Counterpoint

Constructing a Function-Based Records Classification System: Business Activity Structure Classification System*

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RÉSUMÉ En 1995, les Archives nationales du Canada ont mis sur pied un projet pour renouveler et remplacer les Plans généraux d'élimination des documents du gouvernement du Canada (PGED). Ces plans contiennent les autorisations de disposition ainsi que les périodes de conservation pour tous les documents administratifs communs créés, accumulés et contrôlés par le gouvernement du Canada; ils n'avaient pas été révisés de façon substantielle depuis les années 1960. Le remplacement des PGED, ainsi que la façon dont cette démarche a été faite, a eu un profond effet sur divers aspects de la gestion des documents du gouvernement fédéral, l'un d'entre eux étant le système de classification par sujets et blocs numériques. Cet article examine l'impact du remplacement des PGED sur les systèmes de classification par sujet du gouvernement canadien et propose ce qui pourrait être requis dans le futur afin de développer un système de classification basé sur les fonctions qui faciliterait la gestion de l'information détenue par le gouvernement et l'application des autorisations de disposition. Cet article, qui est rédigé dans un contexte gouvernemental, peut également être appliqué à la gestion des documents dans le secteur privé. Il vise un public intéressé par ou encore responsable de la conception, du design, de la mise en place et du maintien de systèmes de classification de documents basés sur une analyse des fonctions des entreprises.

ABSTRACT In 1995, the National Archives of Canada (NA) undertook a project to review and replace the General Records Disposal Schedules of the Government of Canada (GRDS). The GRDS contained the records disposition authorities and retention periods for all common administrative records created, collected, and controlled by the Government of Canada (GoC). It had not undergone any major revisions since the 1960s. The replacement of the GRDS, and the manner in which it was done, has

* The views expressed here are entirely those of the author and do not reflect the official position of the National Archives of Canada or any other institution. Though familiar with literature from Australia on the records continuum, functional analysis manual entitled *Designing and Implementing Record Keeping Systems* (DIRKS) and record-keeping metadata schema, and from some American and Canadian authors involved in functional analysis and macro-appraisal, the author has no intention of reviewing the similarities and dissimilarities or merits and demerits of different approaches to function-based classification systems here. The intended audience are people interested in designing and implementing an enduring records classification system based on functional analysis and seeking practical advice now on constructing the systems rather than constructing theories (not that there is anything wrong with theories).

had a profound effect on various other aspects of federal government record-keeping, one of which is its Subject Block Numeric Classification System. This article briefly examines what impact the replacement of the GRDS has had on the subject-based classification systems in the GoC, and proposes what may be required in the future to develop function-based file classification systems to facilitate the management of government information holdings and the application of records disposition authorities. This article is written in a government context but can be applied to records management practices in the private sector as well. It is aimed at an audience that is primarily interested in and responsible for the conception, design, implementation, and maintenance of record classification systems based on an analysis of business functions.

Motives for the Switch

During the late 1990s, the National Archives of Canada (NA) began adopting a methodology of macro-appraisal and structural-functional analysis of the functions of the Government of Canada (GoC) to appraise and identify the archival and historic records of national significance under the control of the GoC. It was natural, therefore, that, starting in 1995, the NA take a functional approach in its review and replacement of the disposition authorities covering common administrative records, the General Records Disposal Schedules of the Government of Canada (GRDS). This required an intellectual and perceptual shift away from reading and interpreting records as though their primary purpose was to describe or inform the reader about subjects, objects,[1] or end products[2] and towards, instead, understanding the function involved. It required us to redirect our attention to reading and understanding records as documenting and evidencing functions, sub-functions, activities, and transactions, i.e., records were to be viewed as being primarily about business activities. Replacing the GRDS by using a macro-appraisal methodology required that the NA move from a subject-based (or subject-centric) interpretation of the information contained in records to a function-based interpretation of information content and context documenting and supporting the business processes of the Government of Canada. The new Multi-Institutional Disposition Authorities (MIDAs), which replace the GRDS cover the following common administrative functions: general administration, real property management, materiel management, comptrollership, and human resources man-

1 By the term "object(s)" I mean any thing or entity placed before the eyes or presented to the senses, a tangible material thing, such as cabinets, chairs, computers, desks, lamps, tables. Thus, records about cabinets, chairs, etc. were traditionally listed in a file system without much thought that they primarily documented the function of materiel management within a business life-cycle process.

2 By the term "end product" I mean any object which is the end result or product of a business process or series of activities, such as agreements, books, buildings, contracts, plans, recommendations, reports, surveys. Thus – using another example – records about such things as asbestos, coal, copper, iron, and nickel were listed in alphabetical order in a file system without much thought or reference to the business process involved in the function of mining.

agement. These MIDAs do not contain file lists, but simply state that they cover all records documenting and supporting each common administrative function as described in a "functional profile" for each MIDA. The functional profile, unlike file lists based on subject hierarchies which are found in virtually every federal institution (including an older model *Subject Classification Guide* published by the National Archives), describes the functions, sub-functions, activities, and processes which constitute the entire function. Thus, any record documenting and supporting a common administrative activity profiled under a particular MIDA would be covered by that MIDA.

The macro-appraisal methodology used for archival appraisal, especially in the instance of MIDAs, raised a number of issues: (1) we needed a new working definition of "record"[3] to understand the common characteristics shared by such particular things as books, maps, photographs, blueprints, e-mail messages, etc., which would obviate their inclusion under the universal idea of a "record"; (2) we needed a working definition of a "function"; (3) we needed a new function-based file classification model to arrange records by function, sub-function, activity, transaction, and business process rather than by subject, object, or end-product hierarchical structures; and (4) we needed to have the common administrative records that are covered by the new MIDAs and the new *Retention Guidelines for Common Administrative Records* to be identified and captured within a function-based classification system, and described consistently by these products. In order to correctly and more easily apply function-based records disposition authorities, institutions in the future will need to reorganize and classify their records from subject-based file classification systems to function-based file classification systems. The impact of replacing the GRDS with function-based MIDAs with no file lists meant that existing subject-based classification systems which group things like "campaigns," "committees," "meetings," "reports," or "studies" together as subjects would prove to be inadequate when applying a MIDA. A MIDA requires records managers in institutions to recognize that records about these subjects do not exist in isolation but are produced by and document a particular function of a common administrative or operational nature. It also necessitates that these subject files be classified directly under the particular related function they document.

3 The current definition of a "record" found in the *National Archives of Canada Act* and *Access to Information Act* includes any "correspondence, memorandum, book, plan, map, drawing, diagram, pictorial or graphic work, photograph, film, microform, sound recording, videotape, machine readable record, and any other documentary material, regardless of physical form or characteristics, and any copy thereof." This definition, while suitable for the purposes of these acts, is based primarily on the structure and medium of the record. It is felt by many in the Canadian federal government records community that we need to understand the content and context, as well as the structure, of the information contained in records to eliminate the need (real or perceived) to keep adding new media to this definition and to facilitate the design of a medium-independent function-based classification system.

Background

Addressing these issues begs a review of basic principles of subject file classification systems and an explanation of what this article means when it refers to the design of "function-based" records classification systems. The name for the type of function-based classification system's structure being developed and designed at the NA is the *Business Activity Structure Classification System* (BASCS, pronounced like the word "basis"). It is fundamentally different from subject-based (or even some types of "functional") classification systems being proposed elsewhere. When we review the basic principles of classification systems, we see the term "classify" as meaning – according to dictionaries published at the height of when subject classification system design was being moulded into a discipline (1960s and 1970s) – "to arrange in classes; assign to a class"[4] of something. The term "class" could mean "(Nat. His.) highest division (–, *order, family, genus, species*) of animal, vegetable, or mineral kingdom."[5] Thus, a subject-based records classification system is one which arranges records into a hierarchy of classes and sub-classes of subjects. However, published records management literature has been rather poor in defining what is meant by a "subject," and this has created confusion. Dictionaries define a "subject" as "theme of or *of* discussion or description or representation, matter (to be) treated of or dealt with."[6] Thus, a subject can be about anything and everything. Since a subject could be about objects as well as functions, what usually happened during the design of traditional subject-based classification systems was the drafting of long lists of all sorts of subjects, things, entities, or objects mentioned in the content or subject line of a record (i.e., the sentence or title of a report or memorandum which was underlined to capture a sense of the record's content) which provided very little insight into the actual activities carried out by institutions or individuals and documented in the records. These items or subjects were then arranged in alphabetical order to facilitate a records user in visually scanning pages of a classification manual to locate a subject that closely resembled what she or he was looking for. (Automated record-keeping systems with keyword search capability or full text retrieval have made the argument for alphabetical arrangement irrelevant.) Even the NA's *Subject Classification Guide* in its Records Management Series of publications is not very helpful in explaining the conceptual framework underpinning a subject-based records classification system. It defines a "subject file" as "a collection of papers on a specific subject or sub-subject within a single file jacket."[7] A "subject file classification

4 *The Concise Oxford Dictionary of Current English*, 5th ed. (Oxford, 1969), p. 221.

5 Ibid., p. 220.

6 Ibid., p. 1285.

7 Public Archives of Canada, *Subject Classification Guide*, PAC Records Management Series (Ottawa, 1976), p. vii.

system" is "the logical arrangement of individual subject files within a filing system. ..."[8] In both instances, we are offered circular definitions.

In the book, *Information and Records Management: Document-Based Information Systems*, "classification" is defined as "the process of putting like things – records of a similar subject or category – together. A classification, then, is a group of records related by common characteristics."[9] It goes on to state that, "for most systems, the entire scope of subject matter is divided into about 7 to 10 major divisions. These divisions are called majors and usually represent the main functional areas of the organization the system serves. Describing the records series by the function they perform is called *functional filing*."[10] This is a peculiar use of the term "functional filing," and, as will be shown in this paper, the record series in this model may not display actual functions performed.

The NA's perspective, as documented in the functional profiles it has developed for each of the common administrative functions covered by the MIDAs, on records related to the functions performed by institutions differs from the notion of functional filing above. It differs to a lesser degree from other functional classification models[11] based on *Designing and Implementing Record*

8 Ibid., p. vii.

9 Mary F. Robek, Gerald F. Brown, David O. Stephens, *Information and Records Management: Document-Based Information Systems*, 4th ed. (New York, Ohio, California, Illinois, 1996), p. 102.

10 Ibid., p. 105.

11 Reference here is to an excellent presentation of a model file classification system by Jo-Anne Holm at the ARMA National Capital Region (Ottawa) Spring 2001 Seminar. The theme of the presentation was about designing functional classification systems based on her experience in New South Wales using the DIRKS model (found at <http://www.naa.gov.au>, last visited May 2001). What struck the author during this presentation was that the classification scheme, based on the function-based Keyword AAA thesaurus, we were told, arranged the activities in descending order under the function of property management as follows: PROPERTY MANAGEMENT, Acquisition, Construction, Disposal, and Maintenance. When the author enquired as to why the activity "Maintenance" of properties would come after "Disposal" of the properties, he was told the activities were to be listed in alphabetical order and not in the sequence in which the activities would normally take place. The point (not simply quibbling) about alphabetical listings, which also appears later in the paper, is that it completely destroys the natural sequence in which activities actually occur. From a purely logical point of view and from the programme/records creator's point of view, it is much more user friendly and meaningful to construct and interpret a records classification system that actually looks like the working business process model in place. An exchange of correspondence with Adrian Cunningham of the National Archives of Australia, on 10 August 2001, has clarified that DIRKS (based on the Australian Records Management Standard, AS 4390) does not concern itself at the function and activity level with the sequence of activities for classification purposes, but, at the transaction level, recommends that lists of transactions within an activity should mirror the sequence of transactions in the business process. One could, however, implement DIRKS and arrange functions and activities in sequence as a matter of choice without contravening AS 4390. It was also indicated in this exchange that DIRKS is silent on the issue of alpha/numeric or other coding conventions to classify and identify records. A review of other classification systems based on DIRKS from the City of Greater Dandenong and Hertfordshire Council in Australia tends to corroborate these views.

Keeping Systems: Manual for Commonwealth Agencies (DIRKS) developed in New South Wales. It appears that some of these models are not sequential arrangements of functions, sub-functions, activities, or business processes as proposed in this paper, but alphabetical arrangements of titles one level below the function. To illustrate my point, we can look below at the actual example given in Robek, Brown, and Stevens's publication about functional filing.[12] Below the function constituting the highest level, the scheme is really about subjects and objects listed in alphabetical order[13]:

Human Resources	**Property**
Employees	Buildings
Fringe Benefits	Equipment
Job Descriptions	Land
Training	Patents

Under the blocks "human resources" and "property," provided in this American publication as an example of functional filing, we see lists of things or objects in alphabetical order but no activities, transactions, or processes. Moreover, the block "property" does not denote a business activity or a business life-cycle management process but, more accurately, a subject under which real property assets, materiel property assets, and, perhaps, even intellectual property are listed. Except perhaps for "training," all the file titles are subject titles listed in alphabetical order denoting subjects, objects, or end products which result from or are otherwise related to a long series of activities. However, the functional analysis required to construct function-based classification systems is primarily a description and analysis of the business activities of government and not merely about subjects, objects, or end products. Because our traditional definition of a "subject" is so loose and may include subjects, objects, entities, and activities, we require a new approach to file classification which will provide the rigour and sound rationale needed in the design of function-based records classification systems and in the application of related function-based records disposition authorities.

This article proposes that function-based classification systems must go deeper into analysing the function's component sub-functions, activities, transactions, and processes in order to develop the theoretical and methodological foundations for arranging (i.e., classifying) information according to the structured business processes which create and use the information in the first place. In other words, we need to create a new records management orthodoxy (at least within the Canadian record-keeping context) for the devel-

12 This example from an American publication cannot be considered similar to systems based on the Australian DIRKS model as they are based on two different methodologies.

13 *Information and Records Management: Document-Based Information Systems*, p. 106.

opment of records classification systems that are not object-based but designed according to the structure manifested within the succession of activities forming the business process which creates and uses the records to be classified. We conduct a business process analysis in order to discover the underlying business activity structure. The logic for arranging files at the functional, sub-functional, and activity levels is not determined by the alphabet – which never really worked in a bilingual country like Canada where the French titles translated from English were always out of order – but by a sequential order. This approach works well for a government, its employees, and citizens using and requesting access to government information in either official language.

Foundation for a Business Activity Structure Classification System (BASCS)

So as not to confuse this approach with other versions of functional filing systems such as those mentioned above, the type of function-based classification system being designed at the NA is called a *Business Activity Structure Classification System*. The key strategy of the design methodology is to use the structure of the functional sequencing of activities composing a business process or business function to structure the records classification system's sequence of block, primary, and secondary file titles. It would normally be at the secondary, but especially at the tertiary, transaction levels that subjects, objects, and project or individual case files would be identified. In the development phase of such a system we ask not so much what an organizational area does (for example, we know that Statistics Canada conducted the 2001 census this year and a publication or report will be among the end products of that survey) but, more importantly, we need to know how the organization performs that mandate by means of conception, development, collection, processing, research and analysis, and marketing and dissemination. We need to know this because the records to be classified contain information that primarily documents and evidences these activities.

The foundation for constructing a Business Activity Structure Classification System (BASCS) begins by resolving a few issues mentioned above. What is a record? Answering this question requires a comprehensive description of the common characteristics shared by all entities which would, in the normal course of business, be considered "records." In the *Guide for Managing Electronic Records from an Archival Perspective*, issued by the International Council on Archives (ICA), there is a definition of a record which meets our requirements within either a functional or subject-based context. The ICA guide provides that a record "is recorded information produced or received in the initiation, conduct, or completion of an institutional or individual activity and that comprises content, context, and structure sufficient to provide evi-

dence of the activity regardless of form or medium."[14] From a functional perspective, with a view to constructing functional classification systems, there are two important insights to retain from this excellent definition: first, records are essentially information about activities and not about subjects, objects, end products, or themes, and, second, the definition de-scribes activities as having an innate sequential structure in their initiation, conduct, or completion. These insights are the cornerstone to constructing a BASCS. It is self-evident – to anyone who takes the time to understand it – that everything we do or that is done by institutions in this finite universe has a beginning, middle, and an end, all of which act towards providing the goods or services a government body is mandated to deliver. In fact, most federal legislation, regulation, and policies governing activity describe what is to be done in terms of a linear or life-cycle progression of activities from beginning to end. The conclusion to be derived from this insight is that the sequence of functional activities, mapped out and often prescribed by legislation, constitutes the structure of the activity. In other words, what is meant by a "business activity structure" is the deconstruction, in hierarchical order, of functional levels, from a function, to a sub-function, and then to an activity, plus the sequence in which activities takes place.

The nature of a function is the next issue to resolve. What is a function? After several years of developing our skills in macro-appraisal and structural-functional analysis at the NA, we have arrived at a consensus on what constitutes a function. What follows is not strictly a definition but rather a description of how the term "function" is used for the purposes of appraisal, disposition, and records classification, though not necessarily in that order. A function is: (1) any high level purpose, responsibility, task, or activity which is assigned to the accountability agenda of an institution by legislation, policy or mandate; (2) typically common administrative or operational functions of policy development and programme and/or delivery of goods or services; (3) 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.[15] The two first meanings appear to coincide with the views held by many people on what a function is. However, the third meaning was discovered through rigorous analyses of the central policies

14 International Council on Archives, Committee on Electronic Records, *Guide for Managing Electronic Records from an Archival Perspective*, Study 8, rev. ed. (Paris, 2000), p. 22.

15 This definition has undergone several revisions, been tested with a number of records managers in federal institutions and National Archives employees, and will continue to evolve with usage. The author wishes to thank one of the paper's reviewers for suggesting possible improvements to the definition. These will be taken into consideration. However, as this definition has now been adopted in a number of documents at the National Archives, this article is not the place to change the wording drafted by another author. It should also be pointed out that the term "function" may be used with all three characterizations in mind or only one.

and legislation which govern common administrative functions normally described as a linear or life-cycle structure of sequential activities that institutions must carry out. Projects also require this type of sequential planning. Particular sequential structures evolved, not because central agencies dictated it but because the order made sense in terms of the initiation, conduct, and completion of the function or business process.

An analysis of business activity structure or sequence, based on the preceding insights, revealed more of the foundation upon which to build the business activity structure classification system's logic. But what determines that sequence of activities to be the way it is? The basis for the sequence is determined by the spatial, temporal, and causal relationships[16] between the set or series of functions, sub-functions, or activities composing the function. In other words, if all activities have a beginning, a middle, and an end, then the causal relationships between activities and the spatial and temporal precedence[17] of actions and events are the most likely factors determining the sequence of activities and transactions. This was corroborated by analysing central agency policies, such as the materiel management policy described in more detail below. The next stage of building the system's logic was to understand that if all activities have a sequence (prescribed or not in legislation and policy), and a record is essentially information about activities, then surely the information could be remapped and organized systematically in a sequence which reflects the natural sequence of occurring activities it evidences and documents. After all, textual information often uses a narrative technique, presenting in chronological order what has happened or will happen, in which locations, and how one individual or event affects or causes another.

BASCS – Theoretical Model

From this point, one can create the theoretical model and basis, supported by sound definitions and some elementary deductive reason, from which to construct a practical Business Activity Structure Classification System (BASCS). In theory, the BASCS is a logical structure for the classification of records which treats the information contained in records as by-products and evidence of institutional functions, and whose logical sequential structure is determined

16 These relationships pertain to the activities themselves and have nothing to do with the contextual elements of space and time pertaining to records as described in records continuum literature. However, it may be interesting in the future to conduct more study on any possible convergence here.

17 Here, the author is influenced by the analysis of philosopher David Hume on the nature and difference between conjoined events where one event regularly precedes another but the latter event need not follow the former, and cause to effect events where the latter event always follows the former event. Hume's examples of billiard balls striking each other in a causal chain of events within a spatial, temporal, and causal context is classic.

by the natural spatial, temporal, and causal relationships which exist among the set or series of activities which compose the function. The structure manifested within the business functions is discovered through an analysis of the linear or cyclical business processes supporting particular functions at the function level of a classification system (the block) and the subsequent sequencing of sub-functions at the next (primary) level, as described or prescribed in legislation, statutes, regulations, or policies, or discovered through programme studies relating to the function. Therefore, the inherent logical structure of BASCS is not characterized by hierarchical groupings as with subject-based systems but, instead, is sequential in nature. That sequence can be mapped out by performing the above business process analysis using techniques from programme review and evaluation, work flow charting, programme/project planning, or critical path mapping. In summation, this model deconstructs 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) an "activity" (used as a generic term for activity, action, or transaction) is the next level at the secondary, tertiary, and lower levels of activity or subject. However, the overall logic behind the architectural design of a BASCS is based primarily on the sequence of all activities, and, second, on the hierarchy of the three levels mentioned above.

BASCS - Working Prototype

With the theoretical model sketched out, one can create a practical file classification model, such as the example below developed by the author in 2000 in conjunction with the official dissemination of a new MIDA on the materiel management function for the Government of Canada. The classification model was not determined specifically by disposition considerations, even though we believe it will eventually facilitate the disposition of materiel management records. It was based on the functional analysis of the materiel management function as described in legislation, regulation and policy, and designed for the purpose of explaining to records management personnel in federal institutions how to classify their documents according to the descriptions of its eight sub-functions. In the following example, the traditional subject-based classification system is on the left, and on the right is a BASCS structure. The subject listing on the left arranges subjects, objects, or end products in alphabetical order at the primary subject level and is taken directly from the old *Subject Classification Guide* published by the then Public Archives in 1976. This is the traditional subject classification system with an assigned block of primary numbers (700–849) and nothing more needs to be said about it.

EQUIPMENT AND SUPPLIES MATERIEL MANAGEMENT FUNCTION

700–849	700–849
700 Equipment and Supplies – General	700 Materiel Management – General
715 Building Materials	710 Assessing Materiel Requirements
720 Catalogues, Manuals, Price Lists	720 Planning Materiel Requirements
725 Clothing	730 Acquiring Materiel Assets & Related Services
750 Foods	790 Operating Materiel Assets
754 Forms	800 Using Materiel Assets
758 Fuels	820 Maintaining Materiel Assets
764 Furniture and Furnishings	830 Replacing Materiel Assets
795 Office Appliances	840 Disposing of Materiel Assets
830 Stationery	
840 Vehicles	

While conducting the functional analysis in support of the appraisal of records covered by the MIDA for the materiel management function, it was observed that the materiel management policy written and promulgated by the Treasury Board of Canada Secretariat (TBS) not only lays out policy requirements, but also describes in detail how the function of materiel management is to be carried out. The policy prescribes the actions to be taken by federal institutions and describes this function as a life-cycle approach to managing all materiel assets of the GoC. It stipulates that the life-cycle has four sequential phases and, further, that there are eight sub-functions composing the four phases, also sequential in nature. The policy outlines the materiel management life cycle composed of the following eight (in italics) sub-functions in sequence: phase 1, *assessing* and *planning* materiel requirements; phase 2, *acquirin*g materiel resources; phase 3, *operating*, *using* and *maintaining* materiel; and phase 4, *disposing* and *replacing* materiel. This business activity structure of four phases with eight sub-functions was then used to construct the BASCS (right column in the example above), using the same block of primary numbers as those in the left column for comparison purposes. The TBS policy also describes in many instances how each sub-function is to be carried out, that is, the activities and transactions. All this information was used to compose the MIDA's functional profile and the function-based classification system under discussion here. The subject-based purist's attention should be drawn to the fact that this life cycle of activities is entirely logical and very easy to understand by both records creators and records managers, and that the sub-functions occur in sequence and not in alphabetical order. There is the assurance that, since policy dictates how the function is performed, a classification system based on this policy is not arbitrary but reflects the realities of business practice. For verification, senior officials responsible for materiel management in the federal government were consulted in drafting the func-

tional profile. It is also noteworthy that the same term for a specific activity (regardless of functional level) in the policy was used in the MIDA for the materiel management function and is used and copied into the file primary titles. This is especially useful when the text of the policy defines its terms, and is a future consideration towards possibly developing a functional (not subject) thesaurus.

The TBS policy for materiel management views (implicitly) activities as having an initiation, conduct, and completion, in sequence. Other TBS policies, such as those for the management of government information holdings and real property management, also describe the linear or cyclical nature of sequential activities supporting and composing functions, which corroborated the functional analysis done for the MIDAs by the National Archives at the function, sub-function, activity, and transaction levels. A system's logic had emerged! The sequence of primary titles, right column under the materiel management example above, reflects the business life-cycle process of managing materiel assets from assessing to planning, through using and maintaining, to final disposition. It seems very strange now to consider placing the title "disposing of materiel assets" before "operating [the same] materiel assets" in a classification system simply because "d" comes before "o" in the alphabet, or that "planning" to acquire assets should somehow come after actually "acquiring" the assets because of an alphabetical structure traditionally used for subject-based file systems. To rearrange the sub-functions or activities artificially in alphabetical order would be to completely destroy the natural sequence of activities obvious to anyone reading either BASCS or the policy describing the business process, or to someone actually working within the process. Other advantages of using legislation and policy in the design of a BASCS are that the activities described in these instruments are more stable than organizational structures, thus requiring less amendments to the system; the records creators involved in that business function are more familiar and comfortable with terms used in the legislation for the classification system, thus providing greater buy-in and credibility in the system; and it insures a greater consistency in design specifications and performance measurement across all institutions subject to the same legislative and policy frameworks.

In the BASCS file system, as mentioned above, a function equates to our old notion of the block level, and the sub-function equates to our old notion of the primary level. These two levels of functional construction form only the *business activity structure* component within the whole system as they are derived from the business process; no files or records actually exist at the block or primary levels. However, the secondary and tertiary file levels can be about activities, subjects, projects, client or other types of case files, etc., classified to the BASCS file structure. Therefore, the secondary and tertiary file levels equate to the activity levels within the system and form the (records) *classification system* component of the BASCS. Thus, the overall structure of

BASCS 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, as was done in the MIDAs, without ever constructing the second. And the type of individuals (with certain analytical and managerial skills sets) required to design the first component will differ from the type of programme area managers and records management technicians (with their particular skills sets) required for the second component. As files are listed in descending order from secondary and tertiary titles, etc., one will find activity, subject, and other types of records decreasingly less amenable for sequential listing. This more granular level of detail will require further analysis to determine the proper mix of sequential, alphabetical, or other arrangements suitable to an institution-specific application. Below is a scheme of how the business activity structure, in the sequenced titles (bold type) descending from function to sub-function, is superimposed over the activity titles of the records classification system to expose the two components.

~~Function/Block title =~~		~~**MATERIEL MANAGEMENT FUNCTION**~~
Sub-function/Primary title =	X.3.0	**Materiel Management – General**
"	X.3.1	**Assessing Materiel Requirements**
"	X.3.2	**Planning Materiel Requirements**
"	X.3.3	**Acquiring Materiel Assets & Related Services**
"	X.3.4	**Operating Materiel Assets**
"	X.3.5	**Using Materiel Assets**
"	X.3.6	**Maintaining Materiel Assets**
"	X.3.7	**Replacing Materiel Assets**
"	X.3.8	**Disposing of Materiel Assets**
Activity/Secondary title =		– 1 General
"		– 2 Disposal under *Surplus Crown Assets Act*
"		– 3 Disposal of hazardous wastes
Subject/Tertiary title =		– 3–1 Lead-based paints

The example proposed above is a new numbering convention for a BASCS. The first positioned[18] digit (X.3.0) denotes an identified business line described in the Main Estimates for an institution. In this case, X refers to the

18 What is being proposed is not a file number with three digits but a positioning technique, commonly known as a significant position digit code. The example proposes there be (at least) three positions separated by a dot or period (.), but one could use the forward slash (/) for demarcation. The number of digits in each of the three positions can be one or many, but

corporate management services business line of an institution, i.e., all the common administrative functions. When in doubt or dispute, there must be criteria or a rule to help identify the function in question among the many "high" level responsibilities of an institution. Our suggestion is to use the business line described by institutions in the Main Estimates, which are delivered to Parliament annually, published, and made available to the entire government and its citizens. For example, if the business line for all corporate management services at the National Archives is known as number 1, or the first business line out of four, then the primary number here would start with 1, e.g., 1.3.0. The second positioned digit (X.3.0) denotes the function and number of the records disposition authority within the series of MIDAs covering all common administrative functions: MIDA[19] 99/003 for materiel management, previously GRDS schedule 3, is considered the third common administrative function covered by a MIDA. Similarly, the BASCS would identify the comptrollership function with X.4: MIDA 99/004, previously Schedule 4, considered the fourth common administrative function, and so on. The digit (0) in X.3.0 denotes the general series of sub-functions containing multiplicities of activities, or activities of a broad general character subsumed within the function, and begins the sequence. The third positioned digit (X.3.1 to 8) denotes the number of a particular sub-function within the sequence of eight sub-functions identified under materiel management through the business process analysis. This file classification numbering scheme can thus identify and conceptually link the business line, function, and sub-functions in a more meaningful manner for the records user/creator than simply assigning the block of next available four-digit primary numbers. It becomes especially easy to convince programme areas and records users of the meaningfulness of

realistically one or two digits per position will suffice. The first position is reserved for the business line, the second position reserved for the function, and the third position reserved for the sub-function. This coding convention allows one to link and identify functional levels from the business line to the position held by a particular sub-function within a sequence. Secondary and tertiary titles, for consistency purposes and to indicate a shift to actual files as opposed to sub-functions, can continue to be demarcated by the dash (–).Without going into too much detail here, for example, a file number like 1.5.10 or 1/5/10 would indicate the first business line, fifth function, and tenth sub-function in an institution, or it can be read as "Common Administrative Functions/Human Resources Management/Employment Equity" in long hand. The reader would not be mistaken to view this coding convention as creating an artificial language of sign and symbol with numbers. The classification number should not incorporate prefixes to denote corporate structures such as ADMIN which can change to CORP for "corporate service" and change again to MGT for "management services" or the newest fad word requiring three or more amendments to the files, classification system, and automated system.

19 The first set of numbers "99" normally refers to the year the disposition authority was developed and signed (now the NA uses four digits "2001") followed by a forward slash, and the second set "003" refers to the next disposition authority in sequence signed by the National Archivist that year. The official Authority number looks like 99/003.

the numbering scheme when they are involved with the classification system designers in developing a business process model, i.e., broadly speaking, an activity flow chart, mapping out the number of phases and number of sub-functions supporting the business function, and can later see those numbers become their file classification numbers at the block, primary, and even secondary levels.

Choosing blocks of numbers was always rather arbitrary in a subject-based classification system, and was based on the availability of numbers or, again, on the alphabetical order of the block subject, e.g., administration, followed by buildings, equipment, finance, personnel, etc. The proposed numbering convention for a BASCS attempts to provide a rationale for the numbers and related file titles, thereby rendering the system useful and meaningful to all records creators, users, and records managers. Whereas the BASCS is designed to classify records to the appropriate function, sub-function, activity, and subject levels, the proposed numbering scheme directly links the function to the mission or mandate of an institution as described in a business line. If indeed all functions can be directly linked to an institutional mission or mandate codified by a numbering scheme, then the highest level of a BASCS would in fact be the institution's business line and not the function. However academic, it really depends on how an institution decides to identify its functions at a "high level": purpose, responsibility, task, or mandate? When based on the legislative framework governing institutional functions and a business process model of those functions developed down to the activity and transaction levels, the classification numbering scheme provides comprehensive linkages between that legislative framework and the institutional activities documented within the content, context, and structure of the records.

One can incorporate the MIDA functional profile's description of sub-functions and activities under a primary sub-function title of the classification system to describe the records which should be classified to that primary title. This is rather easy. One can simply begin with "includes records related to ... " and attach the sub-functional profile description, as was the case in the following example:

X.3.1 **ASSESSING MATERIEL REQUIREMENTS**

Includes records relating to this sub-function, the business processes, and activities which produce records created by institutions while evaluating existing assets and resources, assessing current and future organizational needs, and reviewing alternative means of satisfying materiel needs including re-engineering business processes; monitoring and providing feedback on the implementation and effectiveness of Materiel Management policies; promoting the acceptance and use of environmentally sound products and practices by institutional managers; ensuring that Materiel Management complies with institutional policies and standards; and ensuring the effective and effi-

cient management of all inventories and inventory cost distribution.[20]

Another example of a BASCS, this time for operational records, was designed for all the records created, collected, and controlled by Statistics Canada (STC) for each of its several hundred surveys.

XXXX	**SURVEY XXX**
–0	Policy
–1	General
–2	Development
–3	Collection
–4	Processing
–5	Research and Analysis
–6	Marketing and Dissemination
–7	Budget
–8	Contracts and Agreements
–9	Methodology

When the author helped design this system over fifteen years ago at STC, we never realized that this was a function-based classification system, as we thought everything was about subjects. One must remember (as stated above) that a "subject" could be about anything and everything. What is noteworthy in this example is that every survey produced and carried out by STC used a survey methodology of six phased activities in sequence. The six phases are captured at the secondary level for any and all surveys by the following secondary numbers: –1 General (for the initiation and conceptualization phase); –2 Development (survey development comes after initiation); –3 Collection (data collection takes place only after survey creation); –4 Processing (data processing occurs after the data are collected), and so on in the natural sequence of activities, ending with –6 Marketing and Dissemination of final publishable survey information. The sequence of activities is logical for the function of conducting surveys, is driven by a business process methodology, easily understood by all records management employees and records creators, and captures the essence of the working definition of a "record" adopted here from the ICA *Guide for Managing Electronic Records from an Archival Perspective*. The operating rationale for this design was that if the survey activities have a natural sequence, prescribed by a standard survey methodology,

20 The description of the primary block, Assessing Materiel Requirements, and its contents is taken from the model BASCS for Materiel Management. This model was developed at the National Archives and disseminated to institutions of the Government of Canada in 2000 at an orientation session on the new Materiel Management MIDA. Each of the eight materiel management sub-function primaries in the BASCS model includes such descriptions.

then why not use the structure of that sequence to map out the file sequence since the records document how the business activity process is carried out. This file sequence at the secondary level is now replicated for all STC surveys and appears to be working very well and demonstrating enduring stability over time. One will also note that –0 Policy, –7 Budget, –8 Contracts and Agreements, and –9 Methodology are considered, more appropriately, subjects which can impose themselves throughout multiple activities rather than at a particular juncture in the business process. Indeed, subject files may occur at the secondary level of a BASCS and may be listed alphabetically if no other logical sequence presents itself. However, the primary structural design of a BASCS is to first map out the natural sequence of activities within a business process model composing the function and sub-functions *before* listing the subjects, objects, end products, projects, and case files in alphabetical order or using some other scheme.

Conclusion

The archival shift to macro-appraisal and functional analysis has caused a conceptual shift in the way we read and interpret information contained in the records we appraise. The resulting impact of this shift to functions and business processes, and away from a subject-centric perspective, is starting to be felt by the information and records management professionals in the Government of Canada who are looking for classification systems that can directly link files to the mission, mandate, and business functions documented in records. They are looking for a classification scheme that is as obvious to the records management staff as it is to the programme area records creator or the Internet surfer looking for information. They are looking for a classification structure which can transcend and cut across departmental boundaries and cultures while arranging records supporting and evidencing a shared or common function performed in Offices of Primary Interest[21] (OPIs) and non-OPI institutions, and yet survive the uncertainty of organizational change. This paper and the proposals in it form an opening gambit in designing function-based classification systems within a Canadian[22] context, but we believe the Business Activity Structure Classification System can meet these requirements, even in an electronic work environment, and be built for all functions. More

21 An Office of Primary Interest is the federal government institution – department, agency, board, office, or commission – to which the authority, responsibility, and accountability to perform a particular function on behalf of the Government of Canada has been specifically assigned by legislation, regulation, policy, or mandate.

22 Very little published Canadian literature and research on function-based classification systems exists at the moment. However, the vast amount of work done in Australia on this topic, so generously made available through the Internet and other venues, and in the United States provides valued resources and a solid foundation for work in this area.

research[23] is required to fully develop the business rules, standards, metadata schema, best practices, and, perhaps more importantly for the immediate future, to develop a new terminology for function-based classification systems with which a rational discourse can take place to further this project. An assessment of the value and benefits to be obtained from developing a keyword thesaurus of functions, sub-functions, and activities under the GoC jurisdiction should be undertaken, especially if the BASCS is primarily sequential and not alphabetical in design. And, further study and partnerships will be required to integrate the conceptual classification scheme into a government-wide automated record-keeping system.

This is only the beginning to revamping and perhaps replacing the subject-based records classification systems used in the GoC for the past 170 years. This paper has addressed three out of the four issues raised at the beginning of the paper. The fourth issue, that of revising traditional methods and practices as a consequence of adopting the functional approach and providing consistent theory, practical advice, and standards through new records management products developed at the National Archives of Canada, is a long-term work plan which cannot be addressed within the scope of this article. It requires and awaits a team of specialists.

23 Research on design and construction of function-based records classification systems is just beginning at the National Archives of Canada. The National Archives is in the process of drafting a project plan to support the future development of a government-wide function-based classification system.