as: a) the scattering of records on the same subject in different classes; b) an inconsistent

³⁵⁰ Sabine Mas, *Schémas de classification et repérage des documents administratifs électroniques dans un contexte de gestion décentralisée des ressources informationnelles*, cit., 2007.

naming of classes; c) and classification/filing problems when assigning a record to a pre-existing class/file or when conceiving a new class/file. Generally, these schemes respond to immediate needs and not to the aim of being functional for the long-term.

The picture presented by Mas reflects the organization/structure given by users to their records in a server file system, shared drive, etc., when no pre-established records classification scheme is available. In her research, Mas verified that staff who have received training in records management were more likely to develop and use very complex classification structures to organize electronic administrative records that were under their direct control. Therefore, issues concerning user classification and filing can be polished and resolved by follow-up actions and continuous training on the use of the system.

5.3 Methodology for elaborating a records classification scheme

The review of the classification scheme elements and construction methodologies in Chapter 3 will serve as a key resource to produce a compendium of recommendations reflecting the current most generally shared archival practices for defining and designing a records classification scheme, hereunder described.

5.3.1 Composition

The main characteristics that a records classification scheme should have, as will be described below, include: 1) Two macro-functional areas; 2) Three classification levels; 3) A complementary file plan; 4) Hierarchical function-based classification levels and sequential arrangement of records aggregations; and 5) Support for all records management processes.

1. Two macro-functional areas

As already mentioned, the idea of organizing classification schemes in functional macro-areas was made popular by Schellenberg in 1956, who established separate headings for facilitative and substantive activities. In 1969, De Felice introduced this model in Italy,³⁵¹ with some variations as he foresaw three main divisional areas, which, as previously noted, are not easily delineated. Schellenberg's model was also re-proposed operationally by the

³⁵¹ See: L'archivio moderno nella pubblica amministrazione: Manuale per l'organizzazione, tenuta e funzionamento degli archivi correnti e di deposito, Roma, ANAI, 1969.

archival administration of British Columbia in the model known as ARCS/ORCS,³⁵² and similarly by the Canadian Province of Nova Scotia in the STAR/STOR model. The division into two initial functional macro-areas is also proposed by Roberge in his universal classification system. Thus, a most shared principle is to distinguish the first-level entries into two major categories based on the nature of the functions: 1) Management and instrumental functions, shared by organizations because they are necessary for their daily functioning/operation; 2) Institutional functions, specific to each entity because they are related to technical and professional operating activities that distinguish an entity from other entities. These two macro-functional areas do not need to constitute a hierarchical level. Normally, at the primary classification level, management functions are listed first, followed by the institutional functions.

2. Three classification levels

A second shared principle is that classification levels should be no more than three in order to avoid redundancy and ensure completeness and ease of use, of which the first level corresponds to functions; the second level concerns macro-activities within each function; and a possible third level is established for further specialization of activities or for more detailed internal partitions.³⁵³

3. A complementary file plan within the classification scheme

This three level classification structure (classification plan) should be accompanied by the identification of files to be created at the lowest classification level (file plan), including indications on how to arrange and name them. To better understand this concept, it can be said that the classification system is composed of a classification scheme and a file plan, which are two complementary structures within the same system. The classification scheme has an abstract character, as it is composed of classes that represent and describe the functions, activities and transactions and, therefore, all possible tasks of an institution. This abstract structure guides the creation of files, which are the aggregations in which records are actually positioned. Files are created at the last classification level (which identifies the records series); thus, records are not placed within the abstract structure of the classification scheme, but within the files that are identified in the file plan. This distinction between classification scheme (*piano di classificazione*) and file plan (*piano di*

³⁵² Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 17.

³⁵³ *Ibidem*.

fascicolazione) was necessary in the Italian context by the end of the 1990s and the early 2000s to better guide users during filing operations. A classification system without indications of which files should be created under the last level of the classification scheme, and of how to arrange and name these files, was revealed to be an incomplete tool, which mostly left the creation of records aggregations to the discretion of the users.

4. Hierarchical function-based classification levels and sequential arrangement of records aggregations

According to Foscarini, distinctions between classification and filing activities were already made by Schellenberg, as he pointed out different possible criteria for identifying classes and records aggregations. “While for the former a functional approach is recommendable, the way records should be grouped into files depends on the nature of the transaction. All transactions – he explains – relate either to persons, or corporate bodies, or places, or topics.”³⁵⁴ This is another principle that can be recognized in the construction of classification schemes. The classification levels are function-based with a predominantly hierarchical structure; instead, records aggregations (files/sub-files) are identified with a person, entity or corporate body, place, process or affair, or record type, to which an alphabetic, chronological, numeric or mixed arrangement is given.

5. Support for all records management processes

Currently, the classification scheme is mostly conceived as an integrated tool to group, in a logical and orderly way, records from which other archival operations can be managed so as to have overall records control. As is also highlighted by ISO 15489, the records classification scheme provides support to all records management processes, as it can be integrated with a retention schedule, the identification of access privileges and security

³⁵⁴ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 36.

levels, vital series, etc.³⁵⁵ Summarizing, a classification scheme may be composed of the following elements:³⁵⁶

1. **Structure of classes**, including code and name (according to established coding and naming criteria), and a synthetic description of the function and activity. As previously noted, a maximum of three levels should be identified.
2. **File typology** (and subsequent pre-defined sub-files), which are foreseen under the last classification level. The creation criteria of files should be specified, indicating
a) The nature or types of records to be included in the files and their arrangement (alphabetic, chronological, numeric or mixed); b) File naming criteria (pre-definition of the elements that will constitute the file name); c) The way in which the opening and closing period of files are established (identification of annual files, permanent files, procedural files, etc.); d) How and when to open a file; e) Relationship of files with any administrative procedure.
3. **Retention period**, which includes information related to the retention applied to active, semi-active and inactive records at the class level or, when necessary, at the category or sub-category levels. In general, it is recommended that the aggregation of records in files should meet criteria useful to the selection activities, by identifying for each category those records or aggregations for which the same retention period is provided.
4. **Records access**, which refers to the rules of access to records, respecting the law for personal data protection and records confidentiality.
5. **Security levels**, which makes reference to security classifications; that is, those series, files or sub-files that are considered top secret, secret, confidential, sensitive, etc.

³⁵⁵ In the project of developing a classification scheme for the Department of Agriculture and Fisheries, Government of Andalucía, Páez García expresses how the classification scheme was conceived as one of the tools whose preparation was to be a priority in the development of the whole plan of action, as the classification should be the main analytical structure that systematizes the set of information contained in an archive. But, the classification scheme was not a goal in itself; it supposed a first step in the preparation of the records management manual and a key element for implementing an integrated records management application. Mateo Antonio Páez García, *Cuadro de Clasificación Funcional para Fondos de Archivos del Subsistema Autonómico Andaluz: El Fondo de la Consejería de Agricultura y Pesca*, Sevilla, Junta de Andalucía, 2002, p. 16.

³⁵⁶ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 18-20; Mateo Antonio Páez García, *Cuadro de Clasificación Funcional para Fondos de Archivos del Subsistema Autonómico Andaluz: El Fondo de la Consejería de Agricultura y Pesca*, cit., 2002.

6. *Vital records*, which identifies series containing records that are essential to continue with an organization's business-crucial functions and operations in case of a disaster. They are necessary to preserve the organization's legal and financial position, and to protect and ensure the rights and interests of its employees and clients.

The following example illustrates a simplified version of the first function of ICCROM's records classification scheme, which includes the above mentioned elements. In this way, the classification scheme becomes an integrated and powerful tool for records management.

Code	Level I	Level II	Level III	Files	Sub-files	Content	Active	Semi-active	Final disposition	Access	Security levels	Vital records
01	Governance									Office of the DG		
01-01		General Assembly										
01-01-01				Number of Assembly			2 years	3 years				
					Inauguration	Invitation cards, replies, etc.			Destruction			
					Credentials Committee				Permanent retention			
					Timeline	Step-by-step agenda, etc.			Permanent retention			
					Services	Interpreters, rapporteurs, etc.			Destruction			
					Final documents				Permanent retention			Vital
01-02		Council										
01-02-01			Selection of Director-General				2 years	10 years	Permanent retention	ODG Secretary	Confidential	
				Year		Vacancy announcement, position description, etc.						
01-02-02			Council meeting									
				Number of meeting								

5.3.2 Analytical process

The archival literature agrees in proposing as a methodology for designing a records classification scheme, a process of analysis of internal and external information sources, in addition to surveys and interviews with staff. Aga Rossi - Guercio write that the process should be developed in, at least, three stages:³⁵⁷

5.3.2.1 Preliminary study of informational sources

This phase consists of examining internal regulations, organizational charts, records lists and indexes. It also includes an analysis of existing records management practices, such as registration, classification and selection, in the different offices of the organization, and interviews with staff through a questionnaire critically evaluated. In Italy, the use of a 'funzionigramma,' which is a function flow chart (a graphic representation of an organizational chart in which the functions of each unit/office are specified), is also recommended. In Spain, as it has been mentioned, the General Budget of the public sector organizations, which follows a functional classification of expenditures, and the inventory of administrative procedures in public administrations are also used for reference when developing records classification schemes.

5.3.2.2 Survey of records

Aga Rossi - Guercio also recommend conducting a survey of semi-active records, which requires the following actions: 1) Preparation of survey forms; 2) Preliminary interview with stake-holders, driven by a number of ready-made questions; 3) Visit of the offices and records centers; 4) Identification of transfer mechanisms, description tools and existing finding-aids; and 5) Determining the needs of staff and gathering feedback in relation to records management issues.

Archival theory often recommends analyzing the documentation and records of existing information systems. According to Luciana Duranti, the functional analysis of records is not only "top down" (i.e., analyzing laws, regulations, and related materials to gain an understanding of the creator's functions and organization) but also "bottom-up" (i.e., analyzing the records themselves).³⁵⁸ In the Spanish archival field, the bottom-up approach prevails over the top-down analysis. This is evident, for example, in the

³⁵⁷ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 31-34.

³⁵⁸ Luciana Duranti, *I documenti archivistici: La gestione dell'archivio da parte dell'ente produttore*, in *Pubblicazioni degli Archivi di Stato: Quaderni della Rassegna degli Archivi di Stato*, 82, Roma, Ministero per i beni culturali e ambientali, 1997, p. 67-70.

elaboration process of the classification scheme of the archives of the Regional Government of Andalucía, described by Páez García. He follows the methodology proposed by Cruz Mundet, which is based in going from the specific to the general; from the records series to the functions; that is, grouping the series in broader classes that collect all related activities, which are the result of the same function. This methodology foresees the elaboration of a register of series, complemented by the interview of the different administrative units on their attributions and competences, their legal framework, documentary production and organization, and definition and naming given to series, including their procedural rules. In parallel, a register of functions is also elaborated by analyzing the legislation in which the organizational structure and competences are attributed. Once the registry of functions (actions) is made, the more concrete actions (activities) that are immediately connected to records series should be separated from those more general abstract categories that designate the common denominator of all these activities (functions).³⁵⁹ This methodology, which starts by analyzing the documentary production and is supported by informational sources, presents many similarities with the way in which the construction of a records classification scheme is performed in Italy.

However, some divergences with this approach may be found. Roberge excludes the exhaustive analysis of files and records produced by offices, if the data collected comes from diverse individual non-standard practices, as these data are generally difficult to use, particularly as it regards records of the field of internal management. He considers this approach expensive and unhelpful to identify the activities that generate records and business files. There are also methodologies, as the one proposed by BASCS, in which prevails the 'top-down' analysis of business activities rather than a 'bottom-up' approach focused on objects, end products or the subject content of records.

Ideally, the two approaches should be integrated, as DIRKS also states, to obtain a comprehensive analysis of what should be organized and how. A bottom-up approach, in which concrete actions are aggregated into increasingly high-level or abstract action statements is potentially more time consuming than a top-down approach. However, an exclusive top-down approach runs the risk of never matching up the entire records production.

³⁵⁹ Mateo Antonio Páez García, *Cuadro de Clasificación Funcional para Fondos de Archivos del Subsistema Autonómico Andaluz: El Fondo de la Consejería de Agricultura y Pesca*, cit., 2002, p. 17-19.

5.3.2.3 Preparation of the scheme and evaluation of its appropriateness

This phase comprises the identification of functions; the definition of the activity field that they embrace and the transactions/processes involved, including the sequential arrangement of records aggregations (files/sub-files); and, finally, the testing of the classification scheme.

As mentioned before, the archival literature provides very general indications on how to elaborate a classification scheme, and lack both a common methodology and operational guidelines to determine how the analysis of an organization's informational sources and records series may lead to the identification of functions, activities, transactions and files, and their mutual interconnections.

If the methodologies presented in Chapter 3 are critically analyzed, it is possible to observe several approaches to the preparation of the scheme. DIRKS and BASCS propose the use of business systems (or process) analysis as basis to elaborate a records classification scheme. According to Bantin, one of the values of business models for archivists is that they depict precisely when, where and how records creation occurs.³⁶⁰ In addition, it provides a conceptual model which helps system designers to define the records/data that need to be captured as evidence of transactions.³⁶¹ Therefore, it acts as a bridge to communication (a common language) between archivists, administrative managers and IT developers.

Looking deeper into the field of business system/process analysis yielded interesting results. Business process is defined as a collection of related, structured activities or tasks that are carried out to accomplish the intended objectives of an organization.³⁶² Business process modeling is used to map out the previous collection of structured activities or processes to create a baseline for process improvements. This technique is widely viewed as a critical component in successful business process management (BPM). The BPM discipline, which aims to design, model, execute, monitor, and optimize business processes to increase profitability, identifies three main types of business processes:³⁶³

³⁶⁰ Philip Bantin, *Encyclopedia of Library and Information Science: Volume 71 - Supplement 34*, 2002, Allen Kent (Ed.), p. 55.

³⁶¹ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 69.

³⁶² Patricia C. Franks, *Records and Information Management*, Chicago, The American Library Association, 2013, p. 21.

³⁶³ Mark von Rosing - Henrik von Scheel - August Wilhelm Scheer, *The Complete Business Process Handbook: Body of Knowledge from Process Modeling to BPM*, Volume I, Elsevier Inc., 2014, p. 162.

1. **Management or governing processes**, which govern the operation of a system and typically include corporate governance and strategic management. Such processes ensure that primary and supporting processes meet operational, financial, regulatory and legal goals.
2. **Operational or primary processes**, often called critical processes, which constitute the core business or essential activities that an organization performs to accomplish its mission. Primary processes can move across functional areas, or even between organizations.
3. **Support processes**, which provide support to primary processes; i.e., by management resources or infrastructure. Support processes are often associated with functional areas, and usually involve a number of cross-functional activities, each of which may include cross-functional teams.

These business processes typologies perfectly fit with the functional macro-areas that since the mid-20th century have been used by archival theorists to organize and structure records classification schemes. As described in Chapter 3, the functions/activities at the first divisional levels of a classification scheme may be broken down in two macro-areas (i.e., Schellenberg: facilitative activities and substantive activities; and Roberge: internal management domain and business domain); three main macro-areas (i.e., De Felice: organizational activities, general activities of competence and specific activities of competence); or even four macro-areas (i.e., Bonfiglio-Dosio and Penzo Doria: primary or governing functions, management functions, instrumental and support functions, and operational functions). In the same manner that functions and activities may be articulated into subsets in records classification schemes, business processes can also be decomposed into several sub-processes, having parent-child relationships.

Business process management and applied methodologies for business processes modeling to improve working processes and increase administrative control within institutions have emerged since the beginning of the 20th century. Probably, Schellenberg (who was a pioneer proposing functional macro-areas) transposed these theories into a classificatory pattern for organizing records and, since Schellenberg, several authors have identified macro-areas of functions that reflect how business activities are structured in organizations. In the 1990s, business process management moved its focus from analyzing functions and procedures to process thinking and redesign. New modeling tools were developed to illustrate cross-functional activities, due to the growth of complexity and dependence among activities. These new methods and tools were also transposed to the

archival field, as it can be observed in DIRKS and BASCS through the use of work process analysis and modeling tools for elaborating business classification schemes and records classification schemes.

Business process modeling applies to business management, and other technical and human-centered disciplines, such as industrial engineering, control engineering, software engineering, and organizational studies. It can also apply to records management projects for redesigning or reengineering processes and internal administrative procedures, and developing records classification systems. The issue here is that archivists are not adequately prepared to carry out this type of business processes analysis, as this is a knowledge not properly covered by the archival curricula.³⁶⁴ Records management projects using this methodology should be carried out by an interdisciplinary team of business managers/systems analysts, archivists and technical developers, and include the identification of the records produced during business/activity processes. In fact, the “BASCS approach recommends finding existing business process models wherever possible or to work with an expert business process analyst”³⁶⁵ when developing records classification schemes.

DIRKS and BASCS support work process analysis following the methodological approach developed by the business process management discipline, as records are by-products of these working processes. The interdependency between the two disciplines is remarked by Heredia Herrera, who says that classification is no longer the sole responsibility of archivists, but a shared responsibility between administrative managers and archivists. Administrative managers have the primary responsibility of identifying and classifying functions and processes; archivists are responsible for identifying and classifying records’ series.³⁶⁶ The issue is that, often, the development of classification schemes rarely involves the integrated work of these two professionals, at least in small and medium-size entities. This determines that the work process analysis is scarcely followed, also due to its complexity.

In practice, the methodological approach followed by archivists to elaborate records management systems comes from the experience gathered with historical records. As it occurs in Spain, the principles and methodologies adopted to build the classification structure of an existing fonds are used to elaborate records classification schemes. This

³⁶⁴ Fiorella Foscarini, *Function-based records classification systems*, cit., 2009, p. 57.

³⁶⁵ Stuart Orr, *Functions-Based Classification of Records: Is it Functional?*, cit., 2005, p. 55.

³⁶⁶ Antonia Heredia Herrera, *Lenguaje y vocabulario archivísticos: algo más que un diccionario*, cit., 2011, p. 66.

methodology follows a bottom-up approach, which goes from the particular (records) to the general (functions). This way of proceeding is easily understandable and closer to archivists than the engineering techniques used by business managers/systems analysts to identify and decompose work processes.

Páez García, who describes the bottom-up approach, affirms that the main issue when elaborating a functional classification scheme is not to confuse the three elements of classification already noted by Schellenberg: the organization (organic classification), actions (functional classification), and subjects (subject-based classification); especially, the confusion that may occur between competences, ultimately relates to affairs or subjects (the thematic elements of classification), and functions (of which there is no a convincing definition).³⁶⁷ Páez García believes that what we call functions and activities are merely abstract intellectual categories set up by us, in which we try to logically and hierarchically assemble records series, which in turn can never be confused with competences (subjects) that are the responsibility areas of those functions.³⁶⁸ As previously mentioned, Páez García proposes a methodology in which a register of series, a register of functions and an updated organizational chart are the basis for elaborating a records classification scheme. Once the three elements are developed, the difficult part is to relate series with the identified activities, which in turn are grouped into abstract functions. Archivists are used to identifying series, as they are bodies of file units or records serially maintained; but are less trained to identify activities or functions (or processes, procedures, operations, tasks, steps), which are different levels of specificity of analysis with respect to work activities.

In conclusion, the identification of functions, activities and transactions, and their interrelations can be accomplished combining the analysis of both the existing records aggregations (which helps to identify records series) and the organization's informational sources (which especially supports the identification of the activities and functions to which records series should be linked). Archivists tend to follow a bottom-up approach, with the support of top-down analysis. If, as Heredia Herrera affirms, the identification of the functions and activities/process is the responsibility of administrative managers, this

³⁶⁷ Mateo Antonio Páez García, *Cuadro de Clasificación Funcional para Fondos de Archivos del Subsistema Autonómico Andaluz: El Fondo de la Consejería de Agricultura y Pesca*, Sevilla, Junta de Andalucía, 2002, p. 17-19.

³⁶⁸ Páez García defines activity as the set of actions, regardless of the area of competence, entrusted to administrative units, which are materialized in records series. Function is the set of activities addressed to the same administrative purpose, regardless of the affair, subject or competence to which they deal with. In relation to the concept of competence, he reports the definition given by the archival terminology dictionary of the General Department of State archives, which defines competence as the attributions exclusively entrusted to a body of the administration to resolve the affairs relating to a particular subject.

may explain the difficulties encountered by archivists to identify these structural elements. The collaboration between archivists and administrative managers (and also IT developers) is still a wish that, in part, explains the insufficient involvement of classification tools for records management. Thus, records classification schemes continue to be developed with inhomogeneous and unsystematic procedures. In addition, there is lack of literature that describes practical cases in which classification methodologies have been applied. It should be interesting to know positive aspects, issues and setbacks in the development and implementation of records classification schemes, in order to promote conclusions and recommendations that improve this practice.

5.4 Analysis of an existing records classification scheme

This section is focused on analyzing to what extent the principles that are currently available in literature on the records classification scheme's composing elements and the methodological approaches used for its elaboration, are applied in an already existing classification scheme. The study will be carried out on the records classification scheme currently available at ICCROM. The scheme was elaborated in 2009 by an Italian consultant archivist, who analyzed ICCROM's informational sources and the existing records production in offices. Additionally, interviews with ICCROM's staff were carried out.

If we start analyzing informational sources, article 1 of ICCROM's Statutes states the mission and specific functions of the organization:

"[...] ICCROM shall contribute to the worldwide conservation and restoration of cultural property by initiating, developing, promoting and facilitating conditions for such conservation and restoration. ICCROM shall exercise, in particular, the following functions:

- 1. collect, study and circulate information concerned with scientific, technical and ethical issues relating to the conservation and restoration of cultural property;*
- 2. co-ordinate, stimulate or institute research in this domain by means, in particular, of assignments entrusted to bodies or experts, international meetings, publications and the exchange of specialists;*
- 3. give advice and make recommendations on general or specific questions relating to the conservation and restoration of cultural property;*

4. *promote, develop and provide training relating to the conservation and restoration of cultural property and raise the standards and practice of conservation and restoration work;*
5. *encourage initiatives that create a better understanding of the conservation and restoration of cultural property.”*³⁶⁹

From the Statutes, it can be deduced that the main ICCROM field of competence is the worldwide conservation and restoration of cultural heritage. Furthermore, these statutory functions or mandates can be broken down as follows:³⁷⁰

Action	Object / and field of competence (subject)
Collect, study and circulate	information concerned with scientific, technical and ethical issues relating to the conservation and restoration of cultural property
Co-ordinate, stimulate or institute	research in this domain by means, in particular, of assignments entrusted to bodies or experts, international meetings, publications and the exchange of specialists
Give	advice on general or specific questions relating to the conservation and restoration of cultural property
Make	recommendations on general or specific questions relating to the conservation and restoration of cultural property
Promote, develop and provide	training relating to the conservation and restoration of cultural property
Encourage	initiatives that create a better understanding of the conservation and restoration of cultural property

The functions are divided in two elements: 1) the action, which is identified by a verb (i.e., collect, study, circulate), and 2) the object, which is identified by a substantive (i.e., information, research, advice, training, initiatives) and designates the things that the action/verb is done to. These objects, when applied to broad and generic actions (i.e., collect, give, make, encourage) become specific functions. In fact, ICCROM’s specific or

³⁶⁹ Available online at: <http://www.iccrom.org/about/statutes/>. (Accessed on 31/01/2017).

³⁷⁰ This breakdown of functions follows the example given by Páez García, who divides the competences given to the Consejerías de la Junta de Andalucía in two periods: Actions and Subject/Field of competence. (Mateo Antonio Páez García, *Cuadro de Clasificación Funcional para Fondos de Archivos del Subsistema Autonómico Andaluz: El Fondo de la Consejería de Agricultura y Pesca*, Sevilla, Junta de Andalucía, 2002, p. 19). This analysis reminds the ALO methodology developed by Roberge for standardizing wordings in function and activity names.

institutional functions are synthesized as follows: Information, Research, Advice, Training, and Awareness.

Not all of these statutory functions or mandates are equally developed at ICCROM. ICCROM's activities mostly focus on providing international training, which is implemented through programmes related to specific subjects or fields of competence. For example, one of ICCROM's priority areas is disaster and risk management, the main activities of which include the courses First Aid to Cultural Heritage in Times of Crisis, Reducing Risks to Collections, or RE-ORG (Reorganization of Collections in Museum Storage). Other functions, such as research, advice or awareness may be developed through specific projects within these programmes (which also include training projects, as previously specified). Therefore, the activities that are carried out to perform ICCROM's institutional functions are based on programmes on specific subjects, which may change often. This is the reason why none of these functions (except Information) and none of these programmes are part of the structure of classes in ICCROM's records classification scheme, as will be analyzed later. This may signify that initiating the analysis by identifying abstract concepts, such as functions, does not immediately help to determine the scheme structure. By definition, the records series and the activities producing them are the elements that mostly condition the organization of the classification structure.

If we follow the recommendations given in literature, another informational source that can be taken as reference is ICCROM's Programme and Budget, in which the organizational chart and the budget envelope are available.³⁷¹ In detail, the budget expenditure for 2016-2017 is organized in two sections: Corporate Operational Costs and Programme Costs. The Corporate Operational Costs mainly refer to ICCROM's administrative or management functions; and the Programme Costs include the institutional functions/activities. In any case, if we analyze in detail the breakdown of these two sections, it may be observed that they are not organized by function, but mostly by organs or subject.

³⁷¹ICCROM, *Programme & Budget 2016-1017, Approved by the XXIX General Assembly*, Rome, 18-20 November 2015, p. 42-43. Available online at: <http://www.iccrom.org/wp-content/uploads/Programme-and-Budget-2016-17-EN.pdf>. (Accessed on 31/01/2017).

Programme and Budget 2016-2017: Budget expenditure	
Corporate Operational Costs	Programme Costs
General Assembly	Developing and Promoting Disaster and Risk Management
Council	Integrating Material Science and Technology with Conservation
General Management and Coordination	Improving Conservation and Management Practices through the World Heritage Convention
Logistics	Promoting People-Centred Approaches to Conservation: Living Heritage
LAN Administration	Building Regional Collaboration
Finance and Administration	Knowledge and Communication Services
Contracts and Voluntary Contributions	International Fellowships
	Advice to International and Regional Conservation Networks and Institutions

The corporate operational costs subdivision mainly follows ICCROM's organizational structure (Governing bodies: General Assembly, Council; and Offices: Logistics, LAN Administration, Finance and Administration). The other categories, such as 'General Management and Coordination' does not reflect a specific organ but a very generic function (in reality, it refers to expenditures from the Office of the Director-General operations), and the last partition can be identified with a transaction of Finance and Administration.

The Programme costs section is composed of five programmes of activities (which reflect ICCROM's fields of competence and specific subjects); two offices (Knowledge and Communication Services, and the Office of Internships and Fellowships); and one function (Advice). The five programmes (which are subject-based) may include, as subdivisions, the functions of training, research and awareness, for which activities may be developed through courses, seminars, meetings, publications, etc. Each programme is under the competence of one Unit, and in some cases, is shared by more Units.

These informational resources, which are fundamental to understanding ICCROM's mandate and activities, can be taken as reference tools to elaborate a records classification

scheme. Anyhow, it is not possible to directly transpose their structures into the classification scheme, as they do not follow consistent and systematic divisional criteria: competences, subjects, organs/offices and functions are all mixed at the same divisional level. The resulting scheme would be fragile, and not very stable, as offices and especially programmes often vary. The work of refining functions and activities needs to be done, based on the identification of the transactions that make up each activity and that produce records.

If we analyze ICCROM's classification scheme, which is composed of two or three classification levels (depending on the need for more detailed partition of activities), we may observe that the first level is composed of 12 headings. The headings from 01 to 11 relate to management functions, and the single category 12 relates to institutional functions:

Code	Level I
01	Governance
02	Regulatory activity
03	Planning
04	Management
05	Relations with countries, entities and partners
06	Legal affairs
07	Financial administration
08	Human resources
09	Communication and information
10	IT Systems
11	Logistics and support services
12	Activities implementation

Literature tells us that administrative or management functions are similar between institutions (both private and public) or can be shared by agencies of the same government, as they support the administrative business needed to facilitate the application of operational policies and the delivery of programmes and services.

This table compares ICCROM's management functions with those proposed by Roberge in his universal classification system, and by Páez García in the records

classification scheme developed for the Department of Agriculture and Fisheries of the Spanish Regional Government of Andalucía (2004):

ICCROM	Universal system by Roberge	Department of Agriculture and Fisheries, Government of Andalucía
01 Governance	01 Administrative management	01 Governance
02 Regulatory activity	01 Administrative management	01 Governance
03 Planning	01 Administrative management	01 Governance
04 Management	01 Administrative management	01 Governance
05 Relations with countries, entities and partners	01 Administrative management	01 Governance
06 Legal affairs	08 Management of legal affairs	02 Administration
07 Financial administration	04 Management of financial resources	03 Finance (Economy/Taxation)
08 Human resources	03 Management of human resources	02 Administration
09 Communication and information	02 Management of communications; 05 Management of information resources	02 Administration
10 IT Systems	05 Management of information resources	02 Administration
11 Logistics and support services	06 Management of property resources; 07 Management of movable assets and support services	02 Administration

This mapping diagram reproduces the equivalences between management functions, with ICCROM's taken as starting point. This comparison leads to some conclusions:

Management functions are organized differently

Each scheme organizes the management functions in different ways, i.e., 'Administrative management' in Roberge's scheme contains five of ICCROM's management functions ('01 Governance,' '02 Regulatory activity,' '03 Planning,' '04 Management,' '05 Relations with countries, entities and partners'). On the other hand, "09 Communication and information" in ICCROM's scheme is split in two management functions in Roberge's scheme ('02 Management of communications' and '05 Management of information resources'). What in Roberge's scheme is considered a sub-function or an activity ('01 Governance,' '02 Regulatory activity,' '03 Planning,' '04 Management') within the function of '01 Administrative management,' in ICCROM's scheme is considered a function. Or what are considered functions in Roberge's scheme ('06 Management of property resources,' '07 Management of movable assets and support services') are activities within the function of '11 Logistics and support services' in ICCROM's scheme ('11.02 Building management,' '11.05 Inventory of goods,' '11.06 Support services').

The same occurs if we compare the classification scheme proposed by Páez García. In this proposal, the two first functions are '01 Governance' and '02 Administration.' The heading '02 Regulatory activity' in ICCROM's scheme is an activity within '01 Governance' (not within '02 Administration,' as it occurs in Roberge's proposal). Or '02 Management of communications,' '03 Management of human resources,' '06 Management of property resources,' or 'Management of legal affairs' in Roberge's proposal, are activities within 'Administration' in Páez García's proposal; they are not considered functions.

This indicates that the classification elements used to develop a records classification scheme, such as functions and activities, are differently interpreted. Their conceptual framework is not clearly delimited. These terms are used interchangeably and have a wide and overlapping range of meanings, as they express abstract concepts with no immediate physical referents. They hold imprecise meanings, and can be differently understood depending on the context of use. According to Nickol (2016), perhaps how to name a given activity statement (task, step, operation, function or process) is not so important; the important thing is a) to recognize that these terms refer to different levels of specificity with respect to work activities, and b) to maintain (in a consistent manner) the connections

between these levels. This is an interesting reasoning. In any case, it would be better to have conventions on how to analyze and identify these concepts to be able to create a classification structure in which it is possible to integrate and name categories following similar criteria. But, as this is not the case right now, what we can learn is that, in these examples, no one is right or wrong; it is just a matter of usage. The confusion between classification elements does not prevent the fulfillment of the classification scheme task, as these elements may work and be equally valid in their usage context. However, as previously said, rules (derived from practical experience) would be necessary to avoid problems in defining criteria for elaborating classification schemes and to ease the use of these schemes by stakeholders.

Functions, activities, organs and subjects are mixed

As previously expressed, functions, activities and subjects are indistinctly used at the first classification level in ICCROM's scheme. Furthermore, some of ICCROM's management functions are identified with its organizational structure, as it occurs in the following headings: '09 Communication and information' (which relates to the Department of Knowledge and Communication Services, encompassing the Offices of Communication, Library and Archives); '10 IT Systems' (which regards the Office of Information Technology); and '11 Logistics and support services' (which identifies the Office of Logistics and Building Services). The competences of each of these offices are divided into several management functions in both the proposals of Roberge and Páez García.

Naming is not homogeneous

If we take Roberge's action-object pairing method (used to construct action statements), we can observe inconsistent naming in ICCROM's scheme. Some functions are more general than others; they are identified by an action and are not accompanied by the object to which they apply ('03 Planning,' '04 Management'). Other functions are more specific; they are defined by the object to which they refer ('07 Financial administration'), or they may lack the action determining them ('06 Legal affairs,' '08 Human resources'). This is mostly a wording issue that shows inconsistency and may cause problems in understanding the way in which these first categories are organized. For example:

	Action-object pairing	Morphological analysis	Comments
01	Governance	Noun	It identifies an action (to govern)
02	Regulatory activity	Adjective + noun	It may identify an action (to regulate)
03	Planning	Noun	It identifies an action (to plan)
04	Management	Noun	It identifies an action (to manage)
05	Relations with countries, entities and partners	Nouns	It may identify an action (to relate) and its objects
06	Legal affairs	Adjective + noun	It identifies an object. The action should be “Management” (of legal affairs)
07	Financial administration	Adjective + noun	It identifies the object and the action (to administer)
08	Human resources	Adjective + noun	It identifies the object. The action should be “Management” (of human resources)
09	Communication and information	Nouns	It identifies the objects, in this case the action is “Management” of communications and information. However, they may also be identified with actions (to communicate and to inform)
10	Information Technology Systems	Nouns	It identifies an object. The action should be “Management” (of information technology systems)
11	Logistics and support services	Nouns	It identifies an object. Again, the action should be “Management” (of logistics and support services)

If we analyze the second classification level in ICCROM's scheme, similar comments could be made. For example, the activities identified at the second level, under the first heading '01 Governance,' are 'General Assembly,' 'Council,' 'Director-General.' In reality, as it may be observed in the table below, these are governing bodies, not activities. Even if these are stable organs, well defined in legal instruments, the second level should have been identified by the activities that these organs carry out.

Code	Level I	Level II
01	Governance	
01-01		General Assembly
01-02		Council
01-03		Director-General

According to Páez García,³⁷² the organic elements must be present in a functional classification scheme, but they should occupy the last level of the hierarchy, instead of the first ones (as it occurs in organic classification schemes). For example, in an organic scheme the series 'Policies and procedures' appear as many times as there are administrative units; instead, this series will appear only once in a functional scheme, as the different administrative units must be specified at the last level. A concrete and imaginary example is illustrated in the following table, in which each administrative unit (placed at the last classification level) may create a file where the records produced for or generated by General Assembly meetings are classified:

³⁷² Mateo Antonio Páez García, *Cuadro de Clasificación Funcional para Fondos de Archivos del Subsistema Autónomo Andaluz: El Fondo de la Consejería de Agricultura y Pesca*, cit., 2002, p. 20.

Function	Activity	Series	Sub-series (organs)	Sub-series (administrative units)
Governance				
	Participation in governing bodies			
		Series of governing bodies meetings		
			General Assembly	
				Office of the Director-General
				Sites Unit
				Collections Unit
				Knowledge and Communication Services

Each section of a classification scheme is predominantly assigned to one administrative area (in this specific case, ‘Governance’ is assigned to the Office of the Director-General) and, even if other units can be classified in this section (as functional classification schemes generally avoid duplication of headings), each unit creates its own file at the last classification level. The records produced by the unit responsible for the proper records maintenance and preservation within the assigned area have higher value and different retention periods than those records produced by a unit that is not responsible for that function/activity (and which just produces partial or incomplete files, containing sporadic contributions to the activity or copies for information). At the same time, different access permissions apply to the files organized by an administrative unit or office. In synthesis, even if there is no duplication of headings at higher levels, there are recurrent files identifying the different administrative units at lower levels. Therefore, the redundancy of

headings is unavoidable.

This is a consequence of what is considered a limitation of the hierarchical records classification scheme. Nickols states that hierarchical models reflect a functional or vertically focused organization, with a system of hierarchically distributed authority, in which often no one individual is accountable for processes that cross functional boundaries. They are instead responsible only for functions and processes confined to their functional area and perhaps portions of cross-functional processes found within their functional areas. Consequently, functional areas are sometimes referred to as 'silos.' Thus, vertical relationships prevail in this scheme and, even when processes are involved (in which relationships between work activities are horizontal), each unit creates and maintains its own file on the process step for which it is responsible.³⁷³

According to Barbadillo, the fact that an archival unit may only belong to a documentary series should not be mitigated by duplication of records within the classification structure, although this is a common temptation.³⁷⁴ In reality, the redundancy of headings is also accompanied by records duplication, as the same record may be classified by different offices in their own files, due to the compartmentalization still existing in institutions.

Coming back to ICCROM's records classification scheme, it is interesting to analyze the second macro-area that relates to the specialized functions of the institution (see the table below). In this particular case, only one institutional function has been identified: 'Activities implementation.' This function is sub-divided into five activities: '12.01 Programmes,' '12.02 Special projects,' '12.03 Laboratory,' '12.04 Technical advice,' '12.05 Fellowships programme.' As previously mentioned, the classification elements are indistinctly used at the same level and their naming is inhomogeneous (i.e., '12.03 Laboratory' and '12.05 Fellowship programme' are administrative units of the organization). In any case, the focus of this analysis is addressed to the activity identified as 'Programmes/Projects.' In reality, this activity, located at the last classification level, forms the records series of programmes implemented by the organization. These programmes and projects reflect ICCROM's field of competence and specific subjects of actions. They may change often, therefore they are represented in the scheme at the level of files and sub-files. Each programme corresponds to an affair, which gives rise to a file.

³⁷³ Fred Nickols, *Define Your Terms: Clearing up the confusion among function, process, procedure, operation, task, step and activity*, 2016, p. 4.

³⁷⁴ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p.22.

At this point, the file plan gives indications to users on how to break down and organize the records produced by programmes.

Code	Level I	Level II	Level III	Files	Sub-files	Content
12	Activities Implementation					
12-01		Programme / Projects				Two filing possibilities are foreseen: a) and b) for complex/big programmes; only b) for less complex activities.
				<i>a) Name of the Programme / Project</i>		
					1. Administration (2 sub-files: 1. Correspondence; 2. Logistics)	
					2. Budget and fund raising	
					3. Partners	
					4. Human resources	
					5. Management structure	Records related to the organs that manage the programme (steering committee, etc.)
					6. Planning	Including needs assessments, preparatory meetings, etc.
					7. Programme missions	Only missions related to Unit programmes. For other missions, see heading "Management."
					8. Evaluation and follow-up	
					9. Information and Communication	
					10. Reporting	
					b) 11. Name of activity	
					11.1 Administration (3 sub-files: 1. Correspondence; 2. Logistics; 3. Social activities)	
					11.2 Budget and fund raising (4 sub-files: 1. Budget; 2. Fundraising; 3. Payments (including contracts); 4. Scholarships)	
					11.3 Partners (3 sub-files: 1.	

					<i>Correspondence; 2. Logos; 3. MoUs)</i>	
					11.4 Team (3 sub-files: 1. Staff; 2. Interns; 3. Lecturers)	
					11.5 Participants (Application and selection, and certificates)	Heading to be also used by the Training, Information & Fellowship Office
					11.6 Activity missions	
					11.7 Planning (3 sub-files: 1. Preparatory meeting; 2. Activity announcement; 3. Course programme)	
					11.8 Activity implementation (5 sub-files: 1. Bibliography/glossary; 2. Session outline; 3. Binder materials; 4. Course visits/Case studies; 5. Contributions by participants)	
					11.9 Evaluation (2 sub-files: 1. Questionnaires; 3. Evaluation report)	
					11.10 Follow-up (3 sub-files: 1. Correspondence; 2. Reports; 3. Meetings)	
					11.11 Information and communication (4 sub-files: 1. Web; 2. Printed material (newsletter, posters, articles); 3. Presentations; 4. Others (bags, t-shirts, etc.)	
					11.12 Photographs and audiovisual material	
					11.13 Activity final report	
12-02		Special projects				
12-03		Laboratory				
12-04		Technical advice				
12-05		Training and Fellowship programme				

5.5 Critical aspects

Several critical aspects have been recognized during the analysis of ICCROM's records classification scheme. These mostly relate to the identification of the classification elements, their interrelation and naming. The following are some recommendations available in literature that presents these issues.

5.5.1 Definition and identification of classification elements and levels

The identification of the hierarchy elements and levels is an issue that is shared among all the disciplines that use this type of structure to organize concepts or objects. For example, in the context of the business process management discipline, Nickol's article on 'Clearing up the confusion among function, process, procedure, operation, task, step and activity' is eloquent. He affirms that all these terms refer to work, to goal-oriented activities. "Whether we choose to say that a process is made up of operations or that an operation consists of processes is less important than recognizing that we are using those terms to indicate relationships between and among levels of detail,"³⁷⁵ which are intended to produce some result. He also adds that in vertical relationships there is a hierarchy of detail, in which more detail is given at the bottom and less toward the top. Thus, one can construct a hierarchy of detail that is job, task, and step (in which a job consists of tasks, and tasks consist of steps); or process, operation, and function; or process, operation, function, job, task, and step.

The conclusion that can be drawn from Nickol's words is that, to avoid terminological and operational confusion, the archival discipline should establish and clearly define the elements and level of details to be used for the articulation of classification structures. As previously mentioned, it is generally recommended that levels of detail be composed of three elements: function, activity and transaction (which identifies records series). Within the series, two more subdivisions could be made according to the need for series specificity. Therefore, the hierarchy of detail (from the top down) is function, which consists of activities, and activities which produce records; or (from bottom to top) records series, which are produced by activities, and activities which perform assigned functions.

As Aga Rossi - Guercio remark, it is necessary to limit the number of classification levels, ensuring, however, a balance in the overall structure of the scheme. It is recommended to avoid both the risk of classification categories that do not require the

³⁷⁵ Fred Nickols, *Define Your Terms: Clearing up the confusion among function, process, procedure, operation, task, step and activity*, 2016, p. 2.

presence of more files, and the case of archival units that are too numerous and too diverse. In both cases, the articulation of the classification plan should be rethought, assessing its adequacy to effectively accompany the institution's documentary production.³⁷⁶ In some way, balanced structures are also defended by Roberge and De Felice, both inspired by Dobrowolski theories. In any case, they advocate for an unlimited number of levels, composed of few child numbers, which reflect the natural records relationships that, according to Dobrowolski, are never unbalanced.

How to identify functions, activities and records series, as well as how to hierarchically relate them is one of the main unresolved issues. But, this is a common point with other disciplines. Again, in the business process management context, Nickol writes that “Another source of difficulty in all this is that the verb-object pairings used to construct action statements (i.e., open mail) are used to refer to specific, observable actions such as ‘press the enter key’ and to broad constellations of activity such as ‘acquire new business.’”³⁷⁷ Therefore, the identification of broader or specific functions and activities, their aggregation and naming is not an easy task. It will depend on a mix of logical and pragmatic needs, aimed to arrange records series in a non-complex, agile and flexible structure.

5.5.2 Naming of classification headings

Aga Rossi - Guercio write that, since it constitutes a crucial aspect for the efficiency of the classification system, both from the point of view of ease of classification and the speed and completeness of retrieval, it is appropriate to adopt some draft naming rules. For example, headings with too detailed information (such as regulatory references) should be avoided as they can be subject to continuous revision; if necessary, such information can be included in the explanatory description of the same heading. Thus, short and concise names are advisable so as to immediately visualize and understand the scheme. Generic headings (various, miscellaneous, general correspondence) should also be controlled and limited, as records classified in this way risk being untraceable. Names without any specificity, in particular headings that coincide with records recipients, should be avoided too, given the risk of multiplying the possibilities for classification and the consequent fragmentation in the creation of files and organization of records. In the case of first level headings, significant and unique expressions are recommended in order to avoid or at least

³⁷⁶ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 26-27.

³⁷⁷ Fred Nickols, *Define Your Terms: Clearing up the confusion among function, process, procedure, operation, task, step and activity*, 2016, p. 2.

reduce the risks of ambiguous interpretations. These headings should be matched with macro-functions to prevent the abnormal growth of the classification scheme and ensure the tree structure effectiveness.³⁷⁸ Along this line, Mas recommends that main headings should be grouped on the basis of a single or dominant criterion (i.e., function), and the number of main headings should be reduced for consistency and quick retrieval. Moreover, a rational and uniform criterion in the headings order should be followed, i.e., if some second level headings frequently recur, it is advisable that they are always repeated following the same sequence. Finally, inconsistency in naming classes and/or files should be avoided, as well as the duplication and redundancy or classes with similar headings.

Further naming rules are provided by Roberge, who proposes three lists of terms, expressing actions, management objects and records types. The interconnection of these terms following Roberge's ALO methodology allows to standardize the naming of classes (functions or activities). A similar naming methodology can be found in the business process management discipline, which uses verb-object pairings to construct action statements for processes analysis modeling. As already seen in Chapter 3, Roberge recommends naming rules in which the wording of classes is based on the use of an action, combined with an object, and exceptionally, with an adjective. In addition, he pays attention to the form in which words should be written (singular or plural).

5.5.3 Naming of records aggregations or categories

Roberge proposes to name records aggregations using the word 'files' and their management objects (i.e., files of personnel, files of customers, etc.). More detailed guidelines are elaborated by Barbadillo,³⁷⁹ who combines three main criteria for naming records aggregations: 1) the documentary structure (a generic one: 'Files,' or a specific one: 'Record type'), plus 2) an administrative activity, or 3) an organic reference. For example, a combination of a general documentary structure and a specific administrative activity should read as follows: 'Files of licenses for building,' 'Files of licenses for

³⁷⁸ Elena Aga Rossi - Maria Guercio, *La metodologia per la definizione di piani di classificazione in ambiente digitale*, cit., 2005, p. 26-27.

³⁷⁹ Javier Barbadillo Alonso, *Apuntes de clasificación archivística*, cit., 2007, p. 17-18. In these notes about archival classification, Barbadillo addresses the naming of series and sub-series, which he believes are the most fundamental level of classification and description of records. Series and sub-series have an archival description perspective but, as already mentioned, the Spanish archival field deals with the concept of classification in a broader sense, embracing records management and archives. Thus, classification applies to both current records and archival fonds. In this thesis section, series and sub-series have been translated into records aggregations (files and sub-files), as the recommendations given by Barbadillo also applies to aggregations of current records.

occupying public road.” It is also possible to use a greater degree of specification of the administrative activity to define similar documentary types, i.e., ‘Files of licenses for occupying public road with trenches,’ ‘Files of licenses for occupying public road with paths for vehicles.’ It is also possible to combine a specific documentary structure and an organic reference, when it is not possible to determine the administrative activity subject, i.e., ‘Minutes of the City Council meetings,’ ‘Minutes of the City Council Permanent Commission.’ In this last case, variations of the administrative procedure may result in a differentiation of similar series types, i.e., ‘Files of international subsidies: ordinary procedure,’ ‘Files of international subsidies: urgent procedure.’ Another less frequent criterion is the use of a generic recipient as an element of identification, i.e., ‘Correspondence of the Mayor,’ ‘Correspondence of the Mayor: Military authorities.’

5.6 Guidelines for records classification and filing

5.6.1 General guidelines

This section focuses on the classification and filing of operational guidelines provided by the archival literature, especially in the Italian and Canadian context. In Italy, these procedures are written in records management manuals, which public administrations are required to adopt.³⁸⁰ These manuals regulate and provide instructions for proper records management, including records creation, registration, classification, filing, retention and disposal. In 2006, the National Centre for Information Technologies in the Public Administration (Centro Nazionale per l’Informatica nella Pubblica Amministrazione - CNIPA) issued a reference manual for the management of the public administration electronic protocol register, records and archives. This tool is used by public entities to elaborate their own manual, which is adapted to the idiosyncrasy and specific reality of the entity.

The CNIPA manual provides indications on the classification and filing system elements and operational procedures. Even so, this part is not as well developed and

³⁸⁰ The Italian manuals consulted to elaborate this chapter are as follows: CNIPA, *Manuale di gestione del protocollo informatico, dei documenti e dell’archivio delle pubbliche amministrazioni: Modello di riferimento, «i Quaderni»* (Supplement to «InnovAzione», 21 (2006), n. 9; Università di Padova, *Decreto rettorale: Regolamento per la gestione, tenuta e tutela dei documenti amministrativi dal protocollo all’archivio storico per l’Amministrazione Centrale*, Gazzetta Ufficiale della Repubblica Italiana, n. 301, 29-12-1997, art. 66; Comune di Padova, *Manuale di gestione del protocollo informatico, dei flussi documentali e degli archivi*, Padova, 2015; Università degli Studi dell’Insubria, *Istruzioni operative per la fascicolatura in Titulus*, 2014; Università degli Studi dell’Insubria, *Manuale di gestione del protocollo informatico*, 2016; Comune di Loano, *Manuale di Gestione Documentale “Riviere,”* 2016.

detailed as the one dedicated to records registration, which provides detailed description of registration elements, modalities and workflows, including records that need to be registered, records excluded from registration, records subject to special registration, deferred registrations, restricted registrations, cancellations, assignment rules, the flows of work for incoming, outgoing and internal records, etc.

As stated in the CNIPA manual, records classification and filing is required by Italian law and must be supported by the use of a records classification scheme, which is defined as the pre-established system of hierarchically ordered abstract partitions, identified on the basis of the entity's functions. The records to be classified and filed are the ones generated by an organization during the course of business (incoming, outgoing and internal records), including those ones not subject to registration.

Classification, understood as the assignment or association of a class to a record, is preliminary to filing. Each record, once classified, is introduced in or associated to its related file. Filing means that records pertaining to the same process/procedure are kept together based on the chronological order in which they are created, in order to get a file that contains the history of the process/procedure. Classification is unconceivable without filing. In fact, classification without filing is considered a bad practice, as it does not properly support records evidential value. Broadly speaking, classification is understood to be the entire process of assigning to a record, in addition to the comprehensive classification code, a file number and, eventually, a sub-file and insert³⁸¹ numbers. Classification can be carried out at different moments: the officer assigned to the protocol register can introduce the higher classification codes, while the attribution of the file codes can be delegated to the person responsible for the affair or administrative procedure. Thus, all registered and/or classified records are brought together into files, which are normally opened at the last level of the hierarchical records classification structure.

The two main types of files that are identified in Italian manuals refer to natural or legal persons, and affairs, activity or administrative procedures. The files relating to business/affairs, activity or administrative procedures are considered files in the proper sense, as they gather within a same class all records related to a particular case or administrative procedure. The difference between the three is described as follows: The files on business/affairs contain records related to a non-proceduralized competence, in which a deadline for its conclusion is not stipulated. The files on activities keep records

³⁸¹ Insert (“inserto”) is a partition of a sub-file, which is in turn a partition of a file. Paola Carucci, *Le fonti archivistiche: ordinamento e conservazione*, cit., 1998, p. 212.

related to a proceduralized competence, for which adoption of a final provision is not expected. Finally, the files on administrative procedures contain diverse type of records that represent homogeneous administrative actions which end with a conclusive record.³⁸² As a rule, each affair/activity and each administrative procedure gives rise to a file. The filing operation, in the case of incoming, outgoing or internal records, must be carried out by the responsible of the administrative procedure or designee. The file is closed at the end of the procedure or affair, and the closing date refers to the date of the last document produced.

In relation to the other file type, procedures indicate that a file should be created for each natural or legal person (i.e., employee, intern, association, institution, etc.). The files regarding a natural person comprise records on various administrative procedures (identified by affair or activity) related to an individual. These files can be open at the first or second classification level, independently of the classes, and contain aggregations of records with different classifications. For example, an employee file can be open at the first level, under Human Resources, and can contain sub-files related to the employee selection, recruitment, disciplinary action, etc., which are differently coded. As a general rule, personnel files are opened at the time of recruitment or reopened in the event of re-employment, and are closed at the time of termination of the employment relationship. Personnel files make up archival series, arranged by the employee register number or, if absent, in alphabetical order by the employee name. The files regarding a legal person, which keep records related to entities, associations, etc., follow procedures for their creation and management similar to those on natural persons.³⁸³

The classification process is briefly described by Italian and Spanish records management manuals. When a record is assigned and delivered to a department, the service responsible or its designee determines whether the record is related to an ongoing affair or procedure (in this case, the record is added to an existing file), or whether the record gives rise to the initiation of an autonomous business/affair, administrative procedure or relationship with a natural or legal person. In this last case, the records assignee must open a new file and file the record according to the chronological order of the record registration; that is, following the protocol number assigned to it. The opening of a new file includes the registration of the following information: Year; Classification code (title, class, sub-class, etc.); File number (in the case of a nominative file, the series

³⁸² Università degli Studi dell'Insubria, *Manuale di gestione del protocollo informatico*, 2016.

³⁸³ Comune di Padova, *Manuale di gestione del protocollo informatico, dei flussi documentali e degli archivi*, Padova, 2015.

number should be also included); File name/subject; Opening date; Department; Responsible person name; Security level (Top secret, secret, confidential, restricted, etc.).

When creating new files, it is necessary to avoid the unnecessary fragmentation of files, an excessive number of records within the same file, or the tendency to create files by recipient, rather than based on the analysis of processes and functions. It is also recommended that sub-files only be created when the file contains a large number of records that can be grouped by affair or homogeneous activities. Filing should be carried out in the shortest possible time after records creation or receipt to avoid a backlog in filing operations.³⁸⁴

Some manuals devote attention to hybrid files, explaining that a file, as a logical unit, can contain records on different media. This determines the creation of hybrid aggregations, which generally are composed of paper and digital records. This duality gives rise to two archival units, which may maintain their unity through the classification system (specifically, by means of the file identification elements) and the records content. A file will then occupy two different places (a box file and a file system) for its entire life, making the management of files and records more complex.³⁸⁵

According to Italian manuals, native paper records shall be kept in paper files, which may also contain printed copies of born-digital records (only if strictly necessary). In general, unique original paper records are those records whose content cannot be derived from other records that should be permanently kept (i.e., minutes of meetings, etc.). Therefore, records with handwritten registration data, acronyms, signs and signatures (when no digital signature is available) are considered unique analogue records to be kept in paper files.³⁸⁶

Born-digital records should only be assigned or associated to a digital file. They should not be printed, nor placed into paper files. Furthermore, it is recommended that digital files should contain a representation of the paper records available in their corresponding paper file.³⁸⁷ This is possible through the creation, in the records system, of a non-electronic record that references a physical record. This means that the record can be traced and details of where it is physically stored can be recorded. The paper record can also be digitized and its image can be introduced into the system. This practice does not exempt the original paper record from being preserved in the paper file.

³⁸⁴ Università degli Studi dell'Insubria, *Manuale di gestione del protocollo informatico*, 2016; Universidad de Alicante, *Manual de organización de archivos de oficina*, 2003.

³⁸⁵ Università degli Studi dell'Insubria, *Istruzioni operative per la fascicolatura in Titulus*, 2014.

³⁸⁶ *Ibidem*.

³⁸⁷ *Ibidem*.

In general, the creation of a complete and entire file in digital form is privileged in records management manuals. In any case, manuals can be found stating that either of the two media (paper or digital) can be adopted to produce complete files, following the criteria of economy and preservation assurance. This includes the production of authenticated copies of original paper or born-digital records, depending of the final decision taken.³⁸⁸

Italian manuals also contain procedures for managing and retrieving files through a tool called 'register of files' ('repertorio dei fascicoli').³⁸⁹ While the records classification scheme represents abstractly the functions and competences of an entity, the register of files represents concretely the activities that have taken place and the records produced in relation to those activities. The register of files, which is constantly updated, should indicate the following file elements: 1) Opening date; 2) Classification code; 3) File number (and any other partitions into sub-files or inserts); 4) Closing date; 5) File name/subject (and possibly the subject of sub-files and inserts); 6) Annotation on the file status (active, semi-active, inactive): whether the file is still active; or whether it has exhausted its immediate administrative value and needs to be sent to the records center; or whether it is to be disposed of or transferred to the archive.

Some manuals may also contain indications on the opening and inventory of dossiers ('repertorio dei dossiers'), which are aggregations of multiple files that can be formed as a result of operational needs; for example, dossiers referring to a natural or legal person that contain files related to different administrative procedures connected to the same entity or person. These files, which contain different classifications, are aggregated under a single dossier. The register of dossiers management procedures are similar to those of the register of files.³⁹⁰

Finally, manuals introduce the concept of archival series, which are defined as aggregations of archival units (records, files, registers) based on homogeneous characteristics, such as the records' nature and form, or the subject matter, affair or procedure to which they relate. There is an archival unit to which manuals pay particular attention, that is the special register, in which specific type of records are grouped together.

³⁸⁸ Comune di Padova, *Manuale di gestione del protocollo informatico, dei flussi documentali e degli archivi*, cit., 2015.

³⁸⁹ 'Repertorio' is a register (or inventory) in which files are annotated with an annual progressive number, following the chronological order in which they are created within the records classification scheme subdivisions. Therefore, it is an orderly and updated list of files annually created within each class. Paola Carucci, *Le fonti archivistiche: ordinamento e conservazione*, cit., 1998, p. 225.

³⁹⁰ CNIPA, *Manuale di gestione del protocollo informatico, dei documenti e dell'archivio delle pubbliche amministrazioni: Modello di riferimento*, cit., 2006.

Thus, records, such as resolutions of the governing bodies, contracts, or invoices, are subject to special registration (what is known as ‘repertoriazione’). Generally, these records are not registered in the protocol register, but only in this particular register which includes information, such as type of register (record type), registration number (chronological and progressive), date, record identification elements (subject/object); classification and filing data, and annotations. These records, which constitute archival series by records type, can also be associated to a file, together with the records referring to the same affair or administrative procedure. These archival series, as other series, are identified in the records classification scheme to ensure a proper organization of records by users. In fact, manuals highlight that the records classification/filing scheme is a fundamental instrument for identifying and managing archival series.

This review of classification and filing guidelines only partially addresses user needs. When electronic records management systems are in place, further procedures are especially required to solve specific issues that may arise for records workers. These include: the identification of the records that should be classified and filed in the system; the types of records to be included in the files and their arrangement; the principles for establishing opening and closing periods of files; files arrangement; etc. In addition, the organization and management of e-mails also requires operational procedures that clarify problematic aspects, such as filing responsibilities of the sender, recipient, or any other individual receiving a record copy, the distinction between official records, working materials or copies, and their filing in the records management system or just their temporary storage in individual e-mail folders, etc.

Standards and specifications for records management in electronic systems focus on quality processes and requirements for the system functionality (as seen in Chapter 4). Little attention is paid to operational aspects, even if they undoubtedly contribute to the implementation of these records systems among users. As already seen, guidelines for classification and filing are not yet fully explored in the literature. Apart from Italian manuals, there are other sources of information, available mostly in the Anglo-Saxon context, which relate to procedures for recordkeeping and e-mail management. A summary of these guidelines is now available, mostly based on a series of recently revised and edited guides for managing records (including e-mails) developed by the British Columbia Government Records Service (GRS). These are the most comprehensive operational guidelines available online. Other guidelines, especially focused on e-mail management, contain similar recommendations.

5.6.2 Identification of records to be classified and filed in the system

In general, literature remarks that complete and accurate records need to be created and kept to document decision-making and work activities.³⁹¹ The British Columbia Government Records Service (GRS) guides on records management distinguish between significant business records and transitory records. This disjunction is taken as a criterion to determine what is filed and what is not filed in the records system. In reality, these guides distinguish three categories of records: official or business records (to be filed); drafts and working materials (to be filed or not, depending on the judgement of the records creator or worker) and transitory records (not to be filed). Their identification or distinction is based on the records content and context, not on records format or storage medium.

The official records are originals or copies required for statutory, legal, fiscal, audit, administrative or operational purposes. They provide evidence of official business, policies, actions, transactions or decisions. Some examples of official records are: work and project plans; activities documentation (work schedules, assignments, etc.); records that help explain the history of a relationship, decision or project; formal communication with external entities about official business; policies and directives; drafts or revisions with unique information on decisions or approvals; decision records, instructions, and advice; final report or recommendations; meeting agendas or minutes; documentation of a policy matter or how a case was managed; documentation of initiation, authorization, or completion of business transactions.

The drafts and working materials may be considered official or transitory records. If they contain significant annotations, comments, approvals and substantial changes that are considered important to understanding final documents, they are filed in the system and retained. If they are considered transitory records, needed to complete a routine action or prepare a final record, they are not filed or retained. This is the case of drafts or revisions that do not provide information on decisions or associated approvals; duplicates that have already been filed or reproduced/summarized in an official record; rough or preliminary notes and calculations used to prepare a final record; and routine correspondence about drafts and revisions.

The transitory records hold a temporary usefulness; they are not filed within the records system, but temporarily kept in employee-specific network drives or e-mail folders for convenience or reference use; for preparation of an ongoing record; or to complete an

³⁹¹ Government of British Columbia, *Guide: Managing Drafts and Working Materials*, ARCS 195-45, 2014.

immediate or minor transaction. Examples of transitory records are as follows: training/conference advertisements; social event announcements; meeting arrangements; simple messages related to commonplace interactions (i.e., instant messages or text exchanges/conversations); duplicate copies for reference convenience; cover memos that do not add value to attachments; advertisement or promotional material from businesses that does not relate to a transaction; messages received as part of a distribution list or received from listservs and other Internet sources, solely for convenience of reference; e-mails that result from personal use of the official electronic messaging system or messages in a form used for casual communication.³⁹²

The British Columbia records management guides state that the authority to identify transitory records is delegated to the records creator or employee, who is also authorized to dispose of these records once their business use ends. The records that are filed in the records systems can be permanently retained or disposed of in accordance to the approved retention and disposal schedules, which are integrated with the classification scheme (the known ARCS and ORCS are tools aimed to classify, file, retrieve and dispose of administrative and operational records).

Italian manuals indicate the records that need to be classified and filed in an indirect manner, when describing record types based on transmission modalities. Thus, files should contain incoming records (originals), outgoing records (draft) and internal records (drafts and originals), including preparatory records, up to final provisions and the conclusive record (if foreseen). Incoming records are understood to be records of legal (and evidential) relevance received by an organization in the exercise of their duties and originated by other public or private entity. Outgoing records are records of legal (and evidential) relevance produced by an organization in the exercise of their duties and addressed to a different public or private entity, and also to its employees as individuals and not in the exercise of their functions. Internal records are records exchanged between the different departments of the same entity. The internal records of prominent legal and probative value are those prepared by staff in the execution of their duties, in order to document facts on the activity performed. They also comprise records from which rights, duties or legitimate expectations from third parties may arise. Finally, informal communications between offices, which include the internal exchange of information, with

³⁹² Government of British Columbia, *Guide: Transitory Records*, ARCS 195-45, 2014; Government of British Columbia, *Guide: E-mail Decision Diagram – Keep or Destroy?*, ARCS 195-45, 2014; Carmen Delgado, *File Classification Scheme for Administrative Functions Common to all UN Offices: Guidelines*, 2012.

or without attached records, are not subject to registration, and their classification and retention is optional.³⁹³

Italian manuals also mention transitory and instrumental records, when dealing with disposition of paper files. When a file is closed, records of transitory and temporary character, which have exhausted their functions once the final provision has been emanated or which are not closely related to the administrative procedure (i.e., notes, memos, copies of legislation and general documents) should be extracted (and disposed of) from the file by the person or operator responsible of the business/affair or procedure.³⁹⁴

5.6.3 Filing responsibilities

In Italian administrations, the person in charge of an administrative procedure is responsible for proper file management, including the creation of files and the assignment or association of related records to those files.

Similarly, the GRS guides propose, as recommended practice, to assign responsibility for filing to a specific office or individual. For example, in the case of project team workspaces, the office responsible for secretariat/project lead functions should be assigned as the office of primary responsibility (OPR) and should file official records into the recordkeeping system. Something similar occurs when records are the result of collaboration; one author needs to take responsibility for declaring a document as final, and somebody should be designated as the person responsible for filing the official copy of the final version as well as relevant working materials. This person needs to determine what to keep and what to destroy; that is, what is a transitory record and what is not.³⁹⁵

In the case of e-mails, the GRS guidelines recommend that the filing of incoming mail messages received from external sources is the responsibility of the recipient, who has to determine which of the e-mails are significant business records to be filed. In the case that the recipient receives a cc (carbon copy) or bcc (blind carbon copy), it can be deleted once no longer required for business purposes. If the e-mail was widely distributed, the initiating office (as the sender) is responsible for filing an official file copy (i.e., directives, administrative circular or notices received by many offices). Within each receiving agency or office, the person who is responsible for the subject or function covered by the e-mail

³⁹³ Università degli Studi dell'Insubria, *Manuale di gestione del protocollo informatico*, 2016.

³⁹⁴ *Ibidem*.

³⁹⁵ Government of British Columbia, *Guide: SharePoint*, ARCS 195-45, 2014; Government of British Columbia, *Guide: Managing Drafts and Working Materials*, cit., 2014.

should assume responsibility for filing an official file copy, if required. Other recipients in the agency or office can then manage their copies as transitory, especially if they do not need to comment or reply to the message. In the case of outgoing e-mail messages, the filing is the responsibility of the sender.³⁹⁶

The United Nations Archives provides further rules to originators of e-mail messages, such as 1) if the e-mail message is created in response to one or several recipients, the originator must ensure that the original text and all responses that form the complete e-mail record are retained; 2) if there is an ongoing e-mail exchange, the originator should determine at what stages in the discussion a copy of the e-mail should be captured as an official record. This judgement needs to be based on the significance of new information in an e-mail response to a previous message; 3) if the originator adds information to an e-mail record received, it is considered as a new original e-mail that must be kept and filed.³⁹⁷ In case of message discussion sequences, which generally include previous text from the various senders and recipients to the discussion, each single exchange of e-mails is considered a new e-mail. Therefore, it should be filed according to the significance of the new information provided by the response (even if containing previous discussion texts).

Traditionally, filing responsibilities have been based on the principle of hierarchy and, in some way, the above-mentioned rules are inspired by this criterion. This is remarked in the Spanish University of Alicante records management manual, which states that, to avoid generating duplicates of internal correspondence, as they are kept by both the sending and receiving administrative units, the principle of hierarchy should be followed. Thus, internal notes sent by the Management Office to the various services must be kept in the Management Office, together with the replies, if any, of such services, as it is the unit having a superior hierarchical level. Services keep the internal correspondence (and related responses) that they exchange with administrative units of lower rank. This criterion of hierarchy can be used if administrative units at the highest level follow the same principle and systematically keep the internal correspondence exchanged with the lower units.³⁹⁸ This practice can clearly be applied to entities characterized by hierarchical structures. However, it will find difficult implementation in flatter structures, in which lines of

³⁹⁶ Government of British Columbia, *Guide: E-mail responsibilities*, ARCS 195-45, 2014; Government of British Columbia, *Guide: E-mail tips*, ARCS 195-45, 2014.

³⁹⁷ Carmen Delgado, *File Classification Scheme for Administrative Functions Common to all UN Offices: Guidelines*, 2012.

³⁹⁸ Universidad de Alicante, *Manual de organización de archivos de oficina*, 2003.

communication, policies, authority and responsibilities are delineated with few or no levels of management. In this case, as GRS pointed out, when records are the result of collaborative decision-making processes, an office or somebody needs to be designated as the secretariat responsible for filing operations.

6. CONCLUSIONS

This dissertation focused on how records should sediment or accumulate once generated by business activities. The initial literature review resulted in the assertion that the archival functions or operations by which records managers/archivists exercise control over the sedimentation process are classification, filing and arrangement. These three activities provide the formal rules and methods for establishing relationships between records and their business context. These relationships determine the archival structure through logical records groupings or aggregations. The tool traditionally used to define the structural relations between records is the records classification scheme, which usually proposes hierarchies and associative or sequential interdependences between records aggregations.

Further literature analysis aimed at examining the elements, structure and methodology for constructing classification schemes, in order to give answer to one of the major questions addressed by this work: What is the state of knowledge with respect to the elaboration of records classification schemes? (Question 1). Starting by analyzing the elements that compose a classification scheme from a structural (classes, files) and conceptual (competence, function, activity/process, action/transaction) perspective, it emerged that the relationship between function and competence (functional and organic aspects) is still not clearly addressed in records classification schemes. Most of the literature analyzed recommends the use of function-based classification schemes, even so there are authors who believe that competence should be considered a classification level, as the presence of organic elements is needed to link reality (an office task) with the abstract components of functional schemes. In practice, functional schemes tend to move the organic element to lower levels (file/sub-file level), as offices need to keep (and classify) records that are not directly linked to their main areas of activity. Thus, they use headings predominantly assigned to other offices by creating their own file (which is identified by the office name) under those headings. Another challenging topic, linked to the previous one, is establishing the relationship between activity/transaction (abstract concept) and records series (which concretely represent the records produced in relation to the activities). Again, the abstract and concrete dimension of records classification presents operative difficulties that are not sufficiently recognized in the literature and would need further study.

This dissertation also examined the analytical process that needs to be followed to identify, define and name functions, activities or records categories when designing a records classification scheme (Sub-question 1). From a theoretical point of view, the

elaboration of functional-based classification schemes should be based on functional and sequential analysis of the work processes/activities that generate records. The use of both analyses is needed as they are complementary analytical methods for identifying the classification scheme elements, which are basically functions, activities/processes and transactions. As ISO/TR 26122:2008 states,³⁹⁹ functional or top-down analysis examines the organization's functions; identifies the activities, programmes or projects performed to achieve those functions; and descends to the transactions which constitute each activity. The sequential or bottom-up approach mainly focuses on identifying the sequence of transactions that make up each process. It works on a smaller scale than functional analysis, i.e., at the transactional level. Therefore, the analysis of work processes for records management allows the identification of functions, activities and individual transactions within an organization and defines how they relate to one another. This architecture or structure is fundamental to give context to records, as it connects records aggregations to the goals and objectives of the organization (operational and administrative functions), to the processes and transactions to which they relate, and to the people (or office(s), organizations, if more than one) involved with their performance.

From a practical point of view, the analysis of work processes is complex and requires high level expertise, particularly the involvement of administrative managers/process analysts working jointly with archivists. As this collaboration is rare, the work process analysis for records is not applied in a satisfactory way. There is then a gap between theory and practice that is filled by records managers/archivists through the use of the same methodology adopted for historical records, when the classification structure of an existing fonds is built up. This starts by analyzing the existing records series, which are later grouped and linked to their related activities, which in turn are the result of functions.

How the relations between records and their contextual information materialize in a structural model relates to Sub-question 2: Is a hierarchical structure still necessary to classify and file records? Relationships established between functions, activities and transactions have been generally developed through hierarchical part-whole structures, as they reflect the way in which the organization's working processes were performed. Institutions in public administrations (or other environments) were and still are characterized by a hierarchical corporate culture, which depends upon structure, rules and top-down control to guide business practices and activities. This hierarchical decision-

³⁹⁹ International Organization for Standardization, *ISO/TR 26122:2008(E): Information and Documentation – Work Process Analysis for Records*, Geneva, 2008, p. 3-5.

making system is reflected on the relationships established between the records generated by business processes. Thus, the functional analysis outcomes are represented through hierarchical relationships between functions and their constitutive activities/processes and transactions. By contrast, the relationships among functions, or among activities/processes, or among transactions, have an associative, non-hierarchical, nature, as they relate to each other at the same level of the hierarchy. In the same way, associative relationships are established among files, and also among records. In addition, relationships of equivalence can also be created between records.

As traditionally understood, classification is supported by a logical and hierarchical architecture of generally exclusive categories represented only once. In this architecture, as already said, records are aggregated into files following internal non-hierarchical relations. Generally, each file is linked to a specific operation or transaction within a specific activity/process, which in turn is a constitutive part of a function. In any case, there may be instances in which this unidirectional and logical flow acquires broader perspectives. An activity/process may be developed across more than one function, or may be linked to, or be dependent on, other processes and systems. In addition, more than one division of an organization may be responsible for a function or group of processes within the function. These variations may determine that one file can be associated to more than one series, or one series can be associated to different activities/functions (as there may be more than one classification criterion. For example, the presentations given at a corporate meeting may be classified under the activity file created for the meeting, or under the function responsible for producing or managing corporate presentations).

More recent IT systems applied to records (and data) management have addressed the issue of multi-criteria relationships among records and their aggregations. They propose poly-hierarchical, faceted or network structures, based on metadata attributes that connect records with information describing their creation and use. These systems employ tools, such as thesauri of functions, agents, records types, and series, or other types of rules, for establishing relationships. Practically, these solutions split the functional sequence of working processes that determine the classification elements (functions, activities/processes, transactions or series) and use them separately as categorization metadata. Multiple links may be created between records aggregations, which can be grouped following different categorization criteria. In this way, the relationships between functions, processes and transactions do not follow a pre-established logical and hierarchical sequence, but are defined randomly by users. The application of these

solutions may vary, but generally they tend to create flatter structures that do not clearly provide a comprehensive overview of the working processes, that is, the sequences of transactions required to produce an outcome that complies with an organization's governing rules. They tend to enrich the access points to records, simplifying the structure behind them. The issue is that the creation of too many relationships with a non-rule-driven control may produce incomprehensible aggregations in which the record-originating activity and the sequence of production are difficult to identify, as records generated by different processes or activities may be mixed in the search result. Such indiscriminate and unlimited growth of relations only leads to system complexity and fails in supporting the evidential value of records. Retrieval becomes unsuccessful and unfruitful for users, mainly because the volume of documentary production is high. Generally, these systems are folder-less, that is, records (and their aggregations) are not filed into file folders, but are linked to metadata categories.

In traditional paper environments (which mostly use hierarchical classification schemes), multiple records associations are obtained through duplication or production of records copies. The same record is classified several times according to the multiplicity of functions to which it refers. In electronic records management systems using hierarchical schemes constituted of folders, there is no need to duplicate records, as only information on the connections between the same record and its copies is duplicated. The same occurs when multiple relations are established between records aggregations. The archival discipline states that the unchecked proliferation of relationships can be counter-productive, and recommends restraining the multiplication of records copies to avoid the excessive growth of an already large documentary production. It burdens management functions and methods of research and should, therefore, be kept within the limits that actually meet the administrative requirements of the records creator.⁴⁰⁰

Technological solutions facilitate the increase of associations between records. A record can be associated with one or more files, which in turn may be linked to one or more series, etc. Yet, records relationships should not be established randomly. Records should be part of files and series, which are properly (pre-)defined and identified to reflect working processes, and to guide users in their classification tasks. Relationships/aggregations need to be stable to provide evidence of the records used to perform a specific process. In synthesis, hierarchical relationships are necessary, as are

⁴⁰⁰ Autorità per l'Informatica nella Pubblica Amministrazione (AIPA), *Linee guida alla realizzazione dei sistemi di protocollo informatico e gestione dei flussi documentali nelle pubbliche amministrazioni (GEDOC 2)*, 2000, p. 83.

associative relations. An archival system includes both, hierarchies in which records series are part of processes and functions, and associative relationships in which the semantic connections between archival units and records series are enriched, increasing the perspectives and avenues of access. Records classification schemes, in which hierarchies and associative relations can be (pre-)established, are fundamental to effectively manage digital records, and constitute organized archives.

Most electronic records management systems have the classification scheme as a key component of their applications. Much of the IT literature, however, advocates for a folder-less structure in which metadata (and search) is used to ‘classify’ records (this is a distorted and misinterpreted use of the concept of classification, often present in IT writings). At present, records management systems may combine both approaches. They may offer auto-filing possibilities, that is, they allow filing records to target file folders within the classification scheme through metadata. For example, this hybrid system permits auto-filing configurations which may include several parameters, such as: 1) path of the root folder where records are to be auto-filed, 2) list of records types to which the auto-file configuration applies, 3) list of metadata properties that determines the folder path to which records will be auto-filed, etc. If, for instance, it is decided that records are filed by two metadata fields, “Project Name” and “Document Type,” these two properties are configured in such a way that new records are automatically filed into the correct folder: “/{Root Path}/{Project Name}/{Document Type}.”⁴⁰¹

Classification may also be automated in records management systems through other means, for example, the automation of workflows which integrate the management of records with the work tasks. The automation of business processes in whole or in part is accomplished by the design of templates and/or standard routes for tasks (records are passed from one user to another for action, according to a set of procedural rules, which include auto-filing). According to Hart, automated classification involves automatically extracting index, category, and transfer data, based on predefined criteria or a self-learning machine process at the time records are captured into the system. She believes that automated classification is in “its early stages and may have great potential; however, this is yet unproven. This approach may reduce records filing efforts but requires a significantly greater information technology infrastructure than standard classification system (replacing those long-lost file clerks with systems staff).”⁴⁰²

⁴⁰¹ Technology Services Group, *Auto-filing Content in Alfresco*, 2014.

⁴⁰² Susan Hart, *Entry: Records Classification*, in *Encyclopedia of Archival Science*, cit., 2015, p. 332.

Classification, whether automated or not, needs methods, tools and procedural rules to be effective. Regretfully, the archival discipline has dedicated little effort to investigate classification. Throughout the 20th century, archival theory and research concentrated on historical archives and archival description. With the arrival of digital technology, more attention was given to records management, but soon the focus was redirected to digital preservation. Basic and fundamental activities for organizing current records, such as classification and filing, were set aside, overwhelmed by newer and more pressing topics.

This explains, in part, the scarcity of classification and filing procedures available to users, which leads to Question 2 of this research. As an outcome of this literature review, it can be said that current records management manuals pay more attention to registration, retention or disposal, than to classification. The last chapter of this research is dedicated to the analysis of existing operational guidelines for records sedimentation, taking into consideration hybrid environments in which the coexistence of analogue and digital records pose challenges and issues concerning their integrated management.

This study has also revealed some other important aspects to be taken into consideration when classification is addressed, such as 1) the need for dedicated and specific staff within offices to undertake classification and filing operations in order to provide continuity and consistency to these tasks (i.e., administrative assistants who may also have a recordkeeping role; contact persons and key users who have undertaken specific training in classification, etc.); and 2) the need for continuous and constant follow-up and staff training (to be developed through tutorials, training on the job, and written guidelines) to guarantee the sustainability of records management projects, particularly of classification tasks.

Finally, it is worthwhile to remark on the need for future research on classification and filing practices, based on real-world situations, in which multidisciplinary working teams of archivists, administrative managers, process analysts, and related professionals, have the capacity to further develop common principles and methods for constructing classification systems. Empirical research should also be applied to records management performances to inform the elaboration of more detailed and accurate guidelines for classification and filing, as basic questions, such as what should be classified, how and where, by whom and when, need to be clarified to users.

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