Dimensions of Contextual Records Management Classifications

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Abstract: "Contextual classifications" describes the environment of record creation and use. They have become increasingly common in records management, but there are little studies and theory to back them up. The paper discusses contextual classifications as a knowledge domain and suggests that they have five relevant dimensions: stability of classification (need to change and update the classification), classification's generality (number of contexts it covers), granularity (number of sub-divisions and sub-hierarchies), specificity (exactness of description) and validity (classification's power to describe and predict features of context).

1.0 Introduction

One can classify records in records management according to subject content, record form (e.g. minutes, letters), organizational structure, organizational activities, and their combinations. Broadly speaking, one can divide properties that one can use in classification into two groups. Some properties—subject content and form of record—are properties of the records themselves: in principle, they are recognizable by looking at the record. "Intrinsic classifications" found themselves on these properties. "Contextual classifications," on the other hand, describe features existing "outside" the record: that is, records' relationship to activities and actors that have created or used the records. These "external" features determine a record's place in a contextual classification scheme. Although record's context is often partly recognizable by looking at the record's content, this is not always the case.

Both intrinsic classifications and contextual classifications (Hjørland 2009) are understood here as knowledge organization systems (KOS), that is, sets of concepts and their relations. In case of contextual classifications, concepts and relationships in the KOS refer to functions, activities and actors in the environment of record creation and use. The idea that records have a special relationship with organizational functions and they must therefore be processed, stored, and accessed differently from other information artifacts (Duranti and Franks 2015b) emerged in the professional practice before it was described in archival literature. Today, the most common form of contextual classifications is functional classifications. A functional classification (Tough 2006, 15) is built on the identification and conceptual modeling of the main functions undertaken by an organization and of the activities of which they are made up. Functional classifications (Myburgh 2009) are the commonly accepted approach for knowledge organization in records management. Some authors even

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equate functional classification with classification itself (Bak 2012), and some recordkeeping professionals (Packalén and Henttonen 2015) are unable to see any alternatives for functional classification.

Contextual classifications serve many purposes. Above all, they show records' connection to organizational activities. Context (Shepherd and Yeo 2003, 72-73) is an integral part of understanding the meaning of an individual record. An inborn (Xie 2007) defect of subject-based classification system is that it is incapable of capturing records in their originating context. Contextualization keeps the information understandable outside its original environment of creation and use. Contextual classifications serve also other goals. Functional classifications may facilitate sharing of information across workgroups (see Bak 2012). Although functional classifications are less commonly used in information retrieval than one perhaps might expect (Singh, Klobas, and Anderson 2007), they allow function-based appraisal: identification (Schellenberg 1975, 52) of value of information for the organization itself and the society at large. A functional classification may also help to identify areas of activity from which records are needed but missing. An additional benefit is that a functional classification gives an understanding of the whole organization (Gunnlaugsdóttir 2012; Shepherd and Yeo 2003, 74), and one can use the classification to see what the organization does. One has suggested (Lybeck 2006, 80), for instance, that a records management handbook containing functional classification could be used as a tool in introducing new employees to the organization.

Although functional classifications are common in records management, there is relatively little research about them. Records management specialists (Mokhtar and Yusof 2015) generally have not closely examined classifications, because this area has been monopolized by library and information science (LIS) and computer specialists. Function-related concepts (action, activity, process, competence, transaction, act, action, and the like) are ambiguous. Notions of purpose, or end (usually associated with function), and process, or means (usually associated with activity) are relative. How human agents perceive "means-ends hierarchy" (Duranti and Franks 2015b; Foscarini 2012b) depends on their position in the organizational hierarchy and degree of procedural knowledge. There are instructions for how to design a classification scheme (Shepherd and Yeo 2003, 74-80) or analyze functions and processes (International Organization for Standardization, 2008), but records professionals (Foscarini 2012b) find available explanations of functional methods confusing. Sherry Xie (2007) notes that principles and techniques of constructing meaningful function-based classification remain un-standardized and require further and even new developments.

This paper addresses the lack of theory building in the field of contextual classifications. It examines ontology of contextual classifications—their relationship to the world that they are describing—and suggests that contextual classifications have five dimensions that we might study in research: stability of classification (need to change and update the classification), classification's generality (number of contexts it covers), granularity (number of sub-divisions and sub-hierarchies), specificity (exactness of description) and validity (the classification's power to describe and predict features of context). The dimensions were selected, because it seems that they capture essence of the discussion that has been going around contextual classifications and, in particular, functional classifications. Some of the concepts are the same or similar to those in bibliographic knowledge organization. This is discussed as the dimensions are introduced in the text.

2.0 Contextual classifications as a knowledge domain

Concepts and relationships in contextual classifications are not primarily about the information in the records themselves: a contextual classification does not describe the records; instead, it describes the context of record creation and use. This is a theoretically significant difference. If a subject-based categorization reflects aboutness of documents—Hjørland (2001) says that "subject" and "aboutness" should be considered synonyms—in contextual classifications, what the document is "about" may not bear any clear relationship to the category where it belongs. For instance, when records from a financial transaction serve as evidence in a police investigation, the class reflects functional context of the investigation, and not that of the financial transaction. Instead of aboutness, archival theory speaks about "archival bond" which is shared by records belonging to the same folder, file, or other accumulation. Archival bond is determined by the nature, mandate, function(s), and activities of the records creator. It expresses the development of the activity in which the records participate, because it contains (Duranti and Franks 2015a; Duranti 1997) within itself the direction of the cause-effect relationship of one record with another.

When we try to understand what functional classifications are about, one should look at (besides categories in classification which are according to Xie (2007) "activity-denoting" or "activity-indicating") the relationship between records and categories. In my view, only creation or use of a record in a function creates a "proper" functional relationship between the classification scheme and the record. It is possible to ignore this, and apply a contextual classification in a manner that effectively turns it into a subject categorization. For instance, undergraduate

education is a function of universities. The function itself generates records that rightly belong to the category (e.g. lecture handouts). In addition, there are records that have a relation to the function of undergraduate education, but that, nevertheless, have their origin in another function. For instance, the managerial function of monitoring undergraduate education creates statistics of passed and failed students. Sometimes this is not understood, or it is ignored. In the example above, a functional class of undergraduate education can be expanded to accommodate also its statistics, but this means abandoning the pure focus on functions. It also blurs the borderline between subject based and functional classifications.

However, making this mistake is easy, because the borderline between functional orientation and other approaches is not entirely clear. Like it has been noted above, records often carry information about their context. For instance, a passport contains information about the holder of the passport. If this forms the basis of knowledge organization, are we organizing records by record subject or record context? Secondly, records are by definition created in organizational activities. Therefore, subjects in records inevitably have a linkage to what the organization does. A guide for creating subject filing systems (Subject filing 1981, 8) says that "the subject categories chosen … then reflect an agency's purpose, missions, programs, projects, or activities—commonly expressed as its functions." Kennedy and Schauder (1998, 115) note that "subject terms too will often coincide with functional terms." Hence, also subject classifications in records management are "functional," in some sense. Guercio (2001) even says that "files" (records grouped according to the affair or matter they refer to) and "series" (made of records which are homogeneous in form, e.g., series of minutes, of decisions, of circulars, of ledgers) are both aggregations that can be considered "functional" insofar as they result from the rational exercise of the creator's functions. Guercio's view, in effect, abolishes the distinction between functional and other classifications; all classifications are "functional" as far as they result from exercising the creator's functions.

Archival literature often looks at content from the point of view of appraisal, that is, selection of records of permanent value (e.g. Menne-Haritz 1994) or archival description (e.g. Haworth 2001). In both appraisal and description, both content-oriented and context-oriented approaches are possible. Concept of subject seems ambiguous in records and archives management. According to international standards for archival description, "scope or content" is one of the descriptive elements. In scope or content (International Council on Archives 2000, 22), one gives "a summary of the scope (such as, time periods, geography) and content, (such as documentary forms, subject matter, administrative processes) of the

unit of description, appropriate to the level of description." Archival literature (Dooley 1992) sometimes gives the impression that subjects are strictly generic topics, like "rain forests," "generals," or "railroads." Bearman (1989) denies that archival material has a subject per se, because it is seldom "consciously authored to be about something." According to Dooley (1992), on the contrary, specified named entities, including particular people, organizations, government agencies, geographic places, and events are no less subjects than generic topics.

Archival theorists, thus, have questioned whether archival documents have a "subject" in the first place, and what kind of entities are subjects in archival documents, if any. Theorists in knowledge organization have instead asked what a document subject is and how we find out what it is. Is subject the author's purpose in writing the document? Can we identify it by relative dominance and subordination of different elements in the picture given by reading the document (Wilson 1968), by counting a document's use of concepts and references or selecting its essential elements? Hjørland (1997, 58) looks for epistemology of subjects and asks whether subjects are perceptions or "ideas" in some people's minds. These are questions of an altogether different category from those posed by the archival theorists.

Although the borderline between subject-based and contextual classifications is to some extent ambiguous, it is nevertheless significant. Hurley (1995) makes a distinction between terminological control and contextual control. Terminological control is based on definitions, contextual control on observation. Contextual control is the opposite of terminological control. There are not true hierarchies, and lower levels do not share the characteristics of the upper ones. Contextual relationships are time bound and contingent, whereas terminological relationships are essentially timeless universal logical expressions (though they are ultimately subject to reality checks of some kind). Hurley gives as the example of Farmer Jones's bull Ferdinand. From a terminological control point of view, Ferdinand belongs to hierarchy "Ferdinand—Bulls—Oxen—Mammals—Animals—EVERYTHING." Contextual hierarchy might be "Ferdinand—Jones—Pastoralists—Primary industry—New South Wales—EVERYTHING." Records management needs contextual control to preserve meaning of records; terminological control is not sufficient for that. Also, appraising the value of records requires contextual control. It is not enough to know that function of "training" was behind generation of records; one has to know (Hurley 1995) that it was "records management training," and that it took place in the business function of Records Management Office of New South Wales.

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3.0 Dimensions of ontology in contextual classifications

I suggest that any contextual classification has five relevant dimensions or properties that can be used to examine and compare classifications. They are stability, generality, granularity, specificity, and validity.

3.1 Stability

The first dimension is stability. Contextual classifications are contingent and bound to a place and time. Stability refers to the need to update the classification; the more stable a contextual classification is, the less there is need to update it. Stability depends on many issues, like how terms, concepts and relationships in the classification are selected, what entities—actors, functions, and processes—and relationships are recognized to exist, why it is thought that they exist, and how we get information about them.

Selection of entities affects the stability of the classification. Functions live longer than organizations. Therefore, professional literature often states that functional classifications are more stable than classifications that base themselves on organizational structure. For instance, "student discipline" is an activity in the function of "student administration" at Glasgow University. The activity (Peters and Richmond 2006, 185-192) started in 1451, and it still exists today, although organization structures have changed several times. Records creators such as government agencies (Cunningham, Millar, and Reed 2012) can often be regarded as nothing more than episodes in the life of a function.

But, although organizational structures change more rapidly than organizational functions, it is much less clear how stable functional classifications actually are and what makes them subject to change. Hurley (1993) asks:

> What rules (if any) govern the evolution of functions? Does a change of name indicate a new function? How do we separate changed functions from earlier (different) functions with the same name? Do functions evolve gradually by almost imperceptible degrees (Darwinian) or in sudden catastrophic jerks ("punctuated equilibrium").

Hurley (1993) notes "the object of our study [function] is not scientific phenomena operating according to the 'laws' of nature but products of the human mind and the political process."

One obvious source of changes is legislation (Packalén 2015). For instance, functions related to the European Emission Trading System did not exist before the creation of international system for trading greenhouse gas emission allowances. Also, changes in processes (Packalén 2015) force to update classification schemes. Anecdotal evidence suggests that even management fads may influence classification. At one point, the general trend in Finnish public administration was to increase efficiency by reducing management. Consequently, the term "management" was replaced in classifications with others; what had been known as "personnel management" was renamed to "personnel services."

Stability of functional classifications (Ståhl 2015) depends on the assumption that everyone sees functions and processes in the same way regardless of the context of inspection, and that the conception does not change during the time. There are several reasons to doubt whether interpretations of functions and processes are fixed and shared. In that case, one can question whether there is any stable basis for functional classification. "Function" is an alien concept to employees and people working in a lower level in the hierarchy. Foscarini (2012b) says that they do not see the big picture nor recognize the upper level function in which their lower-level activities belong. Orr (2005, 109-110) notes that a common fallacy is to believe that there is an objective hierarchy of functions waiting to be identified if only the analyst applies correct techniques. Like Ståhl (2015), Orr adds that in reality the boundaries are unclear, and the task of creating a hierarchy only creates an artificial, if logical, model. In a similar vein, Yeo (2012) asks "when I repaint my rusty delivery truck with my new corporate colour scheme and logo, am I contributing to a vehicle maintenance function or a marketing function?" One "objective" view (Bak 2012) to the organizational functions does not reflect patterns of use and management, or information needs of records creators and users. Todd (2003, 22) says that a functional classification scheme can be arranged by processes, services, subjects, functions or their combinations (in which case e.g. upper levels describe functions and the lowest level processes). The chosen view may also affect the stability of the scheme.

Today, many archival descriptive systems (Yeo 2010) separate functions from records' related actors to facilitate archival description. Nevertheless, the bond between them is tight. It was common in the first half of the 20th century that functions and organizational units matched each other closely; a marketing unit was in charge of "marketing," for instance. Therefore, authors writing at that time may have used terms "administrative function" and "administrative unit" interchangeably (Foscarini 2012b). Even today, an organization's structure (Kennedy and Schauder 1998, 115) reflects its functions and in many cases organizational terms will be the same as the appropriate functional terms.

Foscarini (2006, 191) notes that especially in European countries a number of classification systems that claim to be function-based, at a deeper glance, turn out to be just

a mirror of the agency's internal structure. Although this looks like an error from a purist functional perspective, identifying functions in isolation from organizational structures may also lead to mistakes. Functions are abstractions (Foscarini 2012b), and they need a physical structure to materialize. If organizational structures are ignored (Lodolini 1992; Foscarini 2012b), the result can be a subject classification where "function is subject" and the records are, in effect, decontextualized. Also Hurley (1993) fixes functions by looking at organizational entities. He identifies "primary functions" which are "objective taxonomic units." Primary functions pertain to activities of no more than one agency at any time. This exclusive association with an actual administrative unit (Hurley 1993) gives them a "reality." Even if we accept the idea that functions are stable and exist independently from organizational structures, major organizational changes—like mergers—force to update classifications (Packalén 2015), because they alter the set of organizational duties. Nevertheless, even appraisal (Foscarini 2012b), which may be regarded as the archival function that has appropriated the most functional language and a top-down approach, does not involve any in-depth examination of the ways in which function and structure actually interact.

3.2 Generality

The second dimension of functional classification is generality, that is, classification's universality in its relationship to the world. Logically, there are four possible levels of generality when we think about it. A classification can be about concepts and relationships that 1) exist *a priori* regardless of any particular context and are thus universally valid descriptions of any context; 2) describe a particular context in general (e.g. functions of all local municipalities); 3) are valid general descriptions of one particular context (e.g. functions of one municipality), but may not be applicable in description of other contexts appearing similar (other municipalities); or 4) describe one particular context at a particular moment without assuming universality even in this context (that is, e.g. execution of one process in a municipality without the assumption that the process repeats itself in the same form).

Contextual classifications rarely have an explicit theoretical background. Therefore, it may be difficult to pinpoint them exactly to the levels of generality. Nevertheless, it is easy to see that not all contextual classifications have the same generality. In general, classifications in records management seem to make at least some assumptions about the context in which they are applied. This makes sense considering Hurley's thesis that contextual control is bound to place and time: thus, a contextual classification can make no claims about universality. Currently, it is un-

clear whether contextual classification has or can have universal features. The highest level may sound contradictory—are context-free descriptions of context possible?—but some functions are perhaps so fundamental to the existence of any organization that one might regard classification of those functions as "universal."

Most functional classifications are designed for one organization only. However, there are many examples of classifications that are common for a sector or business area in public administration. Examples include Canadian Business Activity Structure Classification (BASCS, see e.g. Sabourin 2001) and the Australian functional thesaurus "Keyword AAA" (Gibbons and Shenton 2003; NSW 2008). There have been attempts to create a common functional classification for Finnish municipalities, but it has not become generally accepted. One explanation may be change resistance, but there is no research on what obstacles there are for creation of common functional classifications.

3.3 Granularity

The third dimension of classifications is granularity. By granularity, I mean here how fine-grained the classification is, how many organizational levels, functions, subfunctions, activities, or processes it has. A classification that divides a function into ten sub-functions is more granular than a classification with five sub-functions. For instance, classification of the Finnish municipality of Paimio identifies several sub-functions in library management (like "acquisition" and "loaning") whereas classification of the Finnish municipality of Tohmajärvi has only one class, "management of library." The level to which functions, aggregations of processes, and transactions are identified (International Organization for Standardization 2008, 3; Shepherd and Yeo 2003, 75; Kennedy and Schauder 1998, 67) depends on the risk assessment, purpose of the records management task, criticality of the function or process, legal issues, and the number of records.

3.4 Specificity

In library and information science, specificity refers to "the exactness with which a term describes a topic, feature or application." If a message (Feather and Sturges 1997, 348) describes Labrador retrievers, but the index term is "dogs," the term is more generic than specific. Dahlberg (1978) divides concepts into three levels of specificity. General concepts refer to all items of a given kind (e.g. "libraries"), special concepts only to some items of the given kind ("special libraries"), and individual concepts to single items ("City Library of Oulu") (Dahlberg 1978; Iivonen and Kivimäki 1998). Another definition of specificity (Foskett

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1996, 23) is "the extent to which the system permits us to be precise when specifying the subject of a document we are processing." However, Svenonius (2000, 188-189) warns that the concept is an elusive one.

Also, in functional classifications one can find varying degrees of specificity. Alberts et al. (2010) say that all functions and process steps basically have "[subject] is [verb]ing [object]" structure. All three parts of the structure (Alberts et al. 2010) can be expressed more or less abstractly. For instance, "service center overhauls a personnel vehicle" and "car mechanic changes engine oil in a Ford" may describe the same process step, but in the latter, all three parts of the "[subject] is [verb]ing [object]" structure are more specific.

3.5 Validity

The fifth, and last dimension of contextual classifications is validity; a functional classification is not only a description of how the organization functions or how it has functioned, it is also a description of how it should operate in the future. As such, it is—besides a more or less valid representation of the past and of the current moment—also a prediction of what functions there will be and what process steps will take place. Here the relationship is usually two-way; although functional classification is a description, it also prescribes how the organization should operate and its operations understood. For this reason (Oliver 2011), implementing a functional classification often requires change management.

Concept of validity overlaps with the concept of stability but leads to a different question. From the point of view of stability, we may ask how to create a stable classification scheme. From the point of view of validity, we may ask whether the picture of activities given by the classification is misleading and whether there are contexts in which general descriptions of functions and processes are not valid.

Generally, validity of functional classifications is not questioned, but this may be due to chosen perspective on organizations. Organizations are often seen in records management literature as Weberian bureaucracies with clear, fixed, hierarchical structures, rational decision-making, and well-defined roles, tasks, and processes. This view dominates thinking (e.g. Henttonen and Kettunen 2011). Recordkeeping professionals who were interviewed in Foscarini's study (2009) overall found that activities in their respective organizations were mostly of a structured and repetitive nature. At a closer look, one could realize that their focus was just on administrative, routine processes as if classification systems were not concerned with the far less standardized work operations. In most organizations in the study (Foscarini 2009, 285), functional ap-

proach did not involve any systematic analyses of the reality that was to be represented in the classification. Critics argue that organizations today are poly-hierarchical, flattened, matrix, and networking. Processes (Bearman 1994; Foscarini 2006; 2010; Lutzker 1982) are often creative and non-routine. Not all activities are structured processes (Foscarini 2006); some may not follow any pre-established sequence. Classifying records (Bak 2012) that are generated in such processes within a function-based system requires either arbitrary classes derived from artificial process mapping or a big bucket approach in which records are classified only according to very high-level functions. It is difficult for a purist functional classification to accommodate cross-functional processes (Foscarini 2012b) involving multiple functional areas, ephemeral *ad hoc* processes (like holiday planning), and other (especially meeting-based and not process-based) *modi operandi,* which are typical for contemporary organizations.

4.0 Discussion and conclusions

Stability, generality, granularity, specificity, and validity are useful concepts. Each concept highlights one side of contextual classifications and opens a research agenda for its examination. For example, one may ask to what degree, how, and why dimensions of classifications differ or look for the most optimal level of dimensions for information retrieval, workflow management, contextualization, or appraisal of information. One can also ask who has the right to define what is a valid description of organizational activities; if a classification documents environment of record creation and use, whose view on the processes and functions is the one that should be documented in the classification?

We do not have enough knowledge about the relationship between dimensions and the context of classification. Interaction of organizational structures and functions (Foscarini 2012b) has not been studied. There are also no studies about implications of non-Weberian organizations to contextual classifications and their users. Distinctions between Weberian and non-Weberian organizations, on one hand, and creative and repetitive processes, on the other hand, seem crucial for many dimensions of contextual classifications. A general assumption is that organizations follow the Weberian model, but Foscarini (2012a) states that "actual work processes and their complex interrelationships in today's unstructured business environments remain mostly unknown to those who are in charge of documentary evidence."

Also, dimensions themselves have relationships that one may examine in research. For instance, one may hypothesize that classifications with broad generality are likely to have low granularity and specificity whereas clas-

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sifications that are tailored to a specific environment are more specific and more granular. Understanding these and similar issues would help to create the now missing systematic methodology for creation of contextual classifications, because it would show what kind of classifications are possible and likely to work under different conditions.

In the light of the dimensions, contextual classifications of records management seem in many ways different from bibliographic descriptions. Cutter's rule (1876) states that a topic should be indexed under the most specific term that entirely covers it, but in records management some argue that high specificity is not always possible or useful. Foscarini (2006) says that one should take into consideration that not all activities are structured processes; some may be quite creative and not follow any pre-established sequence. On the other hand, when the main driver of classification is workflow (Foscarini 2006) lower levels of the scheme tend to have too many details.

According to Pimentel (2011), evolving needs in the information-use environment drive changes in classification. One motor for classificatory change is the need to sync classification's content with its intended purposes. For instance, user requirements may necessitate more robust synonym control, term disambiguation, or navigable thesaural relationships. In contrast, in records management, the question of classificatory change has been dominated by the search for stable contextual features. User needs have generally gained less attention.

Questions about the stability of classifications also have pulled bibliographic knowledge organization in different directions. On one hand, there has been a quest for stability and objective immutable classifications. On the other hand, it has been recognized (Mai 2004) that all classifications are partially subjective and represent only one particular view of the world. Like the discussion above shows, archival literature also exhibits traits of both directions.

Mai (2004) sees scientific classification of natural objects and bibliographic classification of the content of a document as distinct. Scientific classification is concerned with classification of kind of particulars and says nothing about individual physical objects, whereas bibliographic classification is concerned with classification of particular documents; each time a document is classified in a bibliographic classification system, something specific is said about that individual document. In addition, scheme objects in scientific classification are, more or less, available when the classification scheme is constructed. In bibliographic classification, this is not the case; only relatively few items are available when a classification is constructed, and the classification has to be constructed such that new items can be included and the classification updated regularly.

Contextual classifications seem to have features of both scientific and bibliographic classifications. Classifications at higher levels of generality describe functions and processes as kinds of particulars that one can enumerate in the classification scheme even before the activity takes place. However, at the lowest level of the generality, every act of classification tells something about the individual process and records that it has created or used; no predefined sequence of process steps takes place and even the steps are perhaps defined only when the activity takes place.

References

Alberts, Inge, Schellinck, Jen, Eby, Craig, and Marleau, Yves. 2010. Bridging functions and processes for records management. *The Canadian Journal of Information and Library Science* 34: 365–90.

Bak, Greg. 2012. Continuous classification: capturing dynamic relationships among information resources. *Archival Science* 12: 287–318. doi:10.1007/s10502-012-9171-8.

Bearman, David. 1989. Authority control issues and prospects. *The American Archivist* 52: 286–99.

Bearman, David. 1994. Diplomatics, weberian bureaucracy and the management of electronic records in Europe and America. In *Electronic evidence. Strategies for managing records in contemporary organizations*. Pittsburgh: Archives and Museum Informatics, pp. 254–277.

Cunningham, Adrian, Millar, Laura, and Reed, Barbara. 2012. Peter J. Scott and the Australian "Series" system: its origins, features, rationale, impact and continuing relevance. In *International Congress on Archives, Brisbane, Australia, 23 August 2012. Brisbane*. http://www.ica2012.com/files/data/Fullpapers pload/ica12Final00414.pdf.

Dahlberg, Ingetraut. 1978. A referent-oriented, analytical concept theory for INTERCONCEPT. *International Classification* 5: 143–51.

Dooley, Jackie M. 1992. Subject indexing in context. *The American Archivist* 55: 344–354.

Duranti, Luciana. 1997. The archival bond. *Archives and Museum Informatics* 11: 213–18.

Duranti, Luciana and Franks, Patricia C. (Eds.). (2015a). Archival bond. In *Encyclopedia of Archival Science*. Lanham: Rowman & Littlefield, pp. 28–29.

Duranti, Luciana and Franks, Patricia C. (Eds.). (2015b). Function. In *Encyclopedia of Archival Science*. Lanham: Rowman & Littlefield, pp. 215–18.

Foscarini, Fiorella. 2006. Records classification and functions: an archival perspective. *Knowledge Organization* 33: 188–98.

Foscarini, Fiorella. 2009. Function-based records classification systems. An exploratory study of records

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management practices in central banks. *Faculty of Graduate Studies. Library, Archival and Information Studies.* Vancouver: University of British Columbia. Available from https://circle.ubc.ca/bitstream/handle/2429/93 10/ubc_2009_fall_foscarini_fiorella.pdf.

Foscarini, Fiorella. 2010. Understanding the context of records creation and use: "hard" versus "soft" approaches to records management. *Archival Science* 10: 389–407. doi:10.1007/s10502-010-9132-z.

Foscarini, Fiorella. 2012a. Diplomatics and genre theory as complementary approaches. *Archival Science* 12: 389–409. doi:10.1007/s10502-012-9173-6.

Foscarini, Fiorella. 2012b. Understanding functions: An organizational culture perspective. *Records Management Journal* 22: 20–36. doi:http://dx.doi.org/10.1108/0956 5691211222072.

Gibbons, Paul and Shenton, Caroline. 2003. Implementing a records management strategy for the UK Parliament: the experience of using Keyword AAA. *Journal of the Society of Archivists* 24: 141–57.

Guercio, Maria. 2001. Principles methods and instruments for the creation preservation and use of archival records in the digital environment. *The American Archivist* 64: 238–69.

Gunnlaugsdóttir, Johanna. 2012. Functional classification scheme for records: FCS: a way to chart documented knowledge in organizations. *Records Management Journal* 22: 116–29. doi:10.1108/09565691211268171.

Haworth, Kent M. 2001. Archival description. Content and context in search of structure. *Journal of Internet Cataloguing* 4 no. 3-4: 37–41. doi:10.1300/J141v04n03.

Henttonen, Pekka and Kettunen, Kimmo. 2011. Functional classification of records and organisational structure. *Records Management Journal* 21: 86–103. doi:10. 1108/09565691111152035.

Hjørland, Birger. 1997. *Information seeking and subject representation. An activity-theoretical approach to information science.* Westport, Connecticut: Greenwood Press.

Hjørland, Birger. 2001. Towards a theory of aboutness, subject, topicality, theme, domain, field, content . . . and relevance. *Journal of the American Society for Information Science and Technology* 52: 774–78. doi:10.1002/asi.1131.

Hjørland, Birger. 2009. Concept theory. *Journal of the American Society for Information Science and Technology* 60: 1519–36. doi:10.1002/asi.21082.

Hurley, Chris. 1993. What, if anything, is a function? *Archives and Manuscripts* 21 no. 2. Available http://www.sims.monash.edu.au/research/rcrg/publications/whatif.html.

Hurley, Chris. 1995. Ambient Functions. Abandoned Children to Zoos. *Archivaria* 40: 21–39. Available http://www.sims.monash.edu.au/research/rcrg/publications/ambientf.htm.

Iivonen, Mirja & Kivimäki, Katja. 1998. Common entities and missing properties. Similarities and differences in the indexing of concepts. *Knowledge Organization* 25: 90–102.

International Council on Archives. 2000. *ISAD(G): General International Standard Archival Description* (Second). Ottawa: International Council on Archives. Available from http://www.ica.org/biblio/cds/isadg2e.pdf.

International Organization for Standardization. 2008. *ISO/TR 26122. Information and documentation — Work process analysis for records.*

Kennedy, Jay and Schauder, Cherryl. 1998. *Records management. A guide to corporate recordkeeping.* 2nd ed. South Melbourne: Longman.

Lodolini, Elio. 1992. *Archivistica. Principi e problemi.* 6th ed. Milan: Franco Angeli.

Lutzker, Michael A. 1982. Max Weber and the analysis of modern bureaucratic organization: notes toward a theory of appraisal. *The American Archivist* 45: 119–30.

Lybeck, Jari. 2006. Arkistot yhteiskunnan toimiva muisti. Asiakirjahallinnon ja arkistotoimen oppikirja [Archives – the functioning memory of the society. A textbook for records and archives management]. Helsinki: Arkistolaitos. Available from http://www.narc.fi/Arkisto laitos/oppikirja/asiakirjahallinnon_oppikirja.pdf.

Mai, Jens-Erik. 2004. Classification in context. Relativity, reality, and representation. *Knowledge Organization* 31: 39–48.

Menne–Haritz, Angelika. 1994. Appraisal or documentation: can we appraise archives by selecting content? *The American Archivist* 57: 528–42.

Mokhtar, Umi Asma' and Yusof, Zawiyah M. 2015. Classification: The understudied concept. *International Journal of Information Management* 35: 176–82 doi:10.10 16/j.ijinfomgt.2014.12.002

Myburgh, Sue. 2009. Records organization and access. In *Encyclopedia of library and information sciences,* 3rd ed., ed. Marcia Bates and Mary Niles Maack. New York: Taylor and Francis, pp. 37–41. doi:10.1081/E-ELIS3-120044299.

NSW Department of Commerce. State Records. 2008. *Keyword AAA. Evaluation package.*

Oliver, Gillian. 2011. *Organisational culture for information managers.* Witney: Chandos.

Orr, Stuart Anthony. 2005. *Functions based classification of records: is it functional?* Northumbria University, Newcastle. Available http://public.archiefschool.net/C8/Publicatiesdoorderden/DocumentLibrary/Orr_Functional Classification.pdf.

Packalén, Saara. 2015. Functional classification. Recordkeeping professionals' difficulties and their handling in maintenance and use of FC in Finnish organisations. *Records Management Journal* 25: 166–82.

Packalén, Saara and Henttonen, Pekka. 2015. Record - keeping professionals' understanding of and justification for functional classification: Finnish public sector organizational context. *Archival Science*. doi:10.1007/s10502-015-9254-4.

Peters, Victoria and Richmond, Lesley. 2006. Divided no more. A descriptive approach to record continuum. In Tough, Alistair and Moss, Michael, eds., *Record keeping in a hybrid environment. Managing the creation, use, preservation and disposal of unpublished information objects in context*. Oxford: Chandos, pp. 181–202.

Pimentel, David M. 2011. Towards a typology of classificatory change. In *Proceedings of The Third North American Symposium on Knowledge Organization (NASKO3), Toronto, Ontario* (Vol. 3), ed. Richard P. Smiraglia Available https://digital.lib.washington.edu/ojs/index.php/nasko/article/viewFile/12798/11279.

Sabourin, Paul. 2001. Constructing a function-based records classification system: business activity structure classification system. *Archivaria* 51: 137–54.

Schellenberg, Theodore R. 1975. *Modern archives. Principles and techniques*. Chicago and London: The University of Chicago Press.

Shepherd, Elizabeth and Yeo, Geoffrey. 2003. *Managing records. A handbook of principles and practice*. London: Facet.

Singh, Paulne, Klobas, Jane E., and Anderson, Karen. 2007. Information seeking behaviour of electronic records management systems (ERMS) users: Implications for records management practices. *HumanIT* 9 no. 1. Available http://www.hb.se/bhs/ith/1-9/psjkka.htm.

Ståhl, Martin. 2015. Processer som metadata. En utvärdering av den nya arkivredovisningen [Processes as metadata. Evaluating new archival finding aids]. *Arkiv* 1: 8-10.

Stock, Wolfgang B. and Stock, Mechtild. 2013. *Handbook of information science*. Berlin: de Gruyter.

Subject filing. Records management handbook. 1981. General Service Administration. National Archives and Records Service. Office of Federal Records Centers.

Svenonius, Elaine. 2000. *The Intellectual Foundations of Information Organization*. Cambridge, MA: MIT Press.

Todd, Malcolm. 2003. *Business classification scheme design. Version 1.0. October 2003*. Avalable http://www.nationalarchives.gov.uk/documents/bcs_toolkit.pdf.

Tough, Alistair. 2006. Records and the transition to the digital. In Tough, Alistair and Moss, Michael, eds., *Record Keeping in a Hybrid Environment. Managing the creation, use, preservation and disposal of unpublished information objects in context*. Oxford, England: Chandos Publishing, pp. 1–26.

Wilson, Patrick. 1968. *Two kinds of power. An essay in bibliographical control*. Berkeley: University of California Press.

Xie, L. (Sherry). 2007. Function-based records classification system: a comparative study. Available www.armaedfoundation.org/pdfs/Sherry_Xie_Study.pdf.

Yeo, Geoffrey. 2010. Debates about description. In *Currents of archival thinking*, ed. Terry Eastwood and Heather MacNeil. Santa Barbara, CA: ABC-Clio, pp. 89–114.

Yeo, Geoffrey. 2012. Bringing things together. Aggregate records in a digital age. *Archivaria* 74: 43–91.