

ARCHIVAL SYSTEMS IN THE CONTEXT OF SCIENCE

by

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ABSTRACT

The concept of systems accounts for the organization and patterns of order that characterize the natural world. Throughout the history of science, scientific activity has been based on this concept, either implicitly under a mechanistic approach or explicitly under an holistic systems approach. Contemporary science is now based on an holistic systems viewpoint that encompasses both the natural and social worlds as objects for study.

Based on this context for the systems viewpoint, the thesis addresses archival constructs, arising spontaneously as a byproduct of societal activity, as instances of systems. This is an aspect of their nature that was recognized by traditional theorists, who devised the methodology that still fundamentally guides archival practice. However, the archival field has not yet recognized the applicability and utility of formal systems notions to the work of the archivist, specifically to the tasks of arrangement, description, and appraisal. The thesis argues that appropriate handling of archival constructs requires that they be treated as systems, that the concept of systems provides a necessary framework for archival theory, and that by adopting a systems viewpoint, the archival field may regain the status of a recognized profession and join with other fields of applied science that contribute to systems research.

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INTRODUCTION

The job title of archivist is rightly held by personnel from a variety of technical and educational backgrounds, who work in a variety of administrative settings, and practice their craft according to a variety of methodologies and with a variety of outcomes. The one uniting force is the object upon which archival attention is directed: records. That this is not enough to compose a profession is reflected by a lack of recognition within society for the archival endeavour.

Professional status for the archival endeavour is an important thing, more so for the sake of the records than for the sake of the archivist, because when professional status is attached to a field, this generally coincides with a performance standard that constrains and guides the work done. If all archivists worked according to a performance standard, this would solidify the archival community as a profession group that provided consistent and competent treatment to archival records, regardless of the background of the individual worker and regardless of the particular administrative setting in which the work is done. In the absence of a performance standard, the archival endeavour will continue to be practiced according to a variety of methodologies and with a variety of outcomes. This uneven treatment will become obvious only in retrospect when its effect upon the documentary heritage of contemporary society has become permanent and pervasive.

Despite the prospect of lasting damage to this heritage, the remedy of a professional performance standard for archivists is unlikely to be initiated from outside the field, because if the work of the archivist is not now recognized by society then neither is it a matter for public concern. The archival community itself is therefore responsible for devising and

meeting a standard of care that will raise the endeavour to the status of a profession.

However, before a general performance standard can be devised, the community must first resolve a difference of opinion that has developed in recent times on the purpose of archival work, a difference of opinion that contributes to disunity in the community. There are two viewpoints on this issue, each taking as paramount one of the two factors involved in the archival function to handle records and make them available for use. One of these viewpoints is that the focus of the archival mandate should be primarily on the records themselves; the other viewpoint is that the focus should be primarily on the use of the records.

When applied as methodology, these different viewpoints lead to different outcomes. If archival work is focussed on the records then archival handling is guided by the nature of the records and their organizational structure, and it respects the relationships that developed spontaneously over and between the records in the context of their creation. As a result, groupings of records are left in their original state of organization, any necessary record disposal is done so that this original state remains apparent, and the needs of users are accommodated only through means that do not directly affect the records. If, on the other hand, archival work is focussed on the users and their needs, then the records are handled as a collection of items in terms of their anticipated utility. As a result, there is no prohibition against discarding most of the records in a grouping and keeping a select few, of altering the record structure, or of distributing parts of a grouping amongst different repositories, if such actions may promote and facilitate the use of the records.

Given the antiquity of the archival endeavour, it might be expected that this issue of an archival mandate would have been resolved long ago. However, the need for an explicit

mandate is only recent, because for much of its history the archival function was a part of government administration, and archivists dealt only with governmental records that had passed out of active use, but might some day be needed, most likely by the creator. Therefore, the creators of the records and the users of the archives were generally the same people, the records would be needed in the future for much the same reasons as they were needed when current, and so there was no reason for the archivist to alter the records between their active state and their archival state.

Over time the role of the archivist changed as society changed. Governments became the servants of the people instead of their masters, and the records created by government became the property of the people governed, because these records documented the actions of elected officials and therefore were instruments of accountability. As well, the notion of archives expanded to include records that were not governmental. Business records, formerly of importance for reasons of taxation and property rights, developed importance as documentation of the commercial aspects of society. Personal records were included in this picture of a documentary universe that captured a distilled version of human activity--an information resource in which society as a whole took an active and legitimate interest. As a result of this evolution in the role of archives in society, the role of the archivist changed from a functionary of government to the keeper of the records of society.

With this broader mandate the question first arose of how the work of the archivist was to be done and to what purpose. Is the archivist a guardian of the records which are the documentary heritage of society as a whole, or is the archivist a facilitator to the use of those records? In both cases the archivist is keeping the records on behalf of society. The distinction between the two mandates hinges on a philosophical issue of whether society is viewed as an abstract entity whose interests are served by maintaining archives in as natural a

state as possible, or if instead society is viewed as a pragmatic entity whose interests are served by satisfying the anticipated and specific needs of researchers. Implicit in this distinction is the attribution of different values to the records. In the first case, the records themselves are considered to hold an intrinsic value. In the latter case, the value of the records is derived on the basis of the value which users may find in them.

However, for some time, there was still no pressing need to resolve this issue of an archival mandate, because the answer made no practical difference to the work of the archivist. The most active archival facilities were those that were attached to government administration. Governments had explicit responsibility to preserve at least their own records and they were publicly funded to provide this service to society. Within this context, the work of archivists remained aligned to that of the governmental functionary: caring for the records that were acquired, perhaps from businesses and individuals as well as from the government, dealing with the records generally in terms of their creation context, and supporting access to them as inactive administrative vehicles that contained information of interest for any of a variety of reasons. It was in the governmental archives of Europe that this passive approach to archives handling was formalized over time and presented to the archival community as a whole at the turn of the century in what would become known as the traditional approach.

The traditional approach dealt primarily with the established tasks of arrangement and description of records and the issue of record appraisal did not play a key role. Then came modern record technology and the information age and an explosion of record volume. The role of the archivist could no longer be passive, and guidelines for overt interference with the documentary universe were needed to guide policy for acquisition of records into archival repositories and appraisal of acquired records within the repository to reduce their volume. At this point, there needed to be some resolution on the question of the archival mandate. What

would guide the necessary archival interference with records: an augmented traditional approach based on the nature of the records, or a novel approach based on the needs of researchers? An answer to this question has not yet been determined, and therein lies the fundamental obstacle to achieving an explicit and consistent approach for the collective of those who work as archivists. There is no consensus in the contemporary world on exactly what it is that archivists are supposed to be doing or why.

In recent years there has been active debate on the issue, with differing schools of thought strongly supporting a record-based or a user-based approach, or some compromise between the two. Progress towards an explicit common viewpoint has stalled because the debate has remained philosophical. No independently defensible grounds to support or refute either position has been found, and so it has remained a matter of opinion and circumstance as to whether the records or the users should be the primary focus of archival activity.

However, there is guidance available outside of the archival context, within the broader context of other endeavours which work to study, understand, and manage structures of organization in the world. This is the context of science, and since its beginnings science has devised strategies for dealing with organized structures of the natural world. It is because the phenomena of nature are structured and organized that science is possible.

Archives are a practical instance of such organized structure. They arise spontaneously as a result of human activity, are routinely classified in terms of this activity, and they selectively survive to pass into the archival state at the conclusion of their initial usefulness. The records follow their own life path, a path which arises as a reflex of human society doing practical things, documenting this activity, and keeping the records, and the patterns of relationship between the records are modelled on naturally organized patterns of

activity. The work of the archivist in dealing with records is therefore similar to the work of the scientist in dealing with structures of nature. On the basis of this common ground, the strategies of science offer the independently devised criteria needed for composing an archival approach that can guide all archivists in the task of working with records consistently and competently. This thesis explores the strategies of science in order to formalize the criteria necessary for an extrinsically supported and explicit archival mandate, and then applies the methodology which follows from this mandate to the basic tasks of handling archives.

The discussion begins with the science context: the nature of the activity and the history of the activity. Science is often considered to be a fixed, progressive, and objective enterprise which properly may deal with only a limited array of phenomena in the natural world. In exploring the nature of science activity it is argued that this perception is based on an incorrect view of what science is all about. In fact, science is an endeavour entirely reliant upon a framework of assumptions that may change over time.

One fundamental change over time has been the alternation between two viewpoints in science on how to approach organized structures. These alternating viewpoints are the holistic approach and the mechanistic approach. The holistic approach deals with a complex structure in terms of its composite parts in combination within the context of the whole. The mechanistic approach deals with such structure through reduction of the whole into the context of an aggregation of its composite parts. This distinction has had practical and profound effect on the history of science, and it has led to a current framework that is holistic in its approach and is articulated through the concept of systems.

Following from the historical context of the contemporary systems viewpoint in the

sciences, the second chapter examines the formal concept of systems, and presents the definitional criteria necessary to demonstrate that archives are systems. In the third chapter, a systems-based archival approach is applied to the basic tasks of archival handling, these being arrangement, description, and appraisal, in order to articulate a systems framework for archival theory. Due to the underlying holistic approach taken by traditional theorists, this framework is generally consistent with current methodology, and for arrangement and description there is little required to determine a systems based approach to archives except development of existing concepts. The task of appraisal, as a focal point in the contemporary debate on record handling and a source of challenge for the traditional approach, provides a useful means for then demonstrating the benefit of adopting a systems approach to archives.

From this, it is argued that, because archives are instances of complex organized structure similar to those studied in various modern branches of science, the archival endeavour belongs within the contemporary broader view of science subjects, and that this re-characterization of the archival mandate will support the authority needed to accord professional status to the archival endeavour.

CHAPTER 1

The Context of Science

In order to apply a systems approach to archives, it is necessary first to fully define the concept of systems. This requires an exploration of science, as it is from this context that the formal concept of systems has evolved, and it is into this context that a systems based approach to archives would bring the archival endeavour. The context of science relevant to understanding systems is comprehensive, because systems are the reason that science is possible--they compose the patterns of natural phenomena that mystified early philosophers and invited and rewarded application of reasoned thought to the workings of the world. From a certain perspective, the perspective to be taken here, the history of science is the history of the systems viewpoint in science.

This is the necessary historical context, but there is another context that must also be examined, which is the nature of science activity itself. There are many notions of what science is all about that would argue against the possibility that the archival endeavour might belong amongst the ranks of general science subjects. Such notions are based upon the common perception that science is an endeavour set apart from other sorts of study, in that it is entirely objective by virtue of the rigorous manner in which the activity is done and the restricted range of topics to which it applies. In fact, while science strives towards a standard of pure objectivity, this standard is an unattainable ideal, and the activity of science is actually based upon a complex framework of assumptions that makes it possible for the landscape of the scientific endeavour to be redrawn over time. Appreciating this point is a prerequisite to understanding the role that systems have played in the history of science, and how it can be that archives may qualify as an endeavour of science in the contemporary context.

1.1 Activity of Science

In antiquity, as in modern times, man tried to form a coherent and meaningful picture of his world. About him he saw a world teeming with living creatures. He also observed that certain animals were to be found most frequently in particular environments. That is, mosquitoes were seen emerging from ponds and stagnant water. Salamanders and frogs were to be found in the vicinity of muddy shores. Young turtles were to be observed coming out of the ground. And so on. Thus, the concept arose that these animals were not only associated with their environment. Toads were thought to be generated by mud. Maggots were held to be formed spontaneously by stagnant water. All sorts of the lower animals were considered to be created continuously, on the spot, from nonliving stuff - a spontaneous generation of life.

Belief in spontaneous generation of living things was widely held, and became embedded in the written records of ancient cultures. . . . A procedure for creating mice is. . . found among the writings from Europe of the Middle Ages. If some rags and a few grains of wheat are put into a crock and sprinkled with a little water, adult mice will appear in a few days. According to some accounts, urine was called for instead of water. One was no doubt as efficient as the other.

Stanley Beck, The Simplicity of Science

The word "science" derives from the Latin word *scire*, which means "to know,"¹ and the purpose of science activity is to gather and organize knowledge of the world. This knowledge is illusive, as each person's direct experience of the world is limited to sensory information, gathered through what is seen, smelled, heard, tasted and felt, and such information is subject to individual interpretation. Determining what may be truly known, and not just individually sensed or supposed, requires some means for surmounting subjectivity in order to determine knowledge about the world "which is not dependent on the individual, but can be held in common by all men. To that extent, it can be objective."² To obtain objective knowledge, science must select and reason over sensory information in a particular way. Traditionally, this has been achieved by

¹ Webster's Nine New Collegiate Dictionary, s.v. "science."

² Stanley D. Beck, The Simplicity of Science (Garden City, New York: Doubleday, 1959.), 9.

restricting science study to apply only to that which is material and measurable in the natural world. If it is material, it can be studied by anyone, and if the study produces precise measured findings then these measurements can be set against a known scale and repeatedly tested. According to the science mindset, the findings may then be deemed to be independent of the interpretation of any individual and therefore objectively verified.³

The technique which science study has employed to produce these measurements is the “scientific method.” This method addresses the world in terms of the whole-part relations that structure natural phenomena, such as a plant in relation to its roots, stems, and leaves, or a solar system in relation to its orbiting planets. To study these whole-part relations and obtain measured findings, the scientific method experiments on them using the correlated procedures of analysis and synthesis.⁴ The word “analysis” comes from the Greek *analyzein*, which means “to break up,”⁵ and this procedure involves taking a complex whole and breaking or separating it into simpler component parts, then experimenting on the parts and determining their relations. At some point there may be findings obtained which confirm an hypothesis about the object studied. If these findings prove resilient to testing, then they may lead to the correlated procedure of scientific analysis, which is synthesis. The word “synthesis” also comes from Greek. It derives from the word *syntithenai*, which means “to put together,”⁶ and the task of synthesis involves rationalizing the separate parts back together with reference to a working whole, with the findings of analysis explaining some aspect of its nature.

There are three levels of authority accorded to such findings in science.⁷ The first degree

³ Ibid., 82.

⁴ C. M. Turbayne, *The Myth of Metaphor* (New Haven: Yale University Press, 1962); discussed in David Oldroyd, *The Arch of Knowledge: An Introductory Study of the History of the Philosophy and Methodology of Science* (New York: Methuen & Co., 1986), 26-30.

⁵ Webster's Nine New Collegiate Dictionary, s.v. “analysis.”

⁶ Ibid., s.v. “synthesis.”

⁷ Ibid., s.v. “hypothesis.”

of authority is held by an hypothesis. A finding is hypothetical if there is not sufficient evidence to think it more than possibly true. This is the level of authority accorded to the idea that the scientist uses to direct experimentation. A finding may then become a theory if a range of evidence shows it to be probably correct, but possibly not. More testing is required. However, if the finding can be shown to be invariable under a certain set of conditions, then it is a law which explains a principle in nature, and the scientific community will agree that knowledge--objective scientific knowledge, has been gained.

It is generally held that, under the constraints of the scientific method which so severely restricts the kind of knowledge that may be acquired, nothing in science is assumed--nothing need be assumed and nothing may be assumed; everything that goes into and results from science activity is hard and simple fact. This is the reason that so many fields of endeavour are deemed non-scientific; they cannot be sufficiently constrained to fit within the study model set out by the scientific method. The foundation of this attitude, however, does not survive close examination.

In the first place, even if the knowledge obtained by science is measurable and abides by the strictest requirements for experimental procedure, this does not make it objective knowledge. There is always a certain amount of subjective interpretation attached to information, even if it is quantified. Science philosopher Paul Snyder provides an object lesson on this point.⁸ He sets as an example the question of counting the number of things in a room. It might be assumed that this is a simple matter of numerical measurement. However, it is not so simple. Is the magazine rack to count as a single object, or one object plus however many magazines its holds? Should each page in each magazine be counted? What about the leaves on the plants and the soil in the pots? The problem eventually descends to the molecular level where the counting procedure becomes impossible.

⁸ Paul Snyder, Toward One Science: The Convergence of Traditions (New York: St. Martin's Press, 1978), 14.

Science deals with such problems by requiring that experimental measurements be set against a commonly agreed scale. This however, is a point of interpretation; the scale itself is not a representation of objective reality. Therefore, the information produced by science qualifies as knowledge only because the community has agreed upon the criteria to be used in this judgment. While those in the community may assume that they are correct in their judgments because they have done all that is conceivable to achieve objectivity, this is still not enough to entirely escape from the subjectivity of human experience and perception.

As well, Stanley Beck points out more generally that the activity of science itself relies upon a number of crucial assumptions.⁹ The most basic of these is that nature is understandable. We all assume, scientists included, that what happens in the world can be understood, if we could only find out the “how” and the “why.” Without this assumption, there would be no reason for doing science in the first place. One of the ways in which we determine the world to be understandable is through our belief in cause and effect. We all suppose that if something happens, it is the effect of some regular and discoverable cause. This supposition follows from a perception that nature is unified, and that some single set of consistent laws lies behind the workings of the universe, which underlies the reason that science is carried out with the ultimate goal of explaining the world within one fully articulated scientific model of how nature works. Therefore both in terms of motivation and results, the activity of science depends upon assumptions in order to obtain “objective” knowledge.

The complex framework of assumptions which structures science activity is completed by the factors which determine exactly what is to be studied. These factors stem from the community context of science and were explored by Thomas Kuhn, in his work The Structure of

⁹ Beck, 36-50.

Scientific Revolutions,¹⁰ which describes the patterns of activity and changes to those patterns that mark the history of scientific endeavour. The patterns he defines through the notions of normal science and paradigms, with changes to the patterns described in terms of extraordinary science and paradigm shift.

Normal science is the fundamental state of scientific activity dynamics, where the work of the community is based upon a paradigm that provides the necessary common ground amongst scientists for community members to work in concert and achieve orchestrated advances in knowledge, building upon past research. This common ground for the scientific community is different from the basic foundation established by the scientific method. In a sense, the method is akin to the syntax of communication within the community, and the paradigm provides the semantics. These semantics take the form of a set of explicit assumptions held by the scientific community on the nature of the work to be done. On the basis of this common ground there is little question as to the types of experiments that qualify as relevant, the kind of results that are to be obtained, and the overall theoretical gains expected. The paradigm of a normal science period also plays a crucial role in indoctrination. Students are instructed in terms of the paradigm, and then academic achievement and peer acceptance is determined by the extent to which their work demonstrates allegiance and constitutes a contribution to it. Therefore, the community as a whole--the leaders, the followers, and the learners, all share this set of assumptions as to what is supposed to be done by the scientific community and why. These periods of normal science may continue for years, decades, or even centuries.

Kuhn's analysis of paradigmatic activity during periods of normal science sets the stage for what comes next: an evolutionary process, or in his terms a revolutionary process, which has been played out repeatedly in the history of science activity. This process is the paradigm shift.

¹⁰ Thomas S. Kuhn, The Structure of Scientific Revolutions, 2nd ed. enl., International Encyclopaedia of Unified Science, v. 2. (Chicago: University of Chicago Press, 1970).

The shift occurs when some unexpected problem confounds the current paradigm and jars the preconceptions and assumptions of the scientific community. For a time, the community might attempt to reconcile the anomaly through the current paradigm. Then, if the attempt is unsuccessful, the problem is recognized by the community, and work to resolve it becomes legitimate and of interest. If this effort is unsuccessful, which is rare, then some in the community may come to see the problem as being of crucial importance. Basic assumptions are questioned, examined, and altered to adjust the current paradigm to preserve it partially if not in its entirety. Different approaches to altering the paradigm in order to resolve the anomaly may boast some equal measure of success and the community does not have a means for deciding between the alternatives. The rules that guided the period of normal science become increasingly blurred and the community may no longer feel in agreement as to the exact nature of the paradigm in effect. They have lost the firm footing of common assumptions.

At this point, the scientific community is in a crisis state, moving from normal to extraordinary science. The research conducted during the crisis state is an attempt by the community to re-establish the equilibrium and coordination of normal science assumptions, and this period of activity can lead to three possible outcomes. Some resolution may be ultimately found and the paradigm survives largely intact, or the problem may be set aside in order to preserve a paradigm that serves the community well enough otherwise, or the existing paradigm may be replaced by a alternative paradigm that has sufficient power to resolve the problem and set a new course of activity for the scientific community, which will change the discipline in terms of its view of the field, its methods and its goals. This third outcome is a paradigm shift, after which the scientific community eventually settles back into a period of normal science, where all members of the community are again in general agreement as to the shared assumptions about the work they are doing and the kind of knowledge they are seeking.

This pattern in the activity of the science community has long been recognized. Writing thirty years before the publication of Kuhn's theory of scientific revolutions, mathematician Hyman Levy notes:

The history of scientific theories . . . is the periodic reconstruction of the available fund of knowledge in successive fields on the basis of new and more searching foundations. Every branch of science has its intervals of growing instability until finally, with almost catastrophic suddenness, it casts off its outworn theories that are no longer capable of accommodating the growing mass of facts. With a new synthesis comes a new lease of scientific life.¹¹

Over the course of science history there have been many instances of paradigm shift within the various disciplines of science and across several disciplines at once. From the broad historical view, there have been a limited number of shifts that affected the scientific community almost as a whole, and in Levy's terms, with "almost catastrophic suddenness." These major shifts have patterned with alternations in the activity of science between a mechanical approach and an holistic approach. Both approaches deal with the same essential characteristics of a framework for addressing the whole-part relations of nature. These are the parts, the processes, and the structure of the whole. However each approach deals with these characteristics in a different way.

The mechanical approach views the structure of nature as a great machine, composed of separate parts that fit together in the space that the whole provides. Under this view, the primary task of science is to reduce nature into its parts and analyze them. It is assumed that once these parts are fully analyzed then the workings of the whole will be apparent because the interrelations of the parts are straightforward. The whole is the product of its parts, and the

¹¹ Hyman Levy, Modern Science: A Study of Physical Science in the World Today (London: Hamish Hamilton, 1939), 8.

procedure of synthesis is trivial.

Under the alternate holistic approach, nature is viewed as an interactive and unitary whole, composed of systems. Systems in turn are composed of interactive parts, that perform an orchestrated progression of processes in the context of the system. This accounts for the dynamics of change in the natural world by connecting some initial state, which is input to the system, to an end state, which is output to the system. The essential characteristics of the system are therefore its structure, which organizes the parts in context, the process enacted by the parts operating, and the parts themselves. Under this viewpoint, analysis is recognized as the key to understanding the parts of the system. However, the corresponding task of synthesis is seen as a crucial step to follow on analysis because, while it may be that individual parts can be separated out from the whole for examination, an exhaustive analysis of a collection of individual parts leads only to an incomplete understanding. Systems in nature do not exist as parts, they exist as parts in relation to a context. In other words, the whole is greater than the sum of its parts.

Each approach has served science in its own way in its own time, and each has led to crucial advances in knowledge. In the early times of science activity, when the world was an overwhelming and bewildering mystery, the holistic approach was dominant, and guided the work of science for almost two thousand years as it methodically organized the general puzzle of nature. Then came the advent of machines and industry and the mechanistic approach dominated both science and society for several hundred years. During this time, the individual pieces of the puzzle were explored and discrete aspects of the workings of the world became explicitly known and understood. This work was so successful that the activity of science became identified with the task of analysis, and the task of synthesis was all but ignored.

Now, over the course of the past century, as communication, transportation and

economics have brought the business of human society into a global context, advances in subatomic physics and notions of elastic time and space have prompted science back again to an holistic approach. In science and society, there is a general appreciation for the fact that the task of synthesizing the pieces within the overall context of the puzzle is a subject in itself, and that every instance of organization in the world offers an object of study for science. It is within this contemporary context of an holistic world view, both in science and society, that archival activity meets up with the work of science.

The following section traces the historical emergence of the systems viewpoint in science, a viewpoint that was initially proposed as a candidate for a distinct discipline in the sciences, and has instead evolved into a conceptual assumption for contemporary normal science. This prepares the ground for an exploration of the notion of systems and the application of a systems approach to archives.

1.2 History of Science

In about 1640 a Dutch biologist named Jean-Baptiste van Helmont ran an experiment. . . . His experiment was very well designed and carried out. He took a very large clay pot and filled it with exactly two hundred pounds of thoroughly dried soil. Then a small willow tree was planted in the pot and was watered well with pure distilled water. The clay pot and tree was set outdoors in the weather, where trees normally grow. To prevent dust and dirt and debris from getting in, the soil around the tree was covered with a sheet of iron, perforated with many small holes.

For five years the tree was carefully tended. Van Helmont watered it with distilled water during the dry summer seasons, and swept away the fallen leaves in the autumns. Nothing but distilled water from a sprinkling can and rain (which is also distilled water) was ever allowed to fall on the soil around the tree in the clay pot. The little willow tree grew normally, and it was time to end the experiment

Being careful not to spill and lose the soil in the big clay pot, he carefully dug the tree out. After he had painstakingly brushed all the soil off the roots back into the pot, he weighed the tree. Where he had planted a willow shoot weighing only five pounds, he now found that he had harvested a tree one

hundred and sixty-nine pounds in weight. Not even counting the many leaves that had dropped off during the past winters, his tree had gained one hundred and sixty-four pounds of roots, trunk, branches, bark, and leaves.

Where had all this plant come from? From the soil perhaps? Jean-Baptiste van Helmont now turned his attention back to the clay pot full of soil. He removed all the soil from the pot. The soil was again thoroughly dried and then was weighed. It weighed almost exactly two hundred pounds. To all appearances, it was the same two hundred pounds with which he had started the experiment five years earlier. Now, van Helmont was sure that nothing had been added to the soil except water. He therefore concluded that one hundred and sixty-four pounds of plant substance had been formed from water alone. He had originally considered that there were only three possibilities: either the plant grew from the substance of the soil, or it grew from water, or partly from soil and water. His experimental results were conclusive; there was no loss of soil, and therefore, the willow tree was formed from only the water. . . .

It should be pointed out . . . that van Helmont was still about 95 per cent correct in his conclusions. About 95 per cent of a plant is derived from water. But unfortunately, the other 5 per cent is the most important part of the plant.

Stanley Beck, The Simplicity of Science

There are many different ways to explore the history of science. As noted by historian R.G. Collingwood, all histories are interpretations.¹² The facts from the past form fixed points upon which different historical accounts spin different webs. The web to be spun here broadly examines the history of science in terms of the shift over time between the approaches of holism and mechanism as they have alternated into three paradigm periods that have provided context to science activity since it began.

This history traces back more than 5,000 years to a time before science, to the lands of Babylonia, located in fertile river valleys of the middle east.¹³ The Babylonians, who built one

¹² R.G. Collingwood, The Idea of History (New York: Oxford University Press, 1956), 242.

¹³ Historical discussion based upon the following texts: Peter Checkland, Systems Thinking, Systems Practice (Toronto: John Wiley & Sons, 1981); David Oldroyd, The Arch of Knowledge: An Introductory Study of the History of the Philosophy and Methodology of Science (New York: Methuen & Co., 1986); W.C. Dampier, A History of Science, and Its Relation to Philosophy and Religion (Cambridge: Cambridge University Press, 1966); Paul Snyder, Toward One Science: The Convergence of Traditions (New York: St. Martin's Press, 1978).

of the earliest known human civilizations, were a highly innovative people, and created many of the basic tools for science in the course of dealing with problems of society management. The need to regulate commerce led to the development of standard units of weight and measure and this lay the groundwork for mathematics. Their efforts to determine property rights through land surveying techniques led to the development of basic principles of geometry. The calendar charts required for crop cultivation introduced astronomy as a practical aid to agricultural planning. For a people so analytically grounded, however, the universe was still a disturbingly mysterious place. The responsibility for whatever could not be counted, measured, or charted was therefore handed over to the gods, of which there were many.

Through assigning ranges of natural phenomena to the control of different god characters, the Babylonians began the process of dealing with the whole of nature in terms of composite parts. The parts were explained as the dominion of an assembly of gods that were as disparate and similar, erratic and predictable, nurturing and punishing, as the array of the phenomena that they controlled. The connectedness of nature was explained through a framework of relationships between the gods, modelled on human interaction; the gods knew one another, fought wars amongst themselves, loved and married one another, and gave birth to new gods, and these relationships corresponded with the interactivity of natural phenomena. Myth and mysticism structured this Babylonian world view and gave it sense, and intertwined with the metaphysics were also the first seeds of theoretical science, because this mythical explanation of nature carried the three basic characteristics of a scientific framework for modelling the systems of nature. The component parts of this system model were the different gods, the dynamics of process operated through their personalities and interactions, and the structure of the whole was mapped on analogy to the relations of human society.

These seeds of science began to germinate in Greece around 500 B.C., a time and a place

that is most commonly credited as the true starting point of modern science. This was a period of transition between the mystic model of nature and the creation of a model that did not depend upon mythological explanation.

The identification of component parts in nature other than god characters was the first and most basic step, and this was achieved through the elemental theories of Greek science. Thales [640-545 B.C.] began this program of theorizing through the hypothesis that there was some foundation of elemental constancy underlying the manifest variety to be found through observations of nature. His followers took up the idea, and speculated on the composition and relation of various elements, such as water, earth, mist, and fire. Anaximander [611-549 B.C.] supposed that these elements were in a perpetual state of combination and recombination and this underlay the constant state of change to be found in the world. Anaximenes [556-480 B.C.] decided that mist was the fundamental element, undergoing a variety of changes to form all the other elements.

Heraclitus [535-475 B.C.] took a different approach and focussed on the dynamic processes of nature. He was skeptical of elemental theories, based on everyday observations. It was his belief that, because the world is in a constant state of flux, the only kind of knowledge to be gleaned from simple observation is a disconnected string of facts. Instead, he argued that the essential unity of nature was based on the process of change rather than on any particular ingredient which might undergo or result from change.

The geometer Pythagoras [580-500 B.C.] took yet another view, centred on structure. He founded a religious brotherhood in southern Italy which sought for the purity of the brothers' souls through the purity of their thoughts. For the Pythagorean brothers, mathematical relations were pure, and physical processes and elements were not. Their universe operated with geometric

precision, and they laboured to determine a common abstract structure, expressed in mathematical terms, between medicine, religion, astronomy, and music. This approach rejected the notion of natural processes occurring in real time and space in order to create mathematically abstract and perfect models of nature.

Each of these approaches was hypothesizing that a different characteristic of a systematic nature model, whether it was elemental parts, processes, or structure, was the fundamental source for the constancy and unity that was assumed to organize the universe. This constancy had been provided by the ancients through analogy of a god world to human experience. Through reason, the early Greek scientists discovered a means to transcend dependence upon such anthropomorphic explanations of nature. In so doing, they also composed the three constituents of structure, process, and parts necessary for a different scientific framework. However, these had to be integrated into a paradigm before the mystic model could be shifted aside.

The paradigm that arose from this state of transition was the model composed by Aristotle [384-322 B.C.] who set the path for the development of modern science by combining and building upon these basic constituents of a general framework. The impetus for Aristotle's model was his rejection of a purely geometric notion of nature, as initially proposed by the Pythagoreans and then espoused by Aristotle's teacher, Plato. Based upon his specialized research in marine biology, Aristotle viewed this approach as being incapable of providing explanations for biological entities. For Aristotle, nature was a living totality of all entities and he agreed with Heraclitus that process, not structure, composed the underlying constancy in nature. The components of his world picture were the usual four elements of earth, air, fire and water, which bore the essential qualities of heat, cold, moisture and dryness. This picture extended to the moon, beyond which matter was composed of "quintessence," which was a fifth element. Based upon these elements and qualities, Aristotle's model described a dynamic universe of

perfectly orchestrated geometric structure, with each entity in the structure operating according to its own purpose-driven organic nature, and animated into constant motion under direction of a supreme power. The structure and parts of nature's systems were thereby brought down to earth and delivered into the hands of science.

The Aristotelian model of an holistic, organic, and living universe formed the common ground of normal science for the next two thousand years. For much of this time the scientific community did not have access to the actual texts of Aristotle and the other Greek science philosophers, as these had been moved behind middle-eastern borders closed to European scholars by religious and political strife. As well, the work of science was constrained under dominance of the Church to focus upon theological concerns about the nature of the Supreme Mover of the Aristotelian model, now understood to be the God of Judeo-Christian religion. Then, in the twelfth century the body of Greek scientific writings were rediscovered and translated into Latin. This resulted in a revitalization of critical debate in the European academic community as the foundations for centuries of science activity were opened for examination, marking the beginning of a period of extraordinary research that would lead to what science historians have termed "The Scientific Revolution." In the course of this revolution, the Aristotelian model that had guided science for so long was first challenged then ultimately replaced by a new world view--a dramatic shift to a new perception of the universe as a great mechanical clockwork of separate interlocking and indivisible parts, a universe that ran as a machine, perhaps devised, but not necessarily operated, by God.

The shift was a radical advance for science. Since the time of the Babylonians, the work of science had been conjoined in some way with religion. The Greek scientists had begun the process of separating reason and faith, science and religion, by showing that explanations of the world could be made without recourse to divine intervention. But it was a long process to make

the last step towards modern science of describing the world as something other than explicit evidence that there was a God. The Aristotelian world view had not achieved this step. It was sympathetic to the beliefs of the church, as it composed a picture of a divinely ordered and perfect universe centred on earth and man and in constant motion under the direction of God. This model was in concert with the views of the church, and any challenge to it was also a challenge against the church.

The shift that moved science away from this accepted and sanctified paradigm occurred in stages. It began with the discovery by Nicholas Copernicus (1473-1543) that a sun-centred model in place of the earth-centred model simplified the number of cycles required to explain planetary motion from eighty to thirty-four. Then Johannes Kepler (1571-1630) further simplified this scheme into three simple laws by assuming the cyclic patterns of the planets to be elliptical rather than perfect Aristotelian circles. Galileo Galilei (1564-1642) questioned the Aristotelian theory that motion required force to be maintained, a force that the accepted model attributed to a perpetual divine presence. Based on the results of experimentation, he formulated a law of "uniform acceleration." In contradiction to the accepted view that force produces motion, this law showed that force changes motion to produce acceleration, and that the state of rest continues until some force for movement is applied. Therefore, it was demonstrated that the state of rest is as natural as the state of motion, and the dynamics of motion could not serve as evidence that there was a God.

Not surprisingly, such findings came under heavy criticism from the church. As a result of Galileo's later work in astronomy, which supported the Copernican heliocentric model of the universe and was published in a book defending this model against the geocentric model of Aristotle, he was tried by the Papal authorities in 1633, "after which, having been shown the instruments of torture, he was required to testify that he abjured, cursed, and detested his errors

and heresies.”¹⁴ As well, in 1616 the writing of Copernicus had been placed on the “Index” of forbidden books by the Roman church. However, the compelling explanations provided by the heretical work of these scientists was too widely known and appreciated by the scientific community to be quashed by religious authority.

This period of extraordinary research prepared the ground for the Scientific Revolution, which was a move in scientific activity away from holistic science and into mechanistic science. The pivotal figure in this revolution was Rene Descartes (1596-1650) who provided the essential methodology for the new approach. He was a geometer and, like the ancient Pythagoreans, he believed that the essential nature of the universe could be reduced to properties based on mathematics and geometry. This notion of reductionism established a means for analyzing the complexity of nature methodically, and without preconceptions. No longer was the notion of organic purpose to play any role in characterizing nature. Instead nature was to be objectified from the human observer, reduced to its simpler and then simplest components, and through this mechanistic reduction the mysteries of the universe would be revealed and made obvious.

The Cartesian methodology for a mechanical world was then applied and set into a paradigmatic model by Isaac Newton (1642-1727). It was the work of Newton that finally demolished the Aristotelian world view and replaced its holistic approach with the Cartesian mechanistic approach. Schooled in Cartesian reductionism, Newton worked on an idea proposed by Kepler that there was some force operating between the sun and the planets that orbit around it. Newton hypothesized that this force might be analogous to magnetism. To pursue this hypothesis, he invented calculus as a mathematical tool, and used it to calculate the periodic cycles of the earth’s moon, exploring the “magnetic” force of gravitation. He later published his findings in the book Mathematical Principles of Natural Philosophy, in which he was able to

¹⁴ Checkland, 40.

predict all the known facts about the motion of the planets according to a single universal law of gravitational attraction. "Terrestrial and celestial mechanics were united, and here was a testable mathematical model of the workings of the universe conceived as an elegant, ingenious, and majestic clockwork."¹⁵ Just as Aristotle had composed a world view that changed the accepted beliefs of his time and guided scientific activity for generations to follow, so too did the world view of Newton. In developing and articulating the mechanistic approach proposed by Descartes, Newton set the course for science activity for the next two hundred years.

There were tremendous advances in knowledge as a result of the mechanical approach to nature being adopted throughout the sciences. This model of the world as a perfect machine composed of perfect and perfectly coordinated parts governed by mathematical laws was not simply a scientific theory. This was at the time of the early industrialization of society, and a theory of nature which depicted the world as operating with the same rational complexity and order as the machinery of the age made common sense.

The basic elements of matter in this mechanical universe were the discrete parts to be found at the lowest level of analysis: the atoms, analogous to the individual separated parts of a machine. The dynamic force of energy in this model was exchanged between atoms either through direct mechanical action or by means of waves that passed through some medium. These notions of indivisible atomic structure and energy that was either mechanical or wave forms were essential to the mechanistic view, because this explained how the machines of nature operated. It was these central assumptions that came under question in the late nineteenth century, as research into electromagnetic radiation indicated that atoms were in fact divisible into sub-atomic structure, and that matter was not separate from energy but that instead matter and energy stood on opposite ends of an equation. In 1905 Albert Einstein (1879-1955) dealt the decisive blow to

¹⁵ Ibid., 43.

the reductionist paradigm with the introduction of his Theory of Relativity. The Newtonian model required a conception of space as fixed and stationary in order to serve as the framework on which the mechanisms of physical reality were mapped. Einstein's theory demonstrated, however, that the velocity of light was the fixed universal constant, and that time and distance were relative.

With indivisible atoms divided, the dynamics of energy mixed up with static matter, and the fixed framework of space dismantled, the reductionist rationale for the parts, the processes, and the structure of nature were refuted and this model collapsed. The scientific community then found itself dealing with a complex universe of relativity in which objects in nature could not be effectively analyzed independent of their context. With this widening and inclusive picture of an interactive universe, the way was made for re-entry of an holistic approach to science study.

However, this was not a return to a Babylonian or Aristotelian version of holistic nature. With the advances gained over two thousand years of science activity, this version of holism would require no appeal to divine authority, and it had been proven necessary in order to overcome deficiencies in an otherwise coherent and sophisticated mechanical approach.

1.3 Systems in Science

A little one-celled animal called an amoeba lives in stagnant water, and numbers of them are usually to be found on the stems and leaves of plants near the edge of a pond. The commonest species is a tiny little creature about 1/100 of an inch in length, which is invisible to the naked eye. Under the microscope it is seen to be a colourless, jelly-like bit of animation. Its body is soft and changes shape as the amoeba moves along in a flowing kind of motion. It is made up of a single living cell, complete with outer membrane, cytoplasm, and nucleus. It is an animal organism, showing the characteristics of response, metabolism, and reproduction. It is but one cell, one of nature's living units, a brick on the loose.

The amoeba is surrounded by water, but appears to be a distinct living unit. However, its small body is about 85 per cent water. As far as we can tell, the water in the internal parts of the amoeba has the same properties as the outside water through which the tiny animal moves. If the internal water is removed by drying, the amoeba, as we can know it, ceases to exist. The water within the amoeba arrives there by passing through the membrane at the outside surface of the cell. Water moves back and forth through the cell membrane quite readily, so that a molecule of water within the amoeba is truly here today and gone tomorrow, or sooner. . . .

If we arbitrarily say that what is within the cell is living amoeba and what is outside is environment, we may make a sharp distinction between organism and environment. But then, water becomes “living” as it enters the cell, and it “dies” as it passes out through the cell membrane. It would seem simpler and more logical to consider water as being the same stuff on either side of a cell membrane. As a consequence of this assumed simplicity, the external environment is continuous with the internal organization in so many respects that no sharp line can be drawn between them.

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At the beginning of the twentieth century science was entering a new age as the mechanistic world view, which had guided research for three hundred years, began to collapse. The reason for this collapse was a series of discoveries in different branches of the sciences that undermined or disproved the basic tenets of reductionist science. These discoveries pointed the way to a new view of the natural world as being composed of organized and interactive systems.

This new view did not invalidate the gains made by the mechanistic paradigm. Instead the systems paradigm offered to interested theorists in various branches of science a means for advancing from the mechanistic view by incorporating the gains already made into the new paradigm. Reductionist science activity, through its focus on the analytic and inductive aspect of science study, had defined and described the basic building blocks of nature. Now science could use basic principles of organization to build those blocks together into an holistic model of the world more closely attuned to the unitary reality of nature.

This shift was the next step along the natural evolutionary path of science and was a move towards establishing equilibrium for science activity. In the first place, it balanced the mechanistic approach of examining the whole through reduction into its parts by now examining these parts back in the context of the whole. As well, mechanistic science had focussed on only two of the three components of a nature model: the parts and their processes, and now the third component of structure, which was assumed as the background of a mechanical universe, would receive necessary attention. And finally, the procedure of analysis had been applied to the limit of its potential, and it was at this limit that the mechanistic paradigm had collapsed. Under the holistic paradigm, study of the structure of contextual wholes required that the procedure of synthesis be now fully addressed. In effect, the move to systems science completed the program of activity initiated through reductionist science. Under this new paradigm, the nature of the whole became a topic of fundamental importance, and the findings of mechanistic science indicated the structure of this whole, which was conceptualized in terms of a systems framework.

The systems framework forms the basis of the new science paradigm, and its purpose is to serve as a multi-level scaffold on which the parts of nature's wholes may be mapped in terms of their relations. At each level different parts interrelate, and different types of relations localize to different levels in the structure. The essential notion captured in a system is that of organized complexity. A leading theorist in the systems movement, Ludwig Von Bertalanffy, provides a basic description of the systems structure:

The general model of organized complexity is that there exists a hierarchy of levels of organization, each more complex than the one below, a level being characterized by emergent properties which do not exist at the lower level. Indeed, more than the fact that they "do not exist" at the lower level, emergent properties are meaningless in the language appropriate to the lower level.¹⁶

¹⁶ Ludwig von Bertalanffy, General System Theory: Foundation, Development, Applications, rev. ed. (New York: George Brazillier, Inc., 1968), 75.

Paul Snyder gives as an example of an emergent property the temperature of the human body:¹⁷ Given that the human body has an approximate temperature of 98.6 degrees, it is reasonable to state that the average temperature of the internal organs in a human body is somewhere between 95 and 100 degrees. However, as you move down in scale, it becomes increasingly difficult to make such a statement. For example, while it may still be possible to contemplate the average temperature of cells it is not possible to do so with respect to molecules, atoms and subatomic particles. He explains that the problem is not that the temperature of these microscopic parts is something other than 98.6 degrees. Instead the problem is that at these lower levels the property of temperature is not meaningful. Activity here may result in a certain temperature at the higher levels, but it is only at the higher levels that the relevance of this low level activity emerges as the property of temperature.

Crucially, as well as properties that localize to certain levels within a system, there are also properties that belong only to the system as a whole, and do not exist except at the level of the whole. C. H. Waddington describes the property of aircraft flight as a systems property which is more than summation of the properties of the parts: “[When] the engine, propeller, wings, fuselage, landing gear and so on are put together in the right way, the complicated set-up becomes an aircraft which can fly; but none of the parts can fly when isolated.”¹⁸ Life is a more basic example of a system property. If you dissect a creature into its essential parts, this property can not be found to reside in any isolated part or any group of parts. Life is a property that is present only when the parts are relating to perform their necessary functions in the context of the whole. It is this notion of properties which belong to the system as a whole and not to its parts that provides the most fundamental argument against the mechanistic approach. As Checkland points out, the essential notion of Cartesian science was that a whole could be divided into its

¹⁷ Snyder, 14.

¹⁸ C. H. Waddington, Tools for Thought (London: Jonathan Cape Ltd., 1977), 21.

parts without distortion.¹⁹ This notion assumes that the parts of the whole are not affected by being separated from the whole, and that the principles of synthesis governing the organization of parts within the context of the whole are trivial. Neither assumption holds true if the issue of systems properties is considered.

It was not the case that the mechanistic approach ignored these central properties of the wholes that they studied. Instead the properties of the whole were attributed to the background of mechanical structure, seen as self-evident or too metaphysical for science to address. This view was necessary in order to validate a methodology that was achieving a significant degree of legitimate explanation. Given a frog, the mechanist investigated it by taking the creature apart, analyzing the organs and their organization until these were understood. Then, pointing to what lay spread on the table, the mechanist could declare that frogs had been explained. A systems thinker would say that what had been explained was a dead frog, and the next step is to synthesize the findings of such autopsy analysis back into the context of a whole living frog. Beyond this there are larger encompassing wholes to be addressed: the environmental context in which particular frogs live and the ways in which these environments have led to the evolution of different frog species and variations within each species, and further yet there is the frog environment within the context of a changing regional and global landscape.

It was through this process of expanding viewpoint in scientific investigation that the field of ecology, which studies the interaction between organisms and their surrounding environment, arose from the organismic school of biology.²⁰ This led to a new vocabulary of concepts in science such as “biosphere,” a term which refers to the region of life that lies between the earth and the atmosphere, and “ecosystem,” which is a unit composed of organisms interacting with their physical environment.

¹⁹ Checkland, 59.

²⁰ Fritjof Capra, The Web of Life (New York: Anchor Books, Doubleday, 1996), 32.

It is no coincidence that an explicitly systematic approach in science would offer the field of biology in particular new scope and opportunities for study because there has always been a close connection between biology and the holistic theories that would become systems thinking. Problems in biological explanation had first led Aristotle to the development of his enduring holistic world view in the early times of science. This is not only because biological entities are so context dependent. Another reason for the synchrony between biology and the holistic approach is the role of process in the natural world. A process is marked by gradual changes of state leading towards a particular result, and the concept is inherently dynamic, because process is made evident only through juxtaposing some beginning state and some end state with time intervening. In nature, each chemical reaction, each increment of growth, each movement of air or organism is the result of process.

In a mechanistic model process can not be fundamental, but instead must be secondary: a by-product of the structure, contingent on structure, the result of the machine parts operating. This is because the reductionist method requires the assumption that parts of nature can be separated out from the natural temporal and spatial context where processes occur. However, in an holistic universe process is as basic as structure. Nature is perceived as inherently dynamic, and there is no system that can exist independent of the process it embodies. Biological research tends towards an holistic approach and resists the mechanistic approach because organisms exist by virtue of contextual processes; without context and process there is no life.

While biological work was prominent in its embrace of the new approach, other fields of science also gravitated towards the systems view of nature because this was becoming necessary to deal with novel problems. A notable instance is the development of quantum physics which

arose to cope with discoveries in subatomic particle investigation in the late 19th century.²¹ However, it was in the “softer” sciences, such as economics, psychology, and sociology that the systems approach was most widely and rapidly adopted. This was because these areas of investigation are deemed “soft” generally because they deal with complicated and context-dependent entities like personality and world economy. Under a mechanical paradigm, such topics were considered ineligible for scientific investigation because the entities under study could not be reduced into isolated components parts. However, under the systems approach, which not only allowed but required that context be considered and interrelations be explored, these fields were provided with a new forum for research and discussion within the realms of scientific activity.

With growing interest throughout the sciences in the use of systems as an investigative approach, a group of scholars gathered in 1955 to discuss and establish a program for a General Systems Theory. This theory was to be compiled, shared, and applied by all the various fields that were using and could use a systems approach. Among those attending was an economist, a physiologist, a mathematician, and the biologist Ludwig Von Bertalanffy. As initially proposed by Bertalanffy, General Systems Theory (GST) is a theory of how systems are composed and how they work. According to Bertalanffy, the subject matter for GST is “the formulation and derivation of those principles which are valid for ‘systems’ in general.”²² As he described the situation:

Entities of an essentially new sort are entering the sphere of scientific thought. Classical science in its diverse disciplines, be it chemistry, biology, psychology or the social sciences, tried to isolate the elements of the observed universe - chemical compounds and enzymes, cells, elementary sensations, freely competing individuals, what not - expecting that, by putting them together again, conceptually or experimentally, the whole or system - cell, mind, society - would result and be intelligible. Now we have learned that for an understanding not only [of] the elements but theory interrelations as well are required: say, the interplay of enzymes in a cell, of many mental processes conscious and unconscious,

²¹ Capra, 30.

²² Bertalanffy, 32.

the structure and dynamics of social systems and the like. This requires exploration of the many systems in our observed universe in their own right and specificities. Furthermore, it turns out that there are general aspects, correspondences and isomorphisms common to "systems." This is the domain of *general system theory* . . . General system theory, then, is scientific exploration of 'wholes' and 'wholeness' which, not so long ago, were considered to be metaphysical notions transcending the boundaries of science.²³

In practice, GST is a meta-theory, rather than simply a theory, because it functions overtop other theories, guiding in their use of a systems approach to handle problems of discovery and explanation about the world. When a particular systems-based theory is applied to such problems, this may lead to discoveries that go beyond the specific problem to illuminate something about the general nature of systems. Therefore work conducted under systems-based theories leads to refinement and development of the meta-theory. In turn, the continuing refinement and development of the meta-theory addresses a phenomenon that Bertalanffy noted as a recurring problem in science:

[Often] similar concepts, models and laws have . . . appeared in widely different fields, independently and based upon totally different facts. There are many instances where identical principles were discovered several times because the workers in one field were unaware that the theoretical structure required was already well developed in some other field. General system theory will go a long way towards avoiding such unnecessary duplication of labour.²⁴

This was an observation with significant history amongst those who explore the philosophical foundations of science. Hyman Levy had observed many years previous that "science has developed along a series of straight lines radiating out, as it were, from a common centre but diverging farther and farther from each other. The growing points of each line constitute a series of focal points on the expanding circle of scientific knowledge. To traverse this circle is to synthesize science, and such a synthesis is long overdue." What Levy and the systems theorists realized is that, in the process of its advance, science as a general subject had

²³ Ibid., Forward, vii.

²⁴ Ibid., 33-34.

applied the reductionist approach to its own community, analyzing itself into various disciplines of science in order for each to focus on a different aspect of nature complexity. This was effective, because while the common ground of the scientific method ensured that the advance of each discipline could be shared throughout the community, the organized segregation of the community enabled each of the disciplines to advance independent of the others. But as a result, each area of specialization had become separated from the context of the whole of science. As Levy puts it: "Every man occupying any position on that [united front of science] is a narrow specialist. The higher the pinnacle of scientific knowledge to which he has climbed, the narrower the ledge of broad understanding on which he rests. It is a precarious position."²⁵ The solution offered by the General Systems theorists was to follow the procedures of science, and synthesize science back into the context of a whole.

As announced by Bertalanffy and his colleagues in 1955, the initial aims of General Systems Theory were:

1. To investigate the isomorphy of concepts, laws, and models in various fields, and to help in useful transfers from one field to another;
2. To encourage the development of adequate theoretical models in areas which lack them;
3. To eliminate the duplication of theoretical efforts in different fields;
4. To promote the unity of science through improving the communication between specialists.²⁶

By this time there were strong prospects for the formation of a community of systems specialists that would cut across the lines of traditional disciplines, or in Levy's terms to traverse the circle of outwardly radiating lines of science activity. According to Capra, "by the 1930's most of the key criteria of systems thinking had been formulated by organismic biologists, Gestalt psychologists, and ecologists. In all these fields the exploration of living systems--organisms, parts of organisms, and communities of organisms--had led scientists to the same new

²⁵ Levy, 8.

²⁶ Checkland, 93.

way of thinking in terms of connectedness, relationships, and context.”²⁷

As well, the systems approach led to the creation of new science disciplines specifically based on systems notions. In his 1968 publication Bertalanffy lists the variety of fields that had grown out of the movement:

- (1) Cybernetics, based upon the principle of feedback or circular causal trains providing mechanisms for goal-seeking and self-controlling behaviour;
- (2) Information theory, introducing the concept of information as a quantity measurable by an expression isomorphic to negative entropy in physics, and developing the principles of its transmission;
- (3) Game theory analyzing, in a novel mathematical framework, rational competition between two or more antagonists for maximum gain and minimum loss;
- (4) Decision theory, similarly analyzing rational choices, within human organizations, based upon examination of a given situation and its possible outcomes.
- (5) Topology or relational mathematics, including non-metrical fields such as network and graph theory;
- (6) Factor analysis, i.e., isolation, by way of mathematical analysis, of factors in multivariable phenomena in psychology and other fields;
- (7) General system theory in the narrow sense (G.S.T.), trying to derive, from a general definition of “system” as a complex of interacting components, concepts characteristic of organized wholes such as interaction, sum, mechanization, centralization, competition, finality, etc., and to apply them to concrete phenomena.²⁸

He cites these as examples of developments in the theoretical use of systems, and then notes applications in applied science--in the fields of *systems engineering*: scientific planning, design, evaluation, and construction of man-machine systems; *operations research*: scientific control of existing systems of men, machines, materials, money, etc.; and *human engineering*: scientific adaptation of systems and especially machines in order to obtain maximum efficiency

²⁷ Capra, 36.

²⁸ Bertalanffy, 90-91.

with minimum cost. Writing almost thirty years after Bertalanffy's publication, Capra confirms the importance of the systems approach in the applied sciences:

During the 1950s and 1960s systems thinking had a strong influence on engineering and management, where systems concepts - including those of cybernetics - were applied to solve practical problems. These applications gave rise to the new disciplines of systems engineering, systems analysis, and systemic management.

As Capra goes on to note, the systems approach also gained wide acceptance outside the confines of science:

As industrial enterprises became increasingly complex with the development of new chemical, electronic, and communications technologies, managers and engineers had to be concerned not only with large numbers of individual components, but also with the effects arising from the mutual interactions of those components, both in physical and organizational systems. Thus many engineers and project managers in large companies began to formulate strategies and methodologies that explicitly used systems concepts.²⁹

Systems had become a part of the world view, within and outside the fields of science. However, the goal of Bertalanffy and others for a fully articulated General Systems Theory has never materialized. According to Capra:

The main reason for this "failure" was the lack of mathematical techniques for dealing with the complexity of living systems. . . the mathematics of their time was limited to linear equations, which are inappropriate to describe the highly nonlinear nature of living systems.³⁰

While those who pioneered the grand vision of a General Systems Theory might perceive this outcome as failure, the movement has over time had significant and pervasive impact on the work of science. The vocabulary and concepts of systems thinking have become mainstay in science, and form the basis of leading-edge work and novel areas of scientific research. In physics, chaos theory introduces a new non-linear technique for general science study that

²⁹ Capra, 75.

³⁰ Ibid., 78.

involves exploration of the regularity of irregular behaviour in dynamic systems.³¹ Chaos theorists have found a pattern in this irregular behaviour, a pattern which they term “fractal,” that occurs in failing hearts, coastlines, and commodity prices. As a result, this research cuts across discipline lines of medicine, geography, and economics. In the field of genetics and medicine, study of single genes as the cause for heredity traits and inherited illness has widened in the last decade to the study of genomics (a blend of the words gene and chromosome) which addresses the whole genetic “blueprint” of heredity apparatus in each individual.³² Another branch of activity is in hierarchy theory which argues for expanding the problem domain of analyzing complex systems by including the observer as well as the observed and recognizing the crucial role played by level of analysis in terms of the perception of the observer.³³ The notion of complexity itself has become a subject for study and it has proved an elusive concept when examined in relation to minimality, simplicity, simplification, complication and obfuscation.³⁴ As well, work in biological systems theory continues under new terminology, such as “deep ecology” theory which examines the natural and developed world on a global context in terms of a “web of life.” In many of these works, the notion of systems has become so fundamental to the science being done, that the word is not to be found in the index. It is simply assumed that the approach taken is based on systems.

Another notable development associated with the systems movement has been the melding of the “hard” and “soft” sciences. New discoveries in physics, one of the hardest of the hard sciences, defy proof through experimentation. In this sense, an aspect of physics has gone “soft.” On the other hand, discoveries in traditionally “soft” fields such as psychology and

³¹ James Gleick, Chaos, Making a New Science (New York: Penguin Books, 1987).

³² Abigail Trafford, (The Washington Post), “The buzz in the medical world focuses on genomics,” The Vancouver Sun, 1 August, 1999, sec. A, 15.

³³ Valerie Ahl and T. F. H. Allen, Hierarchy Theory, A Vision, Vocabulary and Epistemology (New York: Columbia University Press, 1996).

³⁴ Lawrence Slobodkin, Simplicity and Complexity in Games of the Intellect (Cambridge, Massachusetts: Harvard University Press, 1992).

economics have revealed connections between the complex interactions of mood and finance with hard facts of chemistry and mathematical theory. Scientific investigation into the nature of the world has thereby entered into its own holistic context, where the boundaries of investigation are limited only by reality, and archives and atoms may both be suitable objects for science study.

CHAPTER 2

Archival Systems

Contemporary science has come to view the world holistically and in terms of systems. As a result, a wider range of fields can participate in the kind of research that science undertakes. The strongest criteria for making good use of a systems approach is that the field copes with problems of complex interrelationships and issues of context. Archival nature is defined in terms of the complex interrelationships that arise between records and their context of creation. Therefore, the archival environment is not only a strong candidate for systems treatment, it also offers the rare example of a type of system that is rich in subtle detail and passively available for study.

Through adopting this approach, the archival field can avail itself of the insights and methodology offered by a meta-theory that specifically addresses the nature of systematic entities and formalizes their organization and properties. This does not automatically result in solutions to particular problems in the archival environment. Instead the notion of systems provides a means for dealing with archives objectively and under guidance of systems principles.

2.1 Systems

The scientist's zeal for simple and testable knowledge has led him to trim away the excess fat from the body of science. One may begin to suspect that his enthusiasm for cutting away the fat has resulted in his also hacking off the meat, leaving us only a skeleton. Perhaps when we thoroughly understand the skeleton, we can start studying the meat.

Stanley Beck, The Simplicity of Science

In order to appreciate how a systems approach may address problems and issues within the field of archives, the basic concepts of systems must first be articulated to the point that they can be practically applied in the archival environment. To a great extent the general idea of a system is already well known because the word "systems" is a part of everyday vocabulary in modern society, a sign of the complexity of the world in which we live. In general terms, a system is any complex of interrelated parts that function in coordination towards a single effect. For example, bus routes interact to form a transit system that produces the single effect of moving people around in a city, and audio components interact to form a stereo system that produces the single effect of reproduced sound.

We are not taught to recognize systems. This recognition is a part of human cognitive equipment. With this ability, whenever we see system parts (rapid transit lines linking the suburbs to the city and the bus routes crossing the city, or the cassette deck, the amplifier, and the speakers) that are achieving interactive processes aimed at producing a unitary effect (arriving at a chosen destination or hearing recorded music) we understand this implicitly as a system in operation. One component part is performing a particular function in relation to other functions performed by other component parts, with all the parts operating in coordination to achieve the effect (transportation or sound) which is the goal of the system.

The coordination is crucial. If rapid transit ran only at peak hours and connected with a bus route that ran only when it rained, users of the system would recognize the absence of good organization. They would not need to know the precise definition of the word "system," or even that such a word existed, in order to recognize that this arrangement was not effective and that there was a better way to coordinate the parts. Similarly, if every piece of correspondence in a large office were filed alphabetically according to the first word appearing in the text, every file clerk in the office would recognize a system that was unlikely

to work. A mind that is capable of recognizing effectiveness in coordination is capable of recognizing a system, good or bad.

With the advent of the systems approach in science in the early part of the twentieth century, the characteristics of such systems, devised and natural, became a topic of interest. There were no “systems specialists”; this was an area of interest in its first stages of development. Those who investigated systems were the theorists in various fields who felt the need for a better understanding of systems in general in order to apply the concept specifically to their particular field.

Ludwig Von Bertalanffy was a leader in this investigation. He was, by training, a biochemist. But his avocation was the philosophy of science. Bertalanffy believed that the broadest most abstract and complex concepts were accessible to the single mind if only the appropriate encompassing perspective could be determined. Working with rudimentary notions proposed throughout the history of philosophy, he articulated this view as the systems approach, and presented it in the 1940s as the next step in the evolution of scientific research. As the basis for a systems approach, Bertalanffy identified a group of key formal properties of systems, paraphrased as follows:³⁵

1. Systems behave as wholes, and changes in any part of the system constitute a change in the system as a whole.
2. Systems are more than the sum of their parts, because the sum of the parts does not take into account the crucial role that relationships play within a system. As well as being viewed in terms of these relationships, a system as a whole must also be construed within its own

³⁵ Bertalanffy, 66-79. (Two formal systems properties that were primarily mathematical in nature have been left out and the list re-numbered.)

context, which is likely to be an encompassing system that has its own effect on the operation of the system in question.

3. It is a natural progression that interactions between elements within a system decrease with time as the system passes from a state of uniformity to a state of increasing segregation, particularly in biological organisms such as is found in the development of embryos. In its initial state the embryo is essentially an undifferentiated whole. Then, over the course of time, the whole segregates into separate parts that are fixed with respect to their function and operate with increasing independence from the other parts of the embryo. This is indicative of increasing complexity within a system, and results in mechanization of system operation. Levy characterizes this progression as a product of instability, by which he means a situation “in which a slight shift or alteration in one of the factors gives rise to a . . . violent change in the whole.” He describes the progression as a process in which instability “is the limiting intermediate stage between two positions of stability.”³⁶ As it develops through this transition of stable and unstable states, the system continues to function as a unitary entity through regulation which is dictated at the level of the whole, although there is a price to pay for this increasing complexity because with increasing segregation and differentiation of levels, regulation becomes more difficult. In addition, as noted by Bertalanffy: “the more [that] parts are specialized in a certain way, the more they are irreplaceable, and loss of parts may lead to the breakdown of the total system.”
4. Progressive segregation of a system often leads to progressive centralization as well, which in turn is associated with progressive individualization, meaning indivisibility. According to Bertalanffy: “The primitive state is that where the behaviour of the system results from the interactions of equipotential parts; progressively, subordination under dominant parts takes

³⁶ Levy, 145.

place.” As examples of centralized systems, he cites atoms comprised of electrons around a nucleus and planetary systems centralized by a sun.

5. Systems are themselves frequently composed of sub-systems hierarchically ordered. At each level of a composite system structure the general properties of systems will hold.
6. A primary distinction between systems is that of open versus closed status. A system is closed if no material enters or leaves it; it is open if there is import or export of material.

Many of these properties of system operation are based on a fundamental characteristic of systems, which is that systems are inherently dynamic and operate in terms of process. Some initial input to the system is processed at a lower level and exits from that level as output that serves as appropriate input to the next higher level, with the highest level of output being the system level. The structure of any system is therefore a manifestation of underlying processes.³⁷ As Capra states, “systems thinking is always process thinking,”³⁸ and therefore systems are organized in terms of how they evolve in order to process input and produce output. This depends, not only upon system operation, but also upon the operating environment, which is the source of initial input and the destination of ultimate output in an open system. As a result, the context of any system is crucial. Therefore systems are examined in terms of their nesting relations (are they a part of a larger encompassing system and/or themselves an encompassing context of a smaller component system?) and in terms of whether or not their operations involve interaction with the external environment. It is on this latter distinction that Bertalanffy determines a definition of life; a living organism is an open system, and a dead organism is a closed system.³⁹ It is a fundamental distinction between a reductionist machine and a systems

³⁷ This also was fundamental in the holistic world view of Aristotle, and in the earlier viewpoint of Heraclitus.

³⁸ Capra, 42.

³⁹ Bertalanffy, 141.

structure that the systems structure operates in real time, which is entailed by the notion of process, and in real space, which is entailed by the notion of context.

Checkland identifies two pairs of ideas as additional keys to understanding systems operation. These pairs of ideas are emergence and hierarchy, and communication and control.⁴⁰ Hierarchy refers to the relationships between levels of system organization, with lower levels of relative simplicity feeding into higher levels of relative complexity. These hierarchical levels are characterized by properties that emerge through the progression of levels, in that a property is developed at a lower level and then emerges as being relevant to the overall system operation at a higher and more complex level. The property of temperature previously described is an example of an emergent property.⁴¹

The other pair of ideas, communication and control, stem from this relationship between hierarchical structure and the properties which emerge as relevant to the overall system through the levels of the structure. In the course of this process of level-ordered system operation, it is necessary that there be some means for controlling the operation so that each higher level process receives input with emergent properties that will be appropriate to satisfying the overall goal of system operation. The notions of communication and control describe how this is achieved. Communication refers to the process of feedback within the system, which is the transmission of information about the actual performance of the system back to lower levels, so that operation at these levels can be modified if necessary. Capra describes this process of “feedback,” often characterised in terms of a “feedback loop,” as follows:

A feedback loop is a circular arrangement of causally connected elements, in which an initial cause propagates around the links of the loop, so that each element has an effect on the next, until the last “feeds back” the effect of the first elements of the cycle . . . The

⁴⁰ Checkland, 75-76.

⁴¹ Cells functioning within an organism result in a certain temperature being a property at a higher level, for instance the level of the organs or of the organism as a whole. However, this property is not a relevant characteristic of the individual cells at their own simpler level of operation within the system.

consequence of this arrangement is that the first link (input) is affected by the last (output), which results in self-regulation of the entire system, as the initial effect is modified each time it travels around the cycle . . . feedback has come to mean the conveying of information about the outcome of any process or activity to its source.⁴²

Modification of the initial effect in terms of the outcome is achieved through control. If the operation of the levels is not resulting in the emergence of the desired output at the last level of the system, feedback communication to the lower levels activates control mechanisms that modify operations until the problem is corrected.

This is the characterization of an open system operation. When a system closes--when its interaction with the external environment ends--the processes which built and maintain the operation of the system is no longer motivated or reinforced. Then, if the system is not frozen in its closed state, its structure and operation may begin to dissipate, with reversals of differentiation and centralization. As a result, the closed system proceeds towards a state of entropy. The classic description of entropy is that it is a gradual move towards chaos, towards confusion and disorder where all operations are a matter of chance.

2.2 Archives as Systems

The conventional mechanical dynamics which are usually taught in school -- balls rolling down inclined planes, levers, cog-wheels, bodies colliding with each other, or billiard balls bouncing off cushions, and all the rest of 'Newtonian mechanics' -- really applied to closed systems only. . . . But nearly all the systems one has to deal with in the real world are open systems, because they are really part-systems. The only completely closed system is the universe as a whole, and it is only a few astronomers who have to think seriously about that.

It is quite difficult to think of natural examples of smaller closed systems, but perhaps a barrel of wine which is gradually maturing, or a cheese which is ripening inside an airtight container, would be examples.

C. H. Waddington, Tools for Thought

⁴² Capra, 56.

The first step in applying systems concepts to archives is to identify the three basic systems characteristics in archives. Again, these characteristics are process, structure, and parts and, within any given system, there are linkages between these system characteristics. The process is the result of the parts interacting through the organization of the structure, the structure is the result of the parts organizing interactively to achieve the process, and the parts, as input to the system, substantiate the processes and interrelate with increasing complexity to delineate the structure. In this way, the three characteristics consolidate to form a system.

2.2.1 Process

The process that results in archives is that of record accumulation, which begins with records created unconsciously throughout the business of society, by people, businesses, and governments in the course of their day-to-day activity. Among these records are the letters, invoices, reports, cheques, memos, computer files, diary entries, and scrawled notes that form and trace a flow of information. Once each of these records has been created, and then the information has been transmitted, submitted, or otherwise used, the purpose for which the record was initially created has generally been fulfilled. Then the record is either destroyed or it is kept. If the record is kept, then it is set aside. When it is set aside, it is usually placed within a filing scheme from which it can be retrieved, where it is anticipated that rational thought will later be able to find it. This placement depends upon two factors: the organization of the particular filing scheme used by that person, business, or government office, created for the purpose of having a place to put records away, and a decision as to the role of the particular record in relation to the scheme, which classifies the record into the scheme. These are the three essential steps of record accumulation: create the record, keep the record, file the record away. This is the process which underlies the record system, and it operates in terms of the classification scheme, devised to

provide a proper location for all records on the basis of the larger context which is the creator's activities and how they relate to each other. By capturing relationships between the creator's activities through its parts, the scheme makes it possible to retrieve records that have been classified into the framework.

The organization of the classification framework is the result of a structural evolution that follows the basic stages predicted by Bertalanffy's systems properties. It begins with an undifferentiated embryonic mass of records, a stack of papers from which individual items can be readily retrieved. However, as more records are generated and the stack grows, retrieval becomes more difficult and the accumulation becomes unstable. In order to maintain retrievability and restore stability, the whole scheme then segregates into parts according to some rationale, these parts being separate files that relate to some fixed notion captured by a file title, such as "bank statements" or "correspondence."

If the filing scheme continues as an open system, that is, if the person, business or government continues in its activities, new material is added to the files and over the course of time the files grow both in terms of size and in terms of the range of subjects covered within each of them. As a result, it may become necessary to segregate the different files further, for example with the single banking file separated into several different files pertaining to various banking subjects, and the general correspondence file separated into files for correspondence with different parties or on different subjects. At this point, a simple flat structure of sequenced files may no longer satisfy retrieval needs, and so associated files are grouped into series, with each series differentiated from the other series in terms of the files within it. If there are numerous series it may then be necessary to separate them into groups. Some series, for example, may be deemed administrative, meaning that they relate to the basic functions of the record creator, and others may be operational, meaning that they relate to the specialized functions of the creator.

These can then be grouped, with each series group relating to a natural grouping of activities performed by the creator.

Particularly in the case of businesses and governments, this basic configuration of records within files, files within series, and series within groups can evolve even further. From single departments or offices might spring several departments or offices dealing with increasingly specialized and varied activities, necessitating the further segmentation of series, upwards into sub-groups and downwards into sub-series. There can be overlap between the functions of various departments and offices, requiring that a centralized filing system be created, with secondary and related filing systems remaining localized in the departments and offices. Some of the departments and offices might later close or have their functions changed, resulting in massive shifts between components of the record structure. Other departments and offices may become relatively independent of the central administration, which results in their localized filing systems becoming centralized and evolving separate from the general system, yet still being a part of the larger system.

Throughout all these stages of evolution and change the classification scheme is in a state of flux, revised as the process of fitting the records into it and trying to retrieve records from it provides the necessary feed-back to demonstrate gaps, redundancies, and awkward spots. This feedback is analyzed by the control mechanism, which is the judgment of those who file, retrieve and use the records and therefore interact with the scheme at both the input and output levels. Negative feedback occurs if a record cannot be found, and modifications are made until the necessary retrievability function of the system is achieved or restored. These modifications may be either relational or structural. Relational modification includes changing the classification of certain records to alter their location assignment or providing further interpretation of the scheme to make the location of records less ambiguous. Changing the scheme itself would be a structural

modification.

Well-structured and maintained classification schemes in combination with well-placed records are therefore the result of careful consideration of the hierarchical levels of scheme organization and then feed-back and control based on an appreciation of the various relationships:

- between the creator's activities and the scheme;
- between the scheme and the records;
- between the records and the creator's activities.

When these relationships are properly established, a mapping correspondence arises between the records and the activities of the creator. The records fit together and the activities fit together in the same sort of way. Then, given a certain record to be fit into a certain scheme or retrieved from it and knowledge of the creator's activities, the location of the record is predictable. This ideal situation, the goal of all sensible record keepers, makes filing and retrieval a simple matter and renders documentation an information tool that can be used with ease and taken for granted.

In the thought and effort behind both the ideal and all that aspires to it lies the animating force of archives. The classification scheme provides a means for systematically encoding a three dimensional creation context so that it can be mapped into a two dimensional record arrangement that provides a proper place for all records accumulating. Thereby, the records and the creating context become inextricably linked in a dynamic system operation. What is created, what is kept, where it is put, whether or not there is a place for it--all of this is information on how activities were organized and done, and how they were regarded once done. The resulting network of record relationships carries this implicit information about the practicalities of doing business

and documenting business on a daily basis, in addition to the explicit information available within the collective of individual records. As a result, the scheme as a whole, as a product of the process of accumulation, communicates something about the external reality from which it arose. This information is retained within a fonds once interchange between the external environment and the record construct ceases. Thus, archives offer the rare example of natural and closed systems.

2.2.2 Structure

The classification scheme of a record system is bounded by the context of a single creator entity. This, however, determines only one system structure within a hierarchy of systems. Encompassing all records is the documentary universe, which is the ultimate level of the archives system. The nesting relations go downwards as well, to subordinated classification systems within a complex hierarchy and ultimately to the individual records, the primitive parts that serve as initial input to the system.

Therefore, while an understanding of the process nature of a record system also delineates its structural nature, this does not automatically provide archival systems study with a specific framework. The question remains as to which of these levels of structure is to be taken as primary for purposes of both theory and methodology. The broadest possible structure is to be preferred, because it possesses the greatest complexity and detail and therefore holds the richest information. The documentary universe as a whole provides this broadest structure, but is unmanageable for practical purposes. Is there a level of structure within this encompassing whole that can be empirically determined as a single coherent construct and so may itself be deemed a whole for the purposes of archival handling?

Both traditional archival theory and the process nature of archives indicate that the prime

candidate for this basic structure is the fonds--the grouping of records generated by a single record creator, linked to the context of its creation and organized by a classification scheme. This is the level of structure most frequently addressed in archival theory, methodology, and management. It is not necessary, however, to simply assume the fonds to be the relevant systems construct in the archival context. There is guidance available from certain branches of systems study to justify this structure as a primary archival construct.

This guidance comes from branches of systems study that seek to augment the applied science approach to "hard" systems analysis dealing with practical problems such as computer engineering and industrial productivity. Computers and industrial workplaces present obvious structure to systems treatment and therefore it is a fairly routine matter to determine their systems structure. In "soft" systems such as archives, however, the structure may not be so easy to delineate. They are indeed systems, but are heavily context dependent and more complex than structures involving machinery and workers. The task of applying methods of systems analysis to such soft systems has been explored by Peter Checkland, and he provides a guideline of criteria to be used to determine a system construct.⁴³ Following are the criteria with the fonds' qualifying characteristics interposed (in italics).

S is a system if:

1. *S* has an on-going purpose or mission.

The on-going purpose or mission of a fonds is to provide for the organization of documentation generated by a particular record creator.

2. *S* has a measure of performance.

The performance of this system is determined on the basis of retrievability;

3. *S* contains a decision-taking process (role not person), and via the decision-taking process the

⁴³ Checkland, 174.

system may take regulatory action in light of “1” & “2.”

The decision-taking process occurs through placement choices made when records are filed so that they can later be retrieved for reference and use. Regulatory action is taken to adjust this decision-taking process if retrievability performance is deemed unacceptable.

4. S has components which interact, which show a degree of connectivity such that effects and actions can be transmitted through the system.

Within the fonds construct, alterations to the assignment of classification and placement impacts on the system as a whole, as changes to the categorization of any particular type of record may redefine the purpose of some level of organization, perhaps the fonds as a whole.

5. S has components which are themselves systems having all the properties of S.

The levels of record organization each have features of internal structure and relate to different aspects of the creator's activities and therefore also have the properties of a system.

6. S exists in wider systems and/or environments with which it interacts.

The activities to which the records relate occur in the wider system of some particular human endeavour: such as the administration of a government body, the work of a commercial enterprise, or the conduct of an individual in society. The record system interacts with the external environment through documentary operations, such as recording, enacting, enforcing, informing, and referencing activity.

7. S has a boundary separating it from its environment, which is formally defined by the area within which the decision-taking process has authority to cause action to be taken.

The boundary of the record system is formally defined through the interface and mapping function of the classification procedure, which is under control of those who operate in the human activity system and, in accord with this criteria, it is not under the control of those who are not participants in this external environment.

8. S has resources, physical and, though human participants, abstract which are at the disposal of the decision-taking process.

The physical resources of the record system are folders, file cabinets, computer data storage devices, and storage space required to keep and organize the records, along with the abstract resource of human participants who work to maintain the system.

9. S has some guarantee of continuity, is not ephemeral, has long-term stability, and will recover stability after some degree of disturbance (possibly from outside).

The record system endures so long as it is needed as an information resource, which tends to be a long-term need, and it evolves in tandem with the human activity system, with changes activated by the need to effectively serve the activity system.

Therefore, the fonds structure meets the criteria for a system, and can be used as such for the purposes of archival handling. What remains to be determined are the parts of the system.

2.2.3 Parts

The parts of the archival system are the individual records: the atomistic elements on which the process of accumulation acts and the fonds structure is built. These parts of the system mark the boundary between activity and the records generated as a by-product of activity, and form the linkage between the external world of the creator (in traditional theory the provenancial context) and the internal world of classified records (the documentary context). Stanley Raffel describes this boundary and linkage function dynamically, in terms of the act of record-writing, which he states “must depend on some kind of interesting segregating procedure by which two things, a record and the ‘world’ are, first, differentiated from each other and, then, related to each other so as to make the one, ideally, ‘about’ the other.”⁴⁴ This would suggest that individual records are not only parts of the record system and a by-product of the activity system, but also are themselves systematic by virtue of being generated through the process of record-writing.

⁴⁴ Stanley Raffel, *Matters of Fact* (London, Boston, and Henley: Routledge and Kegan Paul, 1979), 7. Quoted in Luciana Duranti, “Diplomatics: New Uses for an Old Science (Part II),” *Archivaria* 29 (Winter 1989-90): 4-18.

This systematic nature of records is explored by the field of diplomatics, which studies the written document, defined as “evidence which is produced on a medium (paper, magnetic tape, disc, plate, etc.) by means of a writing instrument (pen, pencil, typing machine, printer, etc.) or of an apparatus for fixing data, images and/or voices.”⁴⁵ In terms of how it is used in the field of diplomatics, the designation of a “written document” in this definition does not center on the discrete act of marking some medium to produce a single record, but instead references and draws together the various systems which participate in record writing.

The first of these various systems is the encompassing environment of the human activity system, or as Raffel puts it, the “world.” In diplomatics this is more precisely termed the juridical system, which is defined as “a collectivity organized on the basis of a system of rules. The system of rules is called a legal system.”⁴⁶ Within a juridical system there are various roles held in the course of private life, commercial venture, and public service, and these operate in terms of rights and obligations with respect to the system. This concept of a juridical system narrows and focuses the sweep of human activity into the context of the societal significance of this activity, which is the context in which the activity is relevant to documentation.

Also linked to the juridical and documentation context is the language system. Through a common language it is possible for a collectivity to generate, comprehend and thereby communicate abstract ideas such as rights and obligations. These ideas then become objects which can be examined and manipulated, and set down as the laws of a juridical system. As well, through language, it is possible to communicate about intricacies of activity within the juridical system. On this foundation, set programs of action can be schematized and established generically as procedures. Procedures structure activity and give rise to structured documentation, with different parts of the document composed and organized to achieve specific

⁴⁵ Luciana Duranti, “Diplomatics: New Uses for an Old Science (Part I),” *Archivaria* 28 (Summer 1989): 15.

⁴⁶ Ibid., *Archivaria* 29 (Winter 1989-90): 5.

aspects of the procedure.

Diplomatics addresses documents in these terms by separating “two conceptually when not chronologically distinct moments: the *moment of action* and the *moment of documentation*.”⁴⁷ The moment of action occurs within the context of the juridical system. The moment of documentation is predicated upon the action and occurs according to the procedural system. Individual documents then created, relating to both the juridical and procedural systems, are subsequently classified into record systems. The process of documenting action thus results in records which form an atomistic point of contact between the two separate systems of activity and records.⁴⁸

This keys the creation of the record system as a whole. The atomistic elements of individual records accumulate as a by-product of activities performed in the creation context, they are then organized into a classification scheme that evolves spontaneously through the process of accumulation, and within this classification scheme they embody the structure of the record system, which itself, unconsciously, reflects the context of record creation.

⁴⁷ Ibid.

⁴⁸ This type of complex structural relation, whereby the complex systematic construct of an individual record becomes atomistic input to the record system, is related to the chaos theory concept of fractals.

CHAPTER 3

Archival Systems Theory

As an historian I had all my life been aware of the extraordinary importance of documents. I had handled hundreds of them: letters, reports, memoranda, sometimes diaries; I had always treated them with respect, and had come in time to have an affection for them. They summed up something that was becoming increasingly important to me, and that was an earthly form of immortality. Historians come and go, but the document remains, and it has the importance of a thing that cannot be changed or gainsaid. Whoever wrote it continues to speak through it. It might be honest and it might be complete: on the other hand it could be thoroughly crooked or omit something of importance. But there it was, and it was all succeeding ages possessed.

Robertson Davies, The Deptford Trilogy: World of Wonders

Archival repositories are the specialized institutions that receive inactive records and then reveal them as archives. The transitional link between these two states of documentary existence, between inactive records and archives, is the jurisdiction of archival activity. This jurisdiction transcends the circumstance of individual repositories and connects with the broad notion of a documentary universe, the sum of all those records created as a byproduct of practical activity and preserved because human society as whole and throughout history has deemed it necessary to keep them. As a result of this age-old and continuing practise, and scattered throughout a global network of archival repositories, a universe of documentation becomes available which holds a stable and distilled reflection of the dynamics of human activity and offers an objective basis through which lost times may be recaptured. It is a window on the past, and the quality, clarity, and expanse of the view afforded is determined by the quality, clarity, and expanse of the documentary resource, and this depends upon the conduct of archivists within repositories as

they handle the records in their care.

Under current views this characterization of the archival mandate may not be generally appreciated, because the notion of a documentary universe is abstract and it may be violated in any number of ways with no obvious or estimable cost. However, under a systems approach to archives the documentary universe really does exist. It is the system which provides context for every record created in the course of human history, and violation to any part of it affects the integrity of the system as a whole. Each and every archivist holds a share of general responsibility over the portions of the documentary universe that enter the jurisdiction of individual repositories, and this responsibility can be met by a mandate to provide consistent and competent treatment of archival materials, based on rational and appropriate principles of archival handling, adopted by the community as a whole.

In the following sections it is argued that a systems-based archival approach lays the foundation and provides the framework for such a mandate, and that no other approach could serve in this capacity given the inherently systematic nature of archives. In order to explore this hypothesis, each of the three central tasks which comprise archival methodology are examined in terms of how they are done now, how a systems-based approach would differ from or align with current practice, and how the notion of systems may illuminate aspects of archival handling that were not before apparent. These three central tasks to be examined are arrangement, description, and appraisal.

3.1 Arrangement

At the Public Archives of Canada as elsewhere the value of a natural classification according to the principle [of provenance] has been apparent at all points. Its disregard by certain officials prior to the last decade has resulted in several awkward series, in numerous amorphous collections, which now, like income taxes and the poor, can not be disregarded, and are ever with us.

David W. Parker (1922)
"Some Problems in the Classification of Departmental Archives"

Archival repositories receive record constructs when they are no longer in active use and therefore are closed. The construct closed may be a file, a series, a fonds, or a part of any one of these, but the deciding factor is that there is no longer any interchange between the construct and the external creating environment. Yet the records within the construct still carry the information that gave rise to their creation and retention and made them useful, they trace meaningful activity in the past, and may possibly be needed in the future, and so the records are considered to hold sufficient value to be preserved in a repository.

Once they have been received into the repository, the first task of archival handling on these records is arrangement. This is not the process of devising or imposing an arrangement, but rather the task of discovering the arrangement which arose between and over the records in the creating context and as a result of their relationship with this context. Arrangement therefore involves knowing the activities of the creator, discovering the mapping relationship between the activities and the records, and then making permanent the resulting structure within the record arrangement. The manner in which this analytic process is conducted directly affects the extent to which the records retain their value in the closed archival state.

In broad theoretical terms, this task equates with systems analysis, a procedure for determining the structure, processes, and parts of any system. The match between arrangement practice and system analysis, however, is by no means exact. Currently, there are a variety of arrangement methodologies operating under different interpretations of the fonds concept; some aspects of these methodologies are consistent with system analysis procedure, others are not. In order to appreciate the points of both agreement and conflict, it is necessary to first explore and chart the terrain of contemporary arrangement practice to determine how it has developed and why.

Arrangement methodology in most of its variant forms is based on the central concept of archival theory, which is the fonds--the whole of the documents produced in a particular administrative setting. The fonds concept was first established at the end of the eighteenth century,⁴⁹ and then incorporated into the policy and procedures of national archival institutions throughout Europe over the course of the nineteenth century. It is an approach that implicitly, and also explicitly, takes a systems-based view of archives, because the structural notion of a system formed a part of the conception of the fonds as it was presented in detail to the archival communities of Europe and North America early in the twentieth century in basic instruction manuals. Two such publications were the Manual for the Arrangement and Description of Archives⁵⁰ by Dutch archivists S. Muller, J.A. Feith and R. Fruin, and A Manual of Archive Administration⁵¹ by British archivist Sir Hilary Jenkinson.

The first of these publications was the Manual for the Arrangement and Description of Archives, compiled in consultation with the Netherlands Association of Archivists, and

⁴⁹ Terry Eastwood, "General Introduction," in The Archival Fonds: from Theory to practice, ed. Terry Eastwood (Ottawa: Bureau of Canadian Archivists, 1992), 2.

⁵⁰ S. Muller, R. Feith, and R. Fruin, Manual for the Arrangement and Description of Archives: Drawn up by Direction of the Netherlands Association of Archivists, re-issue, (New York: H.W. Wilson 1968).

⁵¹ Hilary Jenkinson, A Manual of Archives Administration, rev. 2d ed., (London: Percy Lund, Humphries & Co., 1965).

originally published in 1898. The authors Muller, Feith, and Fruin, were archivists dealing with public records generated by the Dutch government, a body with an ancient and complex administrative history. As a result, in the course of their work, these archivists had encountered the variety of administrative changes--in terms of growth, reduction, closure, transfer, and amalgamation of functions--that might affect record keeping in governmental offices and departments up to the turn of the twentieth century. Their breadth of experience was evident in the manual, and was shared with a wide audience. In 1905 the manual was translated from Dutch into German, in 1908 it was translated into Italian, and in 1910 it was translated into French. Many years later, in 1940, an English edition was published, translated from the second Dutch edition of 1920. According to the translator of the English edition, Arthur H. Leavitt of the United States National Archives, the manual of the Dutch archivists "has been regarded with high esteem and the principles set forth in it have influenced the development of archival economy in England as well as on the Continent of Europe."⁵² Of particular note here is the fact that the instructions for arrangement given by the Dutch archivists are centred on an evident appreciation for, and repeated reference to, the systematic nature of archives, and specifically deal with the three basic characteristics of dynamic systems constructs: structure, process, and parts.

The Dutch archivists begin their manual by defining the archival fonds (which the English translator termed "archival collection") as a whole composed of parts, which are the individual records:

An archives collection is the whole of the written documents, drawings and printed matter, officially received or produced by an administrative body or one of its officials, in so far as these documents were intended to remain in the custody of that body or of that official.

They explore this notion of an archives collection as a whole in terms of the dynamic

⁵² Muller, Feith, and Fruin, Translator's Preface, 7.

process of record accumulation and the way in which this process forms the structure of the fonds.

An archival collection comes into being as the result of the activities of an administrative body or of an official, and . . . it is always the reflection of the functions of that body or of that official. An archival collection therefore is not arbitrarily created. . . . On the contrary, an archival collection is an organic whole, a living organism, which grows, takes shapes, and undergoes changes in accordance with fixed rules.⁵³

The manual stresses the importance of the archival viewpoint appreciating the dynamic link between the resulting structure and its context of creation, with context influencing the formation of structure and structure then reflecting the context of creation.

In general the old order [of the records] was established in accordance with the needs of the old organization and is closely bound up with it. If one wishes to become acquainted with this old organization--and how can one describe an archival collection if the organization of the body to which it owes its existence is not known? --it is necessary to study first of all the arrangement of the archival collection as it was formed and transformed while it was still a living organism.⁵⁴

The Dutch archivists make repeated use of the biological metaphor of an organism to account for the dynamic process character of systems. This metaphor stems from their understanding of the construct as an holistic and organic entity that exists by virtue and in terms of its context. They describe the fonds as an entity that both lives and dies, as stated in a footnote to the text. "[An archival collection is] at least an organism which has lived, for the archivist generally receives [it] into his custody when it is dead, or at any rate only the parts of it which must be considered closed."⁵⁵

According to the Dutch archivists, the fonds is therefore to be handled with respect for the context and processes that brought it into being and it is not to be handled in a manner that is

⁵³ Ibid., 13-14 & 19.

⁵⁴ Ibid., 60.

⁵⁵ Ibid., ft. 8

alien to its nature.

The rules which govern the composition, the arrangement and the formation of an archival collection, therefore, cannot be fixed by the archivist in advance; he can only study the organism and ascertain the rules under which it was formed.⁵⁶

This leads to the manual's directive for arrangement which the Dutch archivists describe as "the fundamental principle from which all other rules follow":

The system of arrangement must be based on the original organization of the archival collection, which in the main corresponds to the organization of the administrative body that produced it.

This idea of a system of arrangement is supported through debate in the manual, and two alternatives for such a "system" are examined:

The first adopts various headings arbitrarily set up (e.g., Administrative Body, Finance, Relief, etc.) corresponding to the headings which usually appear in a library catalogue. The other system, on the other hand, does not set up any arbitrary headings, but only those that are suggested by the character and organization of the archival collection itself, namely, headings that correspond to the various branches of the administrative body which produced the archival collection.

There are grounds for supposing that the Dutch archivists might entertain the first alternative, as it is noted in the Preface that a primary reason for writing the manual was to provide a means for uniformity of archival description. A system of arrangement that uses headings that appear in library catalogues would be uniform with descriptions already in use, and they note this in their discussion:

The first system has one undeniable advantage, in that it seems to place the searcher in an archival collection in a position to know immediately without difficulty under what heading he will find the one or more documents concerning the particular subject that interests him.

However, as they state:

The penalty for forcing the archival collection into an alien mold is not long in coming; while on the one hand the system helps the searcher by pointing out to him immediately the

⁵⁶ Ibid.

section he must consult, on the other hand it turns him aside from the right path.

On this basis the Dutch archivists conclude that the appropriate arrangement for a fonds is the one that is most closely faithful to its organic nature, and their argument is based on the systematic principles of relationships between both the parts within the whole and the whole within its external context, and on the central role of the natural accumulation process in determining an archival construct. As the manual explains:

Only the systematic arrangement of the archival collection which is based on its old organization leads to satisfactory results; only in this way in the end can the innumerable questions which arise in arranging a collection be rightly solved; this system alone can be consistently applied to an archival collection of considerable size. In every collection a certain relationship has existed from old; the secretaries who built it up established certain rules, either consciously or unconsciously, for the preservation and arrangement of the documents. In general, it may be assumed that these rules are better and more in accord with the nature of the collection than those that we might be tempted to apply; the contemporary officials certainly knew much better than we the character of their archival collection and its practical requirements. But even if the original officials at times followed strange ways according to our ideas in combining different subjects in one register or in one account, it is nevertheless impossible now to make changes. The unity of that register or of that account prevents its being broken up. This unity in turn determines the unity of the files of incoming documents and of receipts belonging to that register or account, which explain them in this most desirable way. Only thus do those files accomplish the usefulness for which they were intended.

Their appreciation for the importance of the naturally occurring structure of archives is confirmed to the point that the Dutch archivists can not conceive that any reasonable approach to archives would lead to breaking apart the unity of the whole and destroying crucial relationships between the parts.

It is, therefore, not so much preference for this system that impels us to recommend it, as the consideration that the archivist who calmly thinks out his plan in advance and wishes to carry it through consistently will actually be *forced* to adopt ours.⁵⁷

⁵⁷ Ibid., 52-56.

Therefore, as of the turn of the twentieth century, Muller, Feith, and Fruin, and the community of Netherlands archivists they consulted in preparing the manual, had presented to the archival community a theory of archival handling based on the essential ingredients of a systems approach. A fonds is a dynamic and holistic construct, arising from the functional activities of its creators, and it is not to be idealized, altered, or interpreted according to the presumptions or preferences of the archivist. The role of the archivist is instead to direct attention to the records in the context of record creation (the parts of the system), in order to infer and understand the systematic arrangement of the whole (the structure), in terms of the manner in which the records were created and accumulated (process), and to make this functionally-based and context-dependent arrangement plain. Through such an approach to archival arrangement, the archivist would be following the path of least resistance and most enlightenment to reveal the fonds and appropriately prepare it for use in its final closed state.

Although this approach to archives was not an innovation, given that the concept of the fonds had been adopted as the guiding principle in archival handling throughout Europe by the time of publication, the manual had a significant impact on the archival community because it widely broadcast the theoretical foundations of the fonds concept and provided practical guidance on the methodology necessary to apply it. Within a few decades the manual of the Dutch archivists was a well-known resource, and much of its substance is reiterated in a following basic treatise on archival handling, A Manual of Archive Administration, by Hilary Jenkinson, published in Great Britain in 1922. Jenkinson, like Muller, Feith and Fruin, was an archivist dealing with public records. He worked in the Public Records Office (PRO) of Great Britain and rose to the position of Deputy Keeper in that institution later in his career. According to the Introduction by Roger Ellis to the 1965 re-issue of the second edition (first published in 1937), upon its publication Jenkinson's manual became "at once the standard work in English

upon [the] subject.”⁵⁸

In his manual, written “to illustrate the theory and practice of Archive Work from English Archives,”⁵⁹ Jenkinson builds on the theoretical principles of the Dutch archivists and their systems perspective of archives. He similarly defines archives as “natural by-products of day-to-day activity, “drawn up or used in the course of an administrative or executive transaction.”⁶⁰ A significant added feature is his description in a section entitled “The Evolution of Archives” of the process of archival accumulation, which anticipates a systems-based description. According to Jenkinson, the process begins with the creation of records: “documents which come into an office; (copies of) documents which go out; and documents which do neither, which circulate within it.” Structure of organization then builds through the process of record accumulation, “starting with the simplest of all Archives forms, a file; which we use as a generic term for a sack or box or hamper or other receptacle in which are contained, or a string on which they are threaded, a miscellaneous collections of scraps of paper or parchment of these three kinds.” The next stage is hierarchical differentiation, the same structuring process noted in Bertalanffy's list of formal properties of systems. Jenkinson describes the process of differentiation in archives as:

The first of a series of steps in the evolution of Archives consisting of the separation of bulky or important classes from the main series of *Miscellanea* into separate files, boxes, & c. . . [From] an original collection not arranged upon any particular principle there will very soon be separated off such classes as by reason of their numbers or the fact that they are frequently required for reference are judged worthy of the dignity of a separate file.⁶¹

According to Jenkinson, this evolutionary process of development forms the basis of the relationships between records within the organic whole of an archives construct and between the construct and the creating context. This motivates Jenkinson's specific directive of arrangement,

⁵⁸ Jenkinson, v.

⁵⁹ Ibid., Preface to 2d ed., xii.

⁶⁰ Ibid., 11.

⁶¹ Ibid., 23-25.

that the chief object is "to marshal [the archives] in such a way that the Archive significance of every document--its own nature and its relation to its neighbours--is brought out as clearly as possible." The directive is formalized in principle as follows: "*The only correct basis of Arrangement is exposition of the Administrative objects which the Archives originally served,*" and the methodology that puts the principle into effect is based on determining the context, history, and organization of the administrations concerned, "for the Archives cannot be understood without a knowledge of the Administration which produced them."⁶²

Both the Dutch archivists and Jenkinson wrote their manuals prior to the advent of the systems approach in the sciences, at a time when the notion of a system would have been simply a matter of common knowledge. Yet both manuals use vocabulary and explicit concepts that would later be formalized within systems theory. This is a reflection of the patently systematic nature of archives, and of the appreciation for this nature that arises spontaneously in the viewpoint of those who are intimately familiar with archives and the challenge of managing them appropriately. For these authors of traditional theory, such appreciation led to an archival approach that prefigured the systems viewpoint.

The approach put forward in these manuals still fundamentally guides the theory and methodology of archival arrangement. Its application in contemporary times, however, is not always a simple matter. This is particularly true in situations of a complex bureaucracy, where there may be many levels of hierarchical administration with associated auxiliary bodies such as committees and branch offices that may relate across levels, all of which are subject to administrative reorganization from time to time. In such situations, repositories may be receiving an irregular deluge of record accessions with complex ancestry and uncertain parentage emanating from a shifting bureaucratic framework of administrative units whose functions move

⁶² Ibid., 97-98.

about, couple and split apart, according to no apparent plan. This makes application of the basic theoretical notion of the fonds construct difficult, because so much in this application relies upon there being discernible record structure associated with a stable administrative structure.

Over the range of record circumstances that lie between the simple and the complex extremes, challenges have emerged to the basic concept of the fonds and practical necessity has led to the concept being examined, interpreted, and adapted in a variety of ways. What has provided the greatest fuel to this process is the general occurrence of the more complex circumstances arising in the context of national government repositories. This has been significant because innovations devised in the setting of a national government repository are likely to be widely known and authoritative. Therefore, a governmentally inspired variation made to the fonds concept may very well influence an entire national community of archivists, at all levels of government and within all spheres of public and private repository management. In fact, the national archival body may have a mandate to take this leadership role. Generally the institution also has the resources in terms of personnel and budget to undertake the work of adapting otherwise accepted professional doctrines, and often the circumstances demand that this work be done, because the doctrines are not sufficient to address the concerns at hand.

However, the problems encountered in a government archives are not typical, particularly with regard to application of the fonds concept, because a government archives falls under a particular category of repository type; those which are a part of the administration creating the records. Therefore, a government archives is serving in a records management capacity in the administration, with the opportunity and usually the mandate to oversee the governmental records in general, a responsibility that includes establishing record creation controls and classification schemes for active records, supervising storage of semi-active records, and ensuring the orderly transfer of inactive records to the repository. This allows for a broader range

of adaptations to archival theory and methodology, including those aspects that might affect record handling in the active and semi-active phases, as well as in the inactive state, only the last of which is generally considered the domain of archival practice. Another atypical feature of this circumstance is the enduring and paramount responsibility which the repository holds towards the creator, which is ultimately in control over the repository, to maintain the records in their archival state in such a way that they continue to serve the needs of the creator, needs which may not always coincide with the best interests of archival heritage. And finally, in such a circumstance the repository is essentially dealing with only a single fonds: the records generated by a particular government in the course of its practical activities. Yet that single fonds may be monstrous in terms of volume and complexity.

Contrast this with a community-based archives that has a self-claimed mandate to preserve archives relating to a certain geographic area or sphere of social activity and that takes donations of relatively simple fonds, often closed and complete, of records falling within the mandate, and that receives material only when there are the resources available, in terms of budget, staff, and space, to process the material. Each circumstance falls against one of the extremes, both are common within the breadth of the archival community, and yet it is the complicated and specific circumstance of national government repositories that generally has motivated and contributed most of the adaptations to the fonds concept since it was introduced.⁶³

This is not to marginalize the importance of the extremity of situations from theoretical discussion on the fonds concept. If the concept is to be maintained as the guiding principle of archival handling, it must be capable, under some consistent formulation, of applying to the full range of circumstances, including the most complex. Yet, at the same time, the concept should not be reformulated in order to serve special and dominant circumstances to the point that it no

⁶³ It should be noted, this is also the circumstance that first gave rise to the fonds concept.

longer serves its original purpose in those basic situations that still constitute a significant portion of archival activity. With this proviso, the special cases of most complicated circumstance provide fertile ground for exploring the implications and limitations of the fonds concept and examining what a systems perspective may add to the debate.

The most basic of these complications is a problem that has vexed the archival community essentially since the introduction of fonds-based handling: the question of just how and where to determine the fonds construct over a particular grouping of records within a complex bureaucracy. As Terry Eastwood describes it, there is the central question of determining "the ruling principles of the identification of the archival fonds. What precisely is an archival fonds and what are the terms to identify one?"⁶⁴ When the archival grouping in question is the records of a person or a business, the terms for identification are usually obvious. The creator is the person or the business and the fond construct is all of the records arising through the activities of the creator in that context. However, when the creator is a government, while it is methodologically accurate to ascribe all the records of that creator to a single fonds, this is not overly helpful to the task of determining levels of arrangement for the records. Any government, or large multi-national corporation for that matter, is likely to be composed of a nested hierarchy and network of departments and offices. The traditional fonds structure has a limited conception of levels involving items, files, and series within the fonds, with the possibility that any of these levels above the item may be split internally into additional structure, such as sub-series within series, and sub (or 'sous') fonds within fonds. However, even with this expansion capacity, the traditional conception of fonds structure still can not apply efficiently to a complex of record organization where there may be levels too numerous to be reasonably counted let alone depicted between the item and the fonds. This problem of multitudinous levels has been a primary cause for elaborations being made to the theoretical concept of the fonds, with various means proposed

⁶⁴ Terry Eastwood, "General Introduction," 3-4.

for assignment of distinct internal levels so that the resulting constructs are both consistent with the spirit of the fonds concept and also are manageable with respect to the tasks of archival handling, repository management, and provision of access.

One strategy generally employed is to assume the arrangement level of the encompassing superordinate fonds, which includes all the records of the mammoth creator. This strategy is made possible by the fact that, in such situations, the repository is generally dedicated to dealing primarily if not exclusively with the records of this creator. Therefore, this uppermost level may, as a matter of practical necessity, be taken for granted. This makes the designation of fonds as a level of structure available for subordinate assignment, and the question then arises as to what criteria will guide the subordinate assignment.

There is some discussion in the early texts on this issue, with both the Dutch archivists and Jenkinson writing from the perspective of government archivists dealing with the problem of determining internal structure for the arrangement of records in their respective repositories. In the manual of the Dutch archivists, the fonds as a general concept is described as “the whole of the written documents, drawings and printed matter, officially received or produced by an administrative body.”⁶⁵ The question, then, is what is meant by “administrative body.” However, in their subsequent and detailed explanation of each component of the definition, their discussion of the term: “an Administrative Body,” does not answer this question. They go only so far as to include individuals and judicial boards as potentially constituting separate bodies for the purpose of creating their own fonds. Aside from these specifications, there is no guidance offered at this point. There is more discussion and some insight available further in the text, in the context of arrangement practice and the necessity of decisions as to the subdivisions of arrangement reflecting the organization of the administrative body which produced a fonds. The

⁶⁵ Muller, Feith, and Fruin, 13.

guidance offered is that a part of this administrative organization would have been the delegation of authority, and the extent to which a delegated authority might have possessed a measure of independence determines its status as a subordinate fonds creator. As they state:

The preparation or even the performance of some parts of the administrative work was often entrusted to special permanent committees or officials who were more or less independent or in many cases at least sufficiently independent to enable them to form an archival collection of their own. The archives of these committees (their minutes, incoming documents, etc.) may not according to our definition be mixed with the archival collection proper of the main administrative body, for these documents were not drawn up or received by that body. The two series of documents run along parallel to each other, though they often refer to the same subjects, and the archives of such committees must therefore necessarily form special divisions in the archival collection of the main body. In this way the archival collection of an administrative body will inevitably reflect in the main the structure of that body.⁶⁶

Therefore the Dutch archivists would hold independence over some sphere of activity to be a determining characteristic of a fonds creator. More information on this point is offered still later in the text. The manual directs that a committee should be assumed to have created a fonds of its own if it produced resolutions. If, on the other hand, the committee made no resolutions, its records "should be considered as dossiers forming part of the archival collection of the board that brought the committee into temporary existence."⁶⁷ This suggests that the Dutch archivists require for the status of fonds creator, not only independence of authority over some sphere of activity, but also a documentary product, or evidence, resulting from exercise of that authority.

Jenkinson goes into the issue in more detail and reaches essentially the same conclusion. Working with the general indicators provided in various parts of the manual of the Dutch archivists, he notes that it may be taken that they "would make the qualities of a *fonds d'archive* depend on its including those which, when the administration which created it was active, constituted the final authority for executive action." Jenkinson includes this concept in his

⁶⁶ Ibid., 57.

⁶⁷ Ibid., 137.

definition of a fonds:

*Fonds, we may render, for lack of a better translation, Archive Group, and define this as the Archives resulting from the work of an Administration which was an organic whole, complete in itself, capable of dealing independently, without any added or external authority, with every side of any business which could normally be presented to it.*⁶⁸

Significant with respect to later adaptations to the fonds concept, he comments in a footnote to the definition: "Notice that nothing need be said of the size of the Administration--whether it consisted of one man or twenty--nor of its origin--whether it was created by e.g., a statute or merely grew out of circumstances; such facts not affecting our present purpose."⁶⁹

A much different point of view was taken in the U.S.A. In the course of its travel across the Atlantic Ocean, the British archives group became the American record group and acquired a significantly different character with the name change; from the U.S. perspective, size not only mattered, it would replace independence of authority as the decisive criterion for determining a fonds. This shift in focus was the product of various factors. Unlike its Dutch and British counterparts, the North American archival community did not have a wealth of slowly-accruing ancient records to provide the long view on archival handling. Instead the archives of the nation were all relatively new and were being produced at a phenomenal rate as a result of technological advances in record creation and reproduction. As a result, the U.S. National Archives, established in 1934, was among the first of the national level government archives institutions to encounter record volume as a serious problem, and it encountered this problem very early in its existence. In the absence of a well-established tradition for archives-keeping, there was neither an impediment nor a bulwark against an untried approach for dealing with the novel problem of mounting volume. The issue of record volume thus directed the U.S. National Archives in the formulation of what would be their major archival unit of the "record group": the correlate to the

⁶⁸ Jenkinson, 101.

⁶⁹ Ibid, ft. 3.

fonds on the European Continent and the archives group in Great Britain.

As presented in an Archivists' Memorandum, the record group of the U.S. National Archives was defined in 1941 as "a major archival unit established somewhat arbitrarily with due regard to the principle of provenance and to the desirability of making the unit of convenient size and character for the work of arrangement and description and for the publication of inventories."⁷⁰ The use of the phrase "established somewhat arbitrarily" is significant. The record group is a manufactured rather than a natural entity, the grouping set with reference to record creation context but not necessarily in direct relation to it.

T.R. Schellenberg, archivist with the U.S. National Archives, explains the circumstances that led to this adaptation of the fonds concept. "One of the first problems with which archivists of the Federal government were concerned was to define the record unit--call it 'fonds,' 'archives group,' or what you will--that should serve as the main unit of arrangement in the archival institution."⁷¹ The context in which this problem was being addressed involved a volume of almost 800,000 cubic metres of records coming into the custody of the Archives in one decade, and there was tremendous pressure to divide this bulk of material into manageable units so that it could be processed.

Schellenberg then goes through the alternatives considered for this main unit of arrangement. With respect to the British archives group, he maintains that this would not have been the appropriate unit because "of the difference in the administrative units of government that created [the records]." It is Schellenberg's view that the English archives group is "applicable only to dead records--past accumulations to which no more records will be added or

⁷⁰ National Archives, Archivists' Memorandum (Washington, D.C.: No A-142, February, 1941).

⁷¹ Theodore R. Schellenberg, Modern Archives: Principles and Techniques (Chicago: University of Chicago Press, 1956), 181.

records of dead agencies.” Given that the archives group was the operative unit for arrangement in the PRO with respect to all its records, this would suggest an opinion that the British government was actively operating with an administrative organization of dead agencies. However, Schellenberg was justified in claiming that there would certainly be more examples of closed record constructs in the British archives, with its long history, than in the American, which may have led to a view that the archives of Britain and the administration that produced them could generally be determined moribund. In contrast, he describes the U.S. National Archives as dealing with a dynamic situation of “constantly changing organizational units and constantly changing functions” that could not be addressed through the archives group concept.

Schellenberg also addresses the alternative of the French “fonds,” a construct that he incorrectly describes as representing “records from similar types of institutions.” This faulty characterization leads him to find a correlation between the classical “fonds” and the “collective record groups” of the U.S. National Archives that would congregate the records of low level administrative units “such as the committees or commissions of Congress that have certain characteristics in common”⁷² together into a multi-provenancial record group.

With respect to the archival construct groupings used in Prussia and the Netherlands, Schellenberg describes these as being produced by registry offices, which provide centralized record keeping services. According to Schellenberg, the American administrative structure is comprised by administrative units at the bureau level, and so this approach would result in groupings too numerous and varied in their form and character. Therefore, with the alternatives considered and generally rejected, the U.S. National Archives devised the record group unit, tailored to the needs of this institution, with records allocated by archival edict to their grouping “according to their relation to a few broad subject fields. . . [the] subject-matter relationships

⁷² Ibid., 181-182.

considered for this purpose [being] defined mainly in the terms of the general functions of the agencies that created the records.”⁷³

The way in which the record group concept fit into overall repository management was later explained in a 1964 article by Oliver W. Holmes, also an archivist in the U.S. National Archives.⁷⁴ Holmes’ article: “Archival Arrangement--Five Different Operations at Five Different Levels” presents the record group concept as central to a modern approach to arranging records, not in terms of a passive analysis and treatment of creator context, but as a means and procedure for integrating the creator context and the repository context with respect to the overall handling of records within the administration. Under Holmes’ characterization, the record group is the central feature in a new version of an holistic approach to archives, made possible, in essence, by extending the open state of records past their active life span to include the time at which they achieve archival status. As a result, the repository then becomes a part of the creating context. Just as the creators in various departments and offices throughout government had played their role in organizing the active records of administration according to their own needs, so too would the repository thereafter play a role as creators of archives over these same records when their initial administrative utility had waned. The repository thus acquires theoretically sanctioned licence to alter the records, for example by forming record groups from provenancial constructs, in order to facilitate repository management and to enhance the research utility of the records.

This reinterpretation of the purpose of archival handling forms the basis of Holmes’ presentation of the five levels of arrangement structure. The pivotal level in this structure is the record group, which is established by an amalgam of criteria associated with both of the relevant contexts: the administrative creation context and the context of repository management. Holmes

⁷³ Ibid., 183.

⁷⁴ Oliver W. Holmes “Archival Arrangement--Five Different Operations at Five Different Levels,” American Archivist 27 (January 1964).

provides his own explanation of the reasoning behind the record group concept:

Before the National Archives began using the term "record group" the Public Record Office in Great Britain was using the term "archive group" to designate the records of an entire agency, no matter how large, including the records of entire ministries. The British practice, we believed, if applied in the National Archives, could lead sometimes to groupings too large for administrative convenience. We thought it better to divide the records of such large "agencies" as departments into a number of separate record groups, usually reflecting the bureaus within departments and of "convenient size" for administration.

Jenkinson had used the term "Archives Group" as a translation of the French term "fonds," with the purpose of applying the classical term in his own contemporary circumstances. The U.S. record group, as taken from Holmes' characterization, however, is a significant departure from the classical notion. Unlike the fonds and the archives group, it is a grouping of records that "usually" reflects a certain creation context, but is determined primarily on the basis of "convenient size." This re-definition permits dissecting what would otherwise be an organic whole, if it is too large for convenient handling. As Holmes goes on to then discuss in the context of the Continental concept of *fonds d'archives* (which he incorrectly distinguishes as being definitively distinct from the Jenkinsonian concept of an "archives group"), the option of manufacturing sized groupings according to administrative need within the repository goes both ways:

As applied in practice, the records of any subordinate office that kept records, no matter how small the office, were considered a "fonds." This was going to the other extreme of "convenient size," and the "record group" principle as defined in the National Archives united the records of subordinate offices under their superior offices, usually up to the bureau level. Also the records of small though essentially independent satellite agencies were often included with the records of major agencies to which they were related. Many smaller fonds . . . were grouped together into what became known as "collective record groups," of which a number were established. There would otherwise be thousands of fonds. Thus, the National Archives, partly for administrative convenience has aimed at the intermediate level in establishing its record groups.⁷⁵

⁷⁵ Ibid., 166-167.

Under this “Goldilocks” approach to record arrangement, then, the deciding factor for determining a record group is that it is “not too big” and “not too small,” and that it either is a natural archival unit, is a segment of such a unit, or is the product of combining several such archival units together. The record group is therefore a unit which is a product of both the creator and the repository context, and marks a transition point in the five levels of arrangement between the lower levels of structure--series, filing unit, and document--determined by creation context, and the highest level of structure--arrangement at the level of the repository as a whole--determined by the context of archival management. Under any traditional notion of the fonds, the creating context and the archival context remain two separate entities. This leaves the structure of the fonds to be a product of creator activity over active records. Under the National Archives approach, this creator generated structure might remain intact at lower levels, but at the point where it interferes with good repository administration, primarily because of awkward size, it is shaped to fit into a distinct archival structure.

From the perspective of the National Archives, this was perhaps not the act of archival sacrilege that it might appear. Record volume in this situation was a significant problem and tied to this was the issue of storage. At the time that the record group approach was devised, the task of determining an arrangement structure for archives did not only involve establishing the unit as an archival construct, but also assigning its placement in the storage area of the repository, because the records of a particular group would be kept together on the shelving. (Although this was not following any traditional directive. In fact, the Dutch archivists specifically note that it is not necessary to store records in accordance with their archival arrangement.⁷⁶) This meant that space would have to be reserved for future accessions of records expected to come from an active creator. The need to apportion the shelving space efficiently, particularly in situations of high volume, was a primary motivation for the U.S. National Archives devising the record group

⁷⁶ Muller, Feith, and Fruin, 156-158.

concept, and an exculpatory factor for the decision to over-ride natural archival structures and claim licence to manufacture levels of arrangement structure according to size and therefore shelf extent. As well, it must be remembered that the National Archives is also in charge of managing all aspects of records for the government. As such, their shaping of the archival record to suit the practical needs of the repository can be viewed from their perspective as taking place within the context of creation and therefore a further step towards the development of a comprehensive and efficient records management program. There is, however, from the archival perspective, the undeniable fact that this approach is interfering with record nature.

The alternative of making a different kind of adjustment to the traditional concept of the fonds to remedy the situation of volume and awkward size had not been fully explored in the U.S. endeavour, primarily due to misinterpretation and premature dismissal of the fonds concept in its traditional forms. This alternative was later explored by Michel Duchein.⁷⁷ Duchein proposed that what is needed is criteria for defining the conditions under which a particular subordinate administrative unit within a complex administration would qualify as the creator of a separate fonds. Describing the American record group as operating most commonly at the level of the "basic administrative cell," he supports their adaptation of the fonds concept as possessing "no fault other than openly admitting in the definition of *fonds d'archives* to a lack of strictness which though most universal was carefully hidden elsewhere."⁷⁸ Duchein's approach is to remedy this "lack of strictness" while still maintaining the more traditional concept of the fonds by means of a set of criteria that designate fonds creating units on the basis of their administrative position within the complex.

He approaches the problem of devising the necessary criteria through the alternatives of a

⁷⁷ Michel Duchein, "Theoretical Principles and Practical Problems of Respect des fonds in Archival Science," *Archivaria* 16 (Summer 1983): 64-82.

⁷⁸ *Ibid.*, 70.

maximalist or minimalist position on what constitutes a fonds. According to Duchein, from a maximalist position a fonds is described at the highest level “by considering that the true unity of functions (to which is linked, let us not forget, that of archival fonds) is situated at the top. . . . By contrast, the minimalist position consists in reducing the fonds to the level of the smallest possible functional cell, by considering that the true organic ‘whole’ of archives results from the work of this small cell.” In this search for reasonable parts within an unmanageable whole, he notes that the criteria to be used must be geared to ensuring that the fonds designation is not assigned too low or else there is a risk of “depriving the notion of fonds of any real meaning.” He notes:

Any ministry or institute office certainly creates archives which are, at the time of creation, distinct from those of other offices of the same ministry or of the same institute, but the various archives are closely interdependent and can no more be considered autonomous than can the office itself.⁷⁹

The purpose of the criteria would therefore be to locate a precise place in the hierarchy for those administrative units which are subordinate fonds creators. This was an adaptation of the criteria for locating embedded fonds structure within an encompassing fonds which had been first introduced by the Dutch archivists and then elaborated by Jenkinson. The Dutch Archivists had proposed this criteria in terms of a sphere of authority delegated from above and evidenced in the records. Jenkinson generalized this notion, and incorporated it into his definition of a fonds as an organic whole “resulting from the work of an Administration which was . . . capable of dealing independently, without any added or external authority, with every side of any business which could normally be presented to it.”⁸⁰ Jenkinson then specifically excluded official credentials as a criterion for determining authority sufficient for fonds status. However, Duchein rejects as imprecise the criterion offered by Jenkinson. According to Duchein, no administrative entity has this latitude of action, “for all administrative procedure involves actions taken

⁷⁹ Ibid. 69.

⁸⁰ Jenkinson, 101.

successively at several levels which are interdependent," and he maintains that, in fact, official credentials provide the required precision.

Duchain therefore proposes a check-list of qualifications that would restrict which administrative units might be eligible to receive the status of a fonds creator. Paraphrased from Duchain, the limiting conditions include having a title, powers, and a place within the administrative hierarchy which are all set out by law or regulation, an internal organization which is regulated by an organizational chart, and a responsible head "possessing the power of decision to his hierarchical level. In other words, the head must be able to treat the affairs within his jurisdiction without having to submit them automatically to a higher authority for decision." Duchain then goes on to note: "Obviously, this does not mean that he must possess the power of decision for *all* matters; certain important things may be submitted to a higher level of the administrative hierarchy. But in order to create a *fonds d'archives* which is its own, an agency must possess the power of decision at least for *certain* things." In summary, the effect of this set of criteria is to restrict assignment of fonds status within a complex bureaucracy to those administrative units that have a documented mandate, authority, hierarchal status, and a formal internal structure. Once the units that fulfil all criteria are designated as fonds creators, the result is a "*hierarchy of fonds* corresponding to the hierarchy of creating agencies, involving the subordination of certain fonds relative to others"⁸¹ (a notion put forward earlier by Jenkinson.⁸²)

This is a brave offering to the debate. Of particular note is its highly governmental tone of articulation, in that the majority of the criteria rest upon documentation in the form of decrees, acts, laws, and regulations. However, for organizations outside of government it is unlikely that this particular trail of paperwork would be attached to branches within a complex administration. Clearly, the criteria are set out for organizations that operate with a high level of bureaucracy,

⁸¹ Duchain, 70-71

⁸² Jenkinson, 102.

which is characterized by adherence to fixed rules and a formal hierarchy of authority. Also of note, under this criteria the status of a fonds creator is determined from the top down, because it is at the upper levels of administration that the decision is made and the official sanctions enacted, either spontaneously or with archival forethought, that bestow the qualifications to subordinate units necessary for a fonds creator designation. Generally, then, the criteria define record creators as administrative entities independent of the role played by the records they create as instruments of administration.

This feature of Duchein's proposal is problematic, because while it may be the case in government that a particular set of administrative circumstances generally results in an administrative unit that produces a fonds-like construct of records, this appears to be not always the case, at least outside of government. Debra Barr cites typical examples from her work with the archives of the Anglican Diocese of British Columbia where the Duchein criteria would either not assign fonds status to administrative entities within the Diocese which arguably should receive this status and, alternatively, examples where fonds status would be assigned because the credentials were in place, but it should not be assigned within the context of the Diocese archives.⁸³ This happenstance is likely when the accountability of the creating unit is not as crucial as might be the case in government administration, because it is with a need for accountability that both the credentials are assigned and the records are attached to the particular unit of administration. As previously noted, while the extreme complexity of government administration offers a certain set of problems against which some ultimate notion of the fonds concept must test sufficient, a general procedure for determining hierarchical fonds structure cannot be composed to address these problems in such a manner that it then does not address less bureaucratic circumstances.

⁸³ Debra Barr, "The Fonds Concept in the Working Group on Archival Descriptive Standards Report," *Archivaria* 25 (Winter 1987-88): 163-170.

As well, and not only to address the rather dismissive tone which Duchein adopts towards Jenkinson's proposal that independence of authority be a criterion for determining a fonds creator, something must be said about the manner in which he, himself, deals with this issue. The notion that the head of the administrative body need not have executive authority over *all* things, but should have authority over *certain* things is ambiguous, to say the least, and lends weight to his own argument that independence of authority may be too relative a concept to serve as a suitable criterion for determining a fonds creator.

However the question then arises, that if administrative credentials cannot be sufficiently generalized, and authority cannot be sufficiently specified--to the extent that either may provide reliable criteria for establishing a lower level fonds creator--what criteria will serve in this capacity as an alternative to fonds by record group edict? Or to open the boundaries of the issue more fully, what is an appropriate structure to be assigned within a complex fonds, and how should it be assigned?

There are two routes to find a solution to this question, and both arrive at the same destination. One pathway begins with the repeated appearance in theoretical discussions of a thorny problem that will beset any approach that would attempt to fix a coherent provenancial structure of arrangement on the records of a complex bureaucracy. This is the commonplace occurrence of change, both to the administrative units within the bureaucracy and to the functional activities of those units, and these changes happen not always at the same time or in the same way. Departments are established and abolished, amalgamated, moved, and divided. Functions are created and assigned, merged, transferred, and split. So where do the records belong in terms of creatorship in this shifting terrain, not only in terms of which level in the structure but also in terms of what place across the designated level?

This issue was recognized early on in discussions relating to the fonds, and there is some mention of it in the manual of the Dutch Archivists. They note that, “when an administrative body is abolished and its rights or functions pass to another, the archival collection, which is the reflection of those functions or rights, goes with it. It has always been so.”⁸⁴ The case of functions that are split receives more extensive discussion in the manual, because it brings two principles into conflict.⁸⁵ One of these principles is that the records should follow the transfer of function; the other is that the records should be maintained as an organic whole. However, as the Dutch archivists note, if a record construct is split to follow a function transferred from one administrative unit to two, then the whole is broken apart. In the end they decide in favour of respecting the integrity of the construct, and advise that the records associated with the split and transferred function should be deposited with one of the successors of the function, and the other successor provided access. However, they also comment that if there has been a split of the records in such circumstances, there is less need for concern if it has occurred over a natural juncture in the fonds. Therefore, the general advice is to not divide a record construct, but if it has been divided this is not necessarily a bad thing, depending on how it was done. It should be recognized, though, that the Dutch archivists were operating in an administrative environment that was not subject to the commonplace of change that marks modern government. This can be seen by their guidance on the issue of record transfers to the archives. They direct that transfers should be made on a regular basis up to the point that there was an important administrative change. “But when such a change has not taken place for twenty-five years, the documents older than that should be transferred to the archival depository.”⁸⁶

Perhaps the pace of administrative change had already increased some years later when Jenkinson was writing his manual, as he discusses the issue more extensively. This discussion,

⁸⁴ Muller, Feith, and Fruin, 22.

⁸⁵ Ibid., 39-40.

⁸⁶ Ibid., 44-45. [Actually, the authors advise that this should be taken as an average, with some records, such as those from the Registry Office, remaining in the place of origin for thirty or forty years (p. 47)]

however focuses on the question of whether or not an unbroken line of custody can be traced through the changes, rather than dwelling exclusively on the issue of who should be attributed which records.⁸⁷ Jenkinson concurs with the stand of the Dutch archivists in cases involving the simple transfer of functions from one administrative unit to another; the archives follow the functions.⁸⁸ In the more complex situation of functions split between two successors, Jenkinson's advice is that if the records are used for reference only by the successor, then they should still be assigned to the old administration. If, however, the new administration (or administrations) adds to these records as well as referencing them, then they become a part of the successor's archives. According to Jenkinson "an Archive belongs to the last Administration in which it played an active part."⁸⁹

This issue of administrative change was a particular problem for the U.S. record group approach. As noted, this approach had been devised specifically to control the size of archival groupings, not only to simplify processing, but also to ensure efficient management of storage space. However, it did not work--because of functional change. If space were set aside for the records of one particular creator in a group, and then this creator was later abolished or its functions transferred out of the sphere of that record group, then the space set aside would be left vacant. If, instead, the creator took on new functions from those formerly carried out by a creator in a different group, the space set aside would be insufficient. It was not until the 1970s that the notion of random storage locations linked to location finding aids was seriously considered,⁹⁰ a notion now commonly appreciated because it is the method used by computers for efficient memory storage.

⁸⁷ Jenkinson places heavy emphasis on this issue of a line of custody for archives, under the precept that an unbroken line of custody was crucial for protecting and validating archival values.

⁸⁸ Jenkinson, 32.

⁸⁹ Ibid., 103-104.

⁹⁰ Carl Vincent, "A Case Study - The Record Group: A Concept in Evolution," *Archivaria* 3 (1976/1977): 9.

However, as Carl Vincent noted, even aside from the storage problem, there is still the problem for record groups of how to arrange the records affected by functional transfers in the administration. In 1976 Vincent was exploring this issue with respect to the record group concept as it was used in the National Archives of Canada, which had followed the American example in segmenting their holdings into well-sized record groupings. Each time a function was transferred the records followed the function, and each different administration that used the records in the course of carrying out the functions would add to them, and perhaps reorganize them to suit the record-keeping procedures of their own unit. According to Vincent, this leaves the archivist arranging such records faced with a choice between two evils:

To which record group files of this nature should be assigned may require an arbitrary decision by the archivists directly concerned. . . . The selection of an archives group is often made on a perfectly *ad hoc* basis, according to the archivists' judgment as to which record group is the most logically appropriate. The very real risk is of either robbing the records of proper and meaningful administrative context or destroying the original arrangement of the series. It is difficult to see how it is possible to avoid one or both of these situations, at least to some degree.⁹¹

This brings into the debate the issue of original order, which is the arrangement of records within the fonds, as it was established by the creator. This order may have been based on a good classification scheme used well or used badly, a bad scheme used in any number of ways, or on no scheme whatsoever. Regardless of its state, it is the internal ordering of the fonds construct, and it is likely to be affected by administrative change, with one order established over the records in one creator context, and a different order imposed in a successor context.

The issue of original order has been a focal point in theoretical discussions. Interestingly, these discussion have almost universally dwelt on an interpretation of original order as the structure of records below the fonds level, despite the fact that in situations involving the fonds of complex organizations, such as a government, it could be strongly argued that the task of

⁹¹ Ibid., 5.

locating subordinate fonds creators is a search for original order within the encompassing fonds. However, this has not been the focus. Instead it is an issue of how to treat the series and files of an archival unit that is, or has been designated, a fonds; that is, is it necessary to respect the internal structure of a fonds in the same manner that the external structure is respected?

For Vincent, and many other archival theorists, it is a matter for concern that the record group approach to arrangement entails that, in situations of multi-creatorship, the records can not be either maintained or else properly restored to some objectively determinable original order, because this constitutes a violation of the archival principles associated with the fonds concept. This viewpoint, however, is not held by all theorists; there is and always has been some measure of equivocation over whether or not the principle of *respect des fonds* extends inwards to direct that the internal structure of records within the fonds be respected as well as the external structure which isolates the fonds from the records of other creators.

This equivocation can be traced back to the works of the traditional theorists. When the arrangement principles of the Dutch manual were being established amongst the archival panel of which Muller, Feith, and Fruin were a part, there was extensive discussion on whether or not original arrangement should be preserved. This discussion centred on the issue of ordering that appeared unsatisfactory according to the opinion of the archivist. As noted in the text:

There was divergence of opinion on one point. "Was it right," it was asked, "to make the arrangement of the archival collection dependent upon its old and sometimes defective organization, even when secretaries with little experience had created an organization which did not correspond to that of the administrative body? Would it not be more correct to follow entirely the organization of the administrative body itself, which after all had been the pattern for the organization of the archival collection?"

The decision on this point was that the purpose of arrangement is to deal with the organization of the records, not with the organization of the administration. The Dutch archivists

note that:

It is scarcely conceivable that even the most inexperienced clerk will have created an arrangement which in the main conflicts with the administrative organization; it would have been simply impossible in the long run to combine the documents received by different independent branches of the administrative body. But even if this had unexpectedly been done, it would still be that arrangement which must furnish the basis for the new arrangement.

The stance taken would seem to be quite clear; the original order of the records within a fonds should be preserved. However, the next principle set forward in the manual directs the procedure to be taken in order to determine whether or not the original order is, in fact, to be preserved:

17. In the arrangement of an archival collection, therefore, the original order should first of all be re-established as far as possible. Only thereafter can one judge whether, and to what extent, it is desirable to deviate from that order.

This rule does not rest on a slavish attachment to the old organization of an archival collection; it does not demand that the old order be restored on the ground that it is not in itself susceptible of improvement; it admits, on the contrary, that there may be occasion to deviate from that old order.⁹²

The improvement which they have in mind deals with corrections to obvious mistakes and to errors in judgment or procedure which may have led careless or inexperienced administrators to deviate from what would appear to be the order established by those who first organized the records. It would seem, then, that the manual envisions only a single order for a particular set of records: that which was established in the first creating context. In the modern circumstance of potentially multiple interpretations of successive and legitimate original orders, it is difficult to obtain guidance from this picture of a simple static construct which offers itself up for timeless perfectionizing.

⁹² Muller, Feith, and Fruin, 57-60.

Jenkinson also deals with the issue of records that “represent a complete absence of any arrangement by the original compilers, other perhaps than filing in a rough chronological order,” and he asks the question, “Is the Archivist ever justified in breaking up Original Files or a well-established original order even when he is convinced that it is the result of either accident or of lack of design in the time of the original compilers?” His judgment on the matter is the product, not of principle, but personal feeling, “In favour of refusing to do more than to re-arrange on paper; leaving the physical arrangement, where there is a definitive arrangement, . . . in the state in which we find it.”⁹³

Therefore, these traditional theorists give no firm answer on the issue of original order, which in itself is something of an answer. There is obviously a sense of regard felt for the value of the original order of records within a fonds, when this order is a good one according to archival opinion, when it is consistent throughout. However, original order within the fonds is not accorded the sanctity received by the fonds construct itself, because they are all willing to seriously entertain, if not endorse, the prospect of altering this order.

Archival literature since then indicates that, in some factions of the archival community, all of which generally embrace the conceptual sanctity of the fonds, this lower level of regard for internal structure deepens with the passage of time and the rise of modern problems. The first of the theorists to openly disclaim sanctity of original order was Schellenberg, who authored the initial volume of published procedures used in the U.S. National Archives. His instructions are similar to those of the traditional theorists in that he advises that generally the original order should be maintained. However, “if the arrangement given records by the originating office is unintelligible or one that makes reference service very difficult, the archivist may devise a system of his own.”⁹⁴

⁹³ Jenkinson, 113-114.

⁹⁴ Schellenberg, *Modern Archives*, 186.

This not only advocates alteration of original order, it introduces an additional criterion for judging and altering record structure, in addition to the size criterion used to establish record groups: the utility of the records for research purposes. This is consistent with the approach taken by the U.S. National Archives generally that the archival processing and use of records in the repository context be an active factor in shaping final archival arrangement. Under this approach, records are transferred to the archives to be processed, preserved, and used, and therefore practicalities associated with these activities constitute good grounds for altering the record--as always, with due consideration for the link between creators and their records, but also with a higher degree of consideration for efficiency in the repository context. If a different order seems more useful for reference, according to the judgment of archivists whose business it is to recognize the utility of archives, then the order should be changed.

Holmes supports this approach in his discussion of arranging records according to an overall repository plan. With regard to the arrangement of files, he states:

A final type of operation that may be encountered in the arrangement of file units is the deliberate reorganization of these units in cases where an arrangement different from the original one would seem to serve more efficiently to meet long term reference demands. . . . This is physical rearrangement, of course, but it is the simplest sort of rearrangement and does not really violate the integrity of the files.⁹⁵

The distinction between respect for external fonds structure and internal fonds structure was later elevated to theoretical status in the most recent in the series of general treatises on U.S. archival practice, presented by Frederic Miller.⁹⁶ He distinguishes between two "distinct but related systems" of arrangement. One of these involves arrangement by provenance, which is the organization of records according to their links with a creator and as this unit of records occurs

⁹⁵ Holmes, 175.

⁹⁶ Frederic M. Miller, Arranging and Describing Archives and Manuscripts (Chicago: Society of American Archivists, 1990).

within or as a record group. This system of arrangement addresses the principle of *respect des fonds*. The other “system” involves arrangement by filing structure, which is the internal organizations of the record unit, otherwise known as the original order.⁹⁷

According to Miller, as a result of this distinction between the two “systems of arrangement,” the archivist is not violating the sanctity of the fonds by altering the order of records, because the fonds and the record order are governed by different arrangement principles. The only real constraint he recognizes against altering original order is that “the work is extremely labour intensive.”⁹⁸ As Miller explains:

Arrangement by provenance has no direct relation to the internal order of individual series or the arrangement of series with respect to each other. Arrangement by filing structure, in contrast to arrangement by provenance, is concerned with the reality of sorting, grouping, and shelving the records themselves.⁹⁹

This modern lack of regard for original order is not restricted to adherents of the record group approach. Dealing with a more traditional notion of the fonds concept, Duchein comments:

If it is tempting for the archivist to keep whatever arrangement was given to the documents by the agency which created the fonds, this temptation comes up against numerous difficulties which ought not to be underestimated. One of these difficulties is basic: the arrangement given the documents by the creating agencies is never an arrangement conceived over a long period of time. Its usefulness is essentially functional, pragmatic, and not historic. It corresponds, therefore only rarely with the methods of archival arrangement which bear in general on fairly long chronological periods.¹⁰⁰

Under most contemporary notions of arrangement, the concept of archival arrangement would not be contrasted to original arrangement, given that the purpose of archival arrangement is to preserve the linkage between records and the creators of records, who are the source of

⁹⁷ Ibid., 60.

⁹⁸ Ibid., 75.

⁹⁹ Ibid., 64.

¹⁰⁰ Duchein, 78-79.

original order. But it would seem, as Duchein continues in his discussion, that the approach he takes stems from the thorny old problem of administrative change, and the difficulty in this circumstance of determining a single original state for the record organization. This can be seen from his presumption that the value of the original order is firmly tied to its stability. As he continues:

While admitting that this difficulty may be avoided if an arrangement of the creating agency is stable over a fairly long period, other difficulties remain. On the one hand, the arrangement given by the creating agency may bear only on certain parts of divisions of the documents created. On the other hand, the arrangement may be carried out according to principles foreign to archival methods and closer to the arrangement of libraries or research centres . . . and sometimes even contrary to the principles of *respect des fonds*, especially when there is a mixture of documents from different provenances. Let us add that these methods of arrangement are applied by the creating agencies, with more or less strictness and continuity, and that too often the adoption of a new system of arrangement by an agency brings about the dismemberment of the preceding system with a retroactive effect carrying over sometimes for several years. In these circumstances, it would be deceptive and dangerous to try to adopt systematically the arrangement given by the creating agency as the archival arrangement.¹⁰¹

The concept of a record creator violating the principle of *respect des fonds* over its own records is provocative, not only in its oxymoronic essence, but also in terms of how it is used--as a call to action for archivists to literally re-create a fonds to make it appear as though functional change within the administration and multi-creatorship had never occurred. According to Duchein, there would be a clear distinction between the creator status of the originator of an administrative function and successors to that function, so that only the order devised by the originator would be respected, and the changes wrought by successors deemed adulterous to a pristine original condition. In practical terms, such an approach is not generally feasible, as the adulterers often have reworked and augmented the records beyond all hope of reconstruction to the hypothetical original condition.

¹⁰¹ Ibid, 78-79.

If, indeed, this has happened, then Duchein advocates that the archivist first “assure himself that the arrangement given by the creating agency has been effectively realized, continued, and maintained, and has not remained only an intent or vain wish; that the arrangement has been continued over a fairly long period; that it is not incompatible with the principle of *respect des fonds*; and that it encompasses all the documents making up the fonds or section of fonds that is being handled.”¹⁰² If these conditions are not met, then Duchein advocates that the arrangement given by the creating agency, or agencies, be ignored, and that the archivist proceed as if the fonds had no arrangement at all; that is, impose an arrangement on it. Therefore an original arrangement by an original creator is to be respected, if the arrangement is stable and “archival”; a subsequent arrangement by a successor is to be unravelled to the original arrangement if possible, with the successor’s involvement in ordering essentially obliterated; if the complex of creators cannot be unravelled, i.e. if the successor has made the records over in its own scheme and in the course of its own business, then the new order may be kept if the result is as complete as if the successor were the originator; but if this is not the case then all original order or orders may be ignored.

An even more aggressive approach towards original order is taken by Graeme Powell of the Australian archival community, specifically with respect to the records outside of government, particularly personal records. He maintains that there is an argument for maintaining original order in government records, because “government officials would have no confidence in archivists who drastically rearranged their old files, and at the same time the courts would no longer recognize public documents as possessing special evidential value.” However, it is his position that private archives, as opposed to the public records of government, not only may be re-ordered, but that this is generally the appropriate action to be taken in the interests of facilitating historical research, a distinctly Schellenbergian notion only this time applied to

¹⁰² Ibid.

private records. One of his main arguments is that private records are generally not well ordered, and even if they have been well ordered this arrangement is unlikely to suit research purposes. In response to the claim that "just as the arrangement of a department's records sheds light on how the department was organized, the existing arrangement of a man's papers reveals something of his character," it is his opinion that "it may be of slight interest to a biographer to know that his subject was very orderly or very untidy, but this fact could be simply recorded by the librarian in an inventory; it does not follow that he should perpetuate the existing arrangement."¹⁰³

A spirited defence of original order everywhere is provided in Chris Hurley's response to the Powell article.¹⁰⁴ Hurley first of all argues against the notion that there is some difference in quality between private and public archives. Instead, he maintains, the difference is one of quantity. The larger the fonds and the more functions to which it pertains, the more complex is its organization, and it is generally the case that the records of a government are larger and relate to more functions, than those of an individual. But this need not be the case on the basis of the public or private nature of the records. He then presents a list of reasons, both practical and theoretical, that original order should be maintained in all records.

The case for preferring original order can be stated as:

- (a) that other arrangements destroy the evidential value imparted to individual documents or groups of documents by their associations and relationships with each other and with the whole;
- (b) that other arrangements destroy the total sum of the meaning of the whole--the evidential value of the arrangement itself both as to the intention of the creator and as to the last practical use to which the records were put;
- (c) that original order provides a standard form of presentation on the only principle that can be justified to all users;
- (d) that original order allows depositors to refer to the records; and
- (e) that original order will ensure that original internal cross-references remain operative.¹⁰⁵

¹⁰³ Graeme T. Powell, "Archival Principles and the Treatment of Private Papers," Archives and Manuscripts, vol. 6, no. 7 (August 1976): 261-262.

¹⁰⁴ Chris Hurley, "Personal Papers and the Treatment of Archival Principles," Archives and Manuscripts, vol. 6, no. 8, (February 1977): 351-365.

¹⁰⁵ *Ibid.*, 353-354.

Hurley also addresses one central theme that recurs throughout all the theoretical discussion of original order and whether or not it should be altered; the case where the original order appears to be simply bad. In this case as well he argues that the organization established, or not established, in the creation context should be respected.

The best analogy is with the work of the archaeologist who does not abandon principles governing excavation work merely because instead of digging out a well ordered and well planned tomb in which placement and arrangement have been designed by its builders to impart meaning and significance he is working on a rubbish heap; he knows the importance of juxtaposing and relationships between the parts of a whole, even where the whole was never envisaged as such in the first place.¹⁰⁶

According to Hurley, to do otherwise than respect original order, whatever it may be, requires that the archivist impose on the arrangement his or her own opinion of what an appropriate order might be. This opinion is not only subjective, but also contemporary with the era of the archival processing and perhaps out of step with the viewpoint of the times in which the records were created and organized. As well, it is the case that any order illuminates certain relationships within the record construct, and suppresses others. It is better that this choice be left with the creator, so that there is a common sensibility throughout the archival construct. Hurley views the maintenance of this sensibility as a responsibility that the archivist holds to those who may in the near or distant future wish to use the records.

The most that the [archivist] can do is to present the documents with a guarantee that where there was an original order to be discerned the researcher sees it without modification, that he is, therefore, in a position to evaluate what evidence if any he feels it can provide, and that his conclusions can then be tested by other researchers who are guaranteed access to the same fundamental facts of arrangement and juxtaposition. This guarantee does not depend on whether or not the [archivist] himself was able to foresee the kind of conclusion which the researcher might be able to draw from the evidence; it depends on the [archivist] being dedicated to the principle that where an original order could be discerned it has been preserved and nothing has been done which might detract from or add to the significance of any evidential value which it might have.¹⁰⁷

¹⁰⁶ Ibid., 354.

¹⁰⁷ Ibid., 364.

These arguments essentially follow from those used to support the concept of *respect des fonds*. Why, then, should there be any question from a theoretical viewpoint as to whether or not the fonds concept, and the precept for respecting the fonds, covers its internal structure as well as its external structure? In some theoretical circles, apparently there was never such a question entertained.

Tracing back on the origins of the issue--the equivocations of the Dutch archivists, who first renounced the idea of disturbing original order and then proceeded to give a principle setting out how to do it--another version of the fonds concept then evolved in the Nordic archival communities along a different path from that taken in North America. In these communities the guiding concept adopted was the principle of provenance, rather than *respect des fonds*, and the principle of provenance has both an outward application, which is, in effect, the principle of *respect des fonds*, and also an inward application, which is the principle of respecting original order.¹⁰⁸ The outward application therefore determines the external structure of the archival construct, while the inward application determines the internal structure. Together these structures key the organization and relationships which bind records together into a whole, an understanding of this whole being the goal of arrangement. Peter Horsman, a modern Dutch archivist, maintains that the Principle of Provenance is "the only principle of archival theory."¹⁰⁹

This approach is gaining credence in other archival communities as well. In particular, the Canadian community is embracing it. Heather MacNeil uses the term *respect des fonds* as an alternate expression of respect for provenance, interpreting it as a means to preserve both the external boundaries and relationships between fonds and also the boundaries and links between

¹⁰⁸ Peter Horsman, "Taming the Elephant: An Orthodox Approach to the Principle of Provenance," in The Principle of Provenance: Report from the First Stockholm Conference on the Archival Principle of Provenance, 2-3 September 1993 (Stockholm: Swedish National Archives, 1994): 51-63.

¹⁰⁹ Ibid., 51.

records within the fonds.¹¹⁰ According to MacNeil, respect for the inward expression of *respect des fonds* preserves values which the records hold, beyond the value of information held by each record individually. By virtue of this added value, records may stand as proof to bear witness and testify on the broad and complex reality which contextualized their creation and organization. Through context, then, information becomes evidence, and this evidentiary value of records is traditionally described in terms of certain qualities which records are considered to hold, such as inter-relatedness, naturalness, uniqueness, authenticity and impartiality. These qualities are preserved through the original order of record relationships within the fonds.

It would seem, then, that there is a strong faction in the archival community that would hold respect for original order to be a principle as central to archival arrangement as is the principle of respect for the fonds, and that the two principles are essentially alternate expressions of the same concept. Therefore, the problem that Vincent cited with the difficulty in determining some sense of original order with multi-provenance records is a valid challenge to the record group concept. In fact, it is a challenge to any approach that attempts to locate and fix subordinate fonds within a complex hierarchy of fonds, because such an approach is bound to run afoul of the original order in the event of changes to the assignment of functions within the hierarchy, leading to splits in the record constructs.

Vincent himself ends up accepting the situation, reaffirming a commitment to the record group concept and predicting a bright future for it in archival theory, with the proviso that more emphasis be placed on handling the records at the lower levels of structure to localize the affects of administrative change. His advice is to “bring control down to the smallest indivisible physical entity (file).”¹¹¹ This would not radically alter repository management. Vincent had already

¹¹⁰ Heather MacNeil, “The Context is All: Describing a Fonds and its Parts in Accordance with the Rules for Archival Description,” in The Archival Fonds: from Theory to Practice, ed. Terry Eastwood (Ottawa: Bureau of Canadian Archivists, 1992): 204.

¹¹¹ Vincent, 14.

noted, in giving a breakdown of the actual treatment of records, that the two guides to the records in a record group used by the repository were generally the inventory and the "finding aid." The inventory begins with an overview of the administrative place and history of the record group creator unit and a description of the history and nature of the records, but "the bulk of the inventory consists of a brief description of each record series." As for the finding aid, it "is normally geared to the series level."¹¹² Given that, for practical purposes (aside from arrangement on the shelves), the operative level of representation for arrangement is the series, he asks the question, "Is there any reason why a multi-provenance series should not appear in the inventories for each of the record groups in which it might possibly be placed?"¹¹³ The effect of this would be to break the bonds that the record group structure forms over the series, because if it is the case that a particular series is created by administrative units that are allocated to different record groups, then the series would appear in the inventories of both these record groups. There would then be no necessity for trying to break apart series of mixed provenance to attribute parts of them to their different creators, and the series could be left in the order established in its last creator context, which is the only order that may objectively be called original. This procedure would preserve original order and properly attribute a series of records, relating to a particular function in the complex administration, to all of the various creators who successively performed this function and participated in creating, ordering, or otherwise shaping, the record series. There would be no interference with archival nature, and both the internal structure and the external connections of the records would be properly revealed.

At the time that Vincent wrote his article, in 1976, this was already not a new solution to the problem of multi-creatorship. Under a different name and as part of a significantly different approach to arrangement, it had been devised more than ten years earlier in the Australian Archives. First proposed by Australian archivist Peter J. Scott, this approach was known as the

¹¹² Ibid., 7.

¹¹³ Ibid., 15.

“series system,” because it lowered the focus of archival handling from the fonds to the series level.

As was the case with other adaptations to the fonds concept, the series system approach was the outcome of a problem arising in the context of a national government repository. However, the significant problem encountered by the Australian Archives was not volume, which had motivated the record group concept in the U.S. National Archives.¹¹⁴ Here, the problem was administrative change. Over the course of fifty years, from 1901 to 1950, the number of government agencies more than tripled, from seven to twenty-three, and with abolitions included, as well as the creation of new agencies, there were a total of fifty-one changes during this time span.¹¹⁵ This resulted in a complex web of record provenance that the archivists of the Australian Archives were left to untangle.

Australian archivist Clive Smith describes the approach then devised to address the problem as being the product of this confusion of records and functions in combination with a particular set of circumstances in the Australian Archives that allowed for radical innovation:

First, the Commonwealth of Australia came into existence only on 1 January 1901, when the six British colonies formed a federation. Second, the former colonies and the new federation had inherited British administrative and record-keeping practices. Third, the first fifty years of the Commonwealth’s existence were filled with events of sufficient magnitude to change the essential nature of this federation and to create an atmosphere of administrative instability. Fourth, the federal government did not appoint its first archivist, or otherwise take any meaningful steps to manage its archives, until 1944.¹¹⁶

Therefore, as of 1944, there was a newly appointed archivist responsible for establishing national archival policy to deal with many decades of government records which had complicated provenance, but which also were in a well documented ordering of series due to the

¹¹⁴ Clive Smith, “The Australian Series System,” *Archivaria* 40 (Fall 1995): 87-88.

¹¹⁵ *Ibid.*, 88.

¹¹⁶ *Ibid.*, 87.

registry procedure in place in the offices of the Australian government. As a result of this procedure, files are numerically ordered within series, as are the documents within the files, and “these highly ordered systems made it relatively easy, subsequently, for archivists to identify record series, and also to track the movement of items from series to series.”¹¹⁷

Initially, the Australian Archives had attempted to organize their series along the then traditional lines of the records group. As noted by Scott and his colleagues:

The Australian Archives and its predecessors . . . explored a number of methods of accommodating multiple-provenance series to the record group concept. We faced the problem openly at the very inception of our programme of archives administration in 1953, acknowledging that administrative change had “blurred” the definition and outline of record groups

We struggled for more than eleven years to maintain in existence the record group concept, before finally seeing no other solution but the “series system.” In our journey we have explored the various methods suggested by those overseas authorities who had faced the reality of administrative change and prescribed a number of remedies designed to cope with the “malady” of multiple-provenance series and its practical consequences for archives administration.¹¹⁸

Among these possible remedies was the attribution of multi-provenance series to the last in the sequence of their creators, a solution advocated by Jenkinson.¹¹⁹ The authors note that this remedy was rejected for three reasons: “It deprives the earlier “fonds” of important records; it makes the later fonds rather grotesque, with records [possibly] created prior to the establishment of the agency; and it means moving the series to an even further agency, if there is a subsequent administrative change.”¹²⁰ Another possible solution was to create composite record groups, describing records created by a predecessor in the context of the successor. The weakness of this solution was that it addresses only the simplest type of change, involving a single abolished

¹¹⁷ Ibid.

¹¹⁸ Peter J. Scott, C.D. Smith, G. Findlay, “Archives and Administrative Change: Some Methods and Approaches,” Archives and Manuscripts, Part 4, vol. 8, no. 2, (December 1980): 52-53.

¹¹⁹ Jenkinson, 103-104.

¹²⁰ Scott, et. al., 54.

predecessor and a single successor, and it would not properly accommodate any further changes. There was also the possibility of breaking up the series to allot portions of it to the different responsible creating units, another solution offered by Jenkinson. This, however, violated the principle of respect for original order, a principle held in equal regard in the Australian Archives to that of *respect des fonds*.

A final alternative was to leave the records in the order in which they arrived at the repository, and list the series in each of the inventories of all relevant fonds, following the advice of the Dutch archivists,¹²¹ with cross-references between the inventories, following the advice of Jenkinson.¹²² This solution had everything to recommend it. Archival principles would not be violated, the records would be listed on the inventories in their appropriate context, and both previous and possibly future administrative change could be accommodated.

This was the first stage in the development of the series system, and it was crucial because it established the series as a modular unit with potentially multiple legitimate links to different creators. However, the gathering of the series was still firmly seated within the inventory structure, which focussed upon the creator as an administrative unit. Arrangement therefore was still based on the record group concept, with the series then meted out to their appropriate place or often places within the inventories of the various record groups. The Australian Archives staff recognized that, in some fundamental way, this amended record group approach still did not appropriately reflect the reality in which the records were being created and used. Instead, with regard to the procedure to be followed in arranging the records it invoked a conflict between the two central principles guiding their efforts; "Respect for provenance required that all series, including portions of multi-provenance series, be assigned to their correct creating agency, even by breaking-up series; respect for original order required equally that

¹²¹ Muller, Feith, and Fruin, 25.

¹²² Jenkinson, 103.

original record-keeping systems be preserved intact and not dismembered.” The Australian archivists felt that the record group approach, even with the adaptation of multi-listings for multi-provenance series, was forcing the records into an “alien” framework:

As a direct result of administrative change, the administrative structure (provenance) did not match and was out of phase with the record-keeping structure (original order). We saw that the increasing disharmony of the two structures, caused through diachronic structural shifts of varying intensity and scale, had, over time, produced the multiple-provenance effect.¹²³

Therefore the search continued for “a natural control system reflecting the real nature and structure of the records themselves,” which would address this “structural dissonance for the *arrangement* of records,” a dissonance which appeared to require that records both be left in one arrangement so as to respect original order and also rearranged from that order so as to respect fonds groupings.

There were two alternatives then explored. The first alternative was aimed directly at the crux of the problem, which was multi-provenance series. The Archives established a “VP” register for these “variable provenance” constructs, which were then left in their accession order and listed in the register, along with all of the agencies that participated in their creation. In the record group inventories these VP series were then listed as a special category of entry so that links could be drawn between inventories related at the series level. This alternative was not pursued for long, however, because they quickly realized that it did not accommodate the eventuality of currently single provenance series later being transferred to a different agency and moving from the standard category to the special category of a VP series. In this event, the inventories showing such series would have to be reworked to show the change in category. The means for representing arrangement was still not sufficiently flexible to respond naturally to the motility of functions and records that characterized the administrative context.

¹²³ Scott, et. al., 56-57.

However, the innovation of a series-centred control mechanism suggested a different alternative; "it was then but a short step to extend the approach [of registry listing] to *all* series, both to those that were single provenance, to those that were already multiple-provenance and to those that were *potentially* multiple-provenance."¹²⁴ The central innovation of this approach was that information about records would be treated separately from information about the record creators, and that the records would be handled at the series level, as the organic unit of record structure associated with administrative function. Each series would be listed along with all its creating agencies and related series, and each agency would be listed along with all the series associated with it, as well as predecessor and successor agencies. This separate treatment provided a means for dealing with the disharmonious effects of change by, in essence, separating out the two distinct "melodies," that could and did play out to their own distinct beat.

This was the beginning of what would be known as the Australian Series System. At the time that the Australian archivists had reached this solution, in the mid 1960s, most of the necessary elements of the program were already in place. Crucially, the prevalence of administrative change and the need to link records to their various creators while searching for an effective arrangement policy had led the Australian Archives to take an intensive approach to analyzing the different record creating agencies of government. Beginning in the 1950s, they had developed a set of information gathering programs on these agencies, including: a listing of administrative arrangement order--showing the functions and legislation administered by each department; inventories of agencies--listing each agency in terms of its place in administrative structure and dates of operation; a register of agencies--providing standardized information on agency mandates, credentials, history, and relationship to other agencies including predecessor and successor relations; an administrative history chronicle--compiling material from various

¹²⁴ Ibid., 57-58.

sources relating to agencies, including significant changes, special events, and biographical information on central personnel; and, an agencies analysis chart--tracking the routes of administrative change.¹²⁵ This wealth of information provided most of what was needed to draw a full portrait of the administrative context which could then be linked to an account of the records.

As well, the frequency of administrative change had led the Archives to develop a policy of designating the status of creating agency in a manner that was compatible with the series approach. According to Scott et al., the level to be designated had to correspond generally to those units which held, lost, and received transfers of function. This led to a decision in 1962 that a "minimalist" position on creator status would be adopted, so as to include essentially independent offices within departments, "to take account of those elements--subordinate offices, boards, commission, committees etc.--which continue substantially unaltered at times of administrative change and simply move from one department/ministry to another."¹²⁶ The Archives then shifted further from the "maximalist" position in 1965, with a decision that any recognizable administrative unit placed at any level in the administration might qualify as a creating body, with the additional proviso that the unit had a separate record-keeping system, this criterion being included in the definition of an agency.¹²⁷

This means for identifying a creating agency is in direct opposition with the "credentials" approach, as advocated by Duchein, which uses administrative structure to assign fonds status to a record construct. Instead, the Australian approach uses record structure to assign agency status

¹²⁵ Peter J. Scott and G. Findlay, "Archives and Administrative Change: Some Methods and Approaches," Archives and Manuscripts, Part 1, vol. 7, no. 3, (August 1978): 118-126.

¹²⁶ Peter J. Scott and G. Findlay, "Archives and Administrative Change: Some Methods and Approaches," Archives and Manuscripts, Part 3, vol. 8, no. 1, (June 1980): 46.

¹²⁷ Ibid. 48. ("An administrative unit that is a recognizable entity, generates records and has its own independent general record keeping system." Definition as given in the CRS Manual of the Australian Archives, vols. 1 & 2, 1990.)

to an administrative unit on the basis that it is in control of its own record keeping system. As a result, the records are accorded an interesting significance in the role they play to determine levels in a hierarchy of record system creators, perhaps only one of many interpretations of an administration's hierarchical structure, but the one that is obviously most relevant to the record system. This approach to designating creating agencies receives some theoretical support in comments by the Dutch archivists in discussions of record ordering that "it is not the organization of the administrative body but that of the archival collection which should decide." Also, it is consistent with Jenkinson's view that, in defining a fonds, "nothing need be said of the size of the Administration--whether it consisted of one man or twenty--nor of its origin--whether it was created by e.g., a statute or merely grew out of circumstances"¹²⁸ If neither dimensions (which is what determines a record group) nor credentials (which is Duchein's criterion) are to be used to guide designation of creating agencies, what is left except autonomy with respect to the records? Under the Australian approach, then, the designation of creating agency status is contingent on the record system, and not on an administration hierarchy conceived independent of record reality. This results in a natural correlation between record creation context and the records created and kept in that context, and simplifies the procedure of linking series with creators.

This link between series and creators is then determined over the two separate streams of information, one stream dealing with series and their linkage to other series, which correspond to particular functions of government, the other stream relating to the creators, and their successors and predecessors, which fulfil their role within government by administering those same functions. These information sources are maintained and updated separately, and linked through functional relationships. With this separation, it is possible to analyze both creators and records over time through a sequence of changes that may lead to different effects on context and

¹²⁸ Jenkinson, 101, ft. 3.

record keeping. This is the diachronic aspect of the study. The other aspect is synchronic, within one moment of time, wherein the creators and the records may be linked together to draw a line sketch of the relationship between the two entities. According to Chris Hurley the synchronic aspect of the approach allows the simple representation of what diachronically would otherwise be "a complex knot of relations,"¹²⁹ and may also extend to operate on active records, "regardless of custody or location, from the moment of creation and throughout the continuum which would also reflect both past and future changes in status (provenance and control) and record keeping system."¹³⁰ Presentation of the information in the traditional inventory format then requires positioning a particular creating agency and an account of this agency at the head of descriptions for the series in which that agency had a creator role, these series being gathered into the inventory on the basis of the linkages.

It is significant that this approach was crafted by the nature of and in response to the spontaneous problem of change in a complex bureaucracy. The series system was not so much created as discovered by the Australian archivists, under guidance of what traditional theory could offer and the goal of compliance with the spirit of traditional principles. This led them to recognize a natural line of interface between creators and records that accounted for the different effects of change on each, and render change as a predictable outcome of complexity, rather than an anomaly. The result is a complex picture of complex administration, drawn from the significant characteristics of the relationships between the records, between the creators, and between the records and the creators.

Writing thirty years after this program was put in place, Australian archivists Mark Wagland and Russell Kelly reflect on the impact of what is now called the "Commonwealth

¹²⁹ Chris Hurley, "The Australian ("Series") System: An Exposition," Records Continuum Ian Maclean and the Australian Archives, First Fifty Years, ed. Sue McKennish and Michael Piggott (Clayton: Ancora Press, 1994), 163.

¹³⁰ *Ibid.*, 151.

Record Series CRS system” and describe it as “a thriving reality.”¹³¹ There has also been commentary from other national archival communities. Debra Barr of the Canadian community cites Scott’s approach for respecting both the fonds and original order, and comments that “as the history of a series becomes more complex, the links to each context become more important,”¹³² an aspect of complex administration which the CRS is designed to address. Terry Cook, of the National Archives of Canada, notes that “Canadian Archivists wishing to improve their descriptive practices would be wise to investigate each of Scott’s proposals very carefully,” and uses the Australian approach in the development of his argument in favour of a more abstract and less structurally rigid conception of the fonds.¹³³

The response, however, has not been unanimous. Duchein, in particular, expresses serious concern about the Australian series system, commenting that “in this apparently attractive system we recognize very quickly the scarcely touched-up face of the old system used before . . . [the advent of the fonds concept]: the classification by topic. . . . Whatever the sincerity and good faith of those who propose such a deliberate violation of fonds, they are wrong, and we ought not to have any leniency for an error so serious and so fraught with consequences.” However, Duchein misinterprets the nature of the CRS approach, describing its central archival unit of the series as “collections of documents forming a chronological and logical set, whatever their origin.”¹³⁴ This misinterpretation is corrected in another supportive commentary of the CRS system, by Finnish archivist and advocate for the generalized principle of provenance, Raimo Pohjola. He notes Duchein’s concern that “the system suggested by Scott might lead to the return of the old Principle of pertinence as the main principle of arrangement of

¹³¹ Mark Wagland and Russell Kelly, “The Series System--A Revolution in Archival Control,” Records Continuum Ian Maclean and the Australian Archives, First Fifty Years, ed. Sue McKennish and Michael Piggott (Clayton: Ancora Press, 1994): 131.

¹³² Barr, 168.

¹³³ Terry Cook, “The Concept of the Archival Fonds: Theory, Description, and Provenance in the Post-Custodial Era,” Archival Fonds: From Theory to Practice, ed. Terry Eastwood (Ottawa: Bureau of Canadian Archivists, Ottawa, 1992), 68.

¹³⁴ Duchein, 71-72.

archives,” and then continues: “To my mind, Scott's model does not involve such a danger, because the administrative context of a series is maintained by descriptions. Scott is perhaps the first to present the idea of the *fonds* as a theoretical model and the idea of arrangement by external provenance through description.” Pohjola also notes that “Duchemin did not accept the thought of the *fonds* as a theoretical construction.”¹³⁵

This notion of the fonds as a theoretical, or abstract, construction lies at the heart of the CRS approach. Within the encompassing fonds of the records of a complex administrator, such as a government, there is the potential for a flow of functions and records throughout the environment that provides the external context of the records. The CRS approach allows this flow to operate dynamically, with each discrete change reflected through an expanding chronicle of functional and documentary history. The traditional fonds approach, on the other hand, and the record group approach with it, instead would require that this internal structure of the encompassing fonds, which is the external context of the records, be fixed and resistant against inevitable change.

Hurley has proposed that this dynamic and abstract aspect of the approach, which allows series to move freely within the structure, need not be characterized as series based. Instead, he maintains that the crucial factor in the Australian approach is the separation that it makes between the handling of context and record keeping.¹³⁶ American archivist Max Evans, on the other hand, holds that there is a reason for the series being the locus of an approach that separates treatment of records and creators, and argues in favour of maintaining this treatment within an approach based on record groups.

¹³⁵ Raimo Pohjola, “The Principle of Provenance and the Arrangement of Records/Archives,” in The Principle of Provenance: Report from the First Stockholm Conference on the Archival Principle of Provenance, 2-3 September 1993 (Stockholm: Swedish National Archives, 1994), 94-95.

¹³⁶ Hurley, “The Australian Series System,” 162.

Evans sees an enduring utility for the record group concept in the administration of archives, as a means to subdivide "undifferentiated bodies of records into ever smaller units until the appropriate unit for description emerges." However, he advocates adapting the record group approach along the lines of the series approach, because as it stands the record group concept is inadequate to meet "the access needs of researchers." This inadequacy stems from the fundamental confusion of records with administrative organizations, a confusion that results from the standard inventory format for record groups, leading to "the chief defect in the use of the record group concept, namely, an assumption that archival records, like the agencies that created them, belong in a hierarchy."¹³⁷ According to Evans, while it is the case that agencies operate within the context of an administrative hierarchy in relation with superior and subordinate units, records instead relate to a different kind of structure--that of an organism, and the level of the organism structure is the series:

The record series is an organic unit: it can be decomposed for descriptive and access purposes into "molecular" (file) and "elemental" (document) units, but its internal structure cannot be changed without destroying its integrity and its essential nature. Like any organism, however, the series may be part of a "community," organized as such because each member has an affinity to the others in the same group; nevertheless, the group remains an artificial (and not an organic) body. And, like a living thing, a series may be affiliated with more than one community.¹³⁸

Evans characterizes the record group as an example of such a community; it provides the contextual background to a particular grouping of organic series. However, "The 'arrangement' of one series in relationship to another, as reflected in an archival inventory [of a record group], is entirely arbitrary; it is merely a device to reveal the administrative and functional context--the provenance--of a record series." Therefore, the record group representation of provenancially related series, structurally fixed within a particular creator context, "is an artificial creation made

¹³⁷ Max J. Evans, "Authority Control: An Alternative to the Record Group Concept," *American Archivist*, vol. 49 (Summer 1986): 251.

¹³⁸ *Ibid.*, 252.

up of the sum of many discrete, 'free', organic units--the various series--which are organized on paper within the inventory in an arbitrary, although supposedly rational fashion."¹³⁹

What Evans is describing is again an issue that arises primarily in the context of complex administration. In the situation of a simple fonds, with the basic levels of item-file-series-fonds, there is no extensive structure intervening between the series and the fonds. As a result, the series in fact may "float free," without this attribute being obvious or significant. It is only in the situation of multiple embedded fonds that there arises the implication of a correlated hierarchical record structure overtop the series that is incompatible with the nature of the records.

The Australian approach deals with this problem by leaving the fonds designation at the superordinate level, and using the creators and their links to series as the basis for determining internal provenancial structure. Under this approach there is no need for intervening structure between the series and the fonds. What structure does occur is administrative and this information can be derived from the chronicle of agency profiles and history. Evans solution is similar, although presented under an alternate interpretation of an "authority control" system. This approach does not address the creators and the records on the equal terms of two streams of information, though. Instead it represents the provenancial relations between series in terms of agencies that, in contrast to the Australian approach, are schematized in the familiar record group format of a constructed and construed hierarchy. This avoids some of the problems associated with the generalized record group treatment of fixing records to the hierarchy, yet still allows the record group concept to apply at the stages of repository management (primarily accessioning and arrangement), which perhaps is necessary given the extent to which the archival holdings of U.S. repositories have been shaped into record groups.

¹³⁹ Ibid., 252-253.

Central within both this approach and that of the Australian Archives, then, is the concept of series as the central unit within the structure of a fonds which, from an historical perspective, is an interesting turn of events. For most of the history of debate centering on the fonds, the level of the series has filled the role of the "middle child," always acknowledged as part of the picture, but somehow, for some reason, taken for granted, and shuffled to the background. Above this middle level in the basic structure is the fonds, comprised by series and protected by the principle of *respect des fonds*. Below it are the files, which make up the series, and the order of the files within the series is protected by the principle of respect for original order. What then, of the series? There is no need to propose a principle to protect its boundaries--its internal and external contexts--because this is provided by the combined effects of the two existing principles. Nor is there a need to protect the ordering of series, because series really have no order; as Evans noted, they are "free floating." Yet through the course of this debate on how to deal with the fonds in the complex extreme, a debate that has now been going on for more than a century, in the end it is the series construct that has come to center stage.

This is not to say that the series level has been ignored. There is some discussion and various definitions of series throughout the literature. Most specifications are drawn consistent with general dictionary definitions of "a number of similar things in a row," or "a number of things of the same class coming one after another in spatial or temporal succession."¹⁴⁰ Generally, there is a focus upon physical criteria and internal structure or ordering, and this is the approach taken by many archival theorists. Holmes defines a series as being composed of "similar filing units arranged in a consistent pattern within which each of the filing units has its proper place. The series has a beginning and it has an end, and everything between has a certain relationship. The pattern may be a simple one--alphabetic, numerical, or chronological--or a complex one, . . . no matter how complex the pattern, so long as that pattern is being repeated,

¹⁴⁰ Thorndike-Barnhart Comprehensive Desk Dictionary; Webster's Ninth New Collegiate Dictionary, s.v. "series."

we still have a single series.”¹⁴¹ U.S. archivist Miller describes a series as “a body of file units or documents arranged in accordance with a unified filing system or maintained as a unit by the organization or individual that created them because of some other relationship arising out of their creation, function, receipt, physical form or use.”¹⁴² A somewhat terse version of this approach to defining series comes from British archivist Michael Cook: he describes the construct as “an organized assembly of archives or records which belong together in a system and which have a common name.”¹⁴³

In the early traditional texts there are scant such offerings of a specific series definition. The term may have been used simply in its generic non-archival sense by the Dutch archivists and Jenkinson, when office practices were very different and prior to the prevalence of file-folding most textual records which is the basis of most modern series, and much of the discussion by the Dutch archivists with respect to a level which would correlate to the series mentions dossiers, registers, and packets, as well as series. When the term “series” is mentioned, however, it appears in a context compatible with contemporary usage.

This is not the view of Linda Janzen, who states “the Dutch archivists did have a very specific concept of series, as a group of records of the same documentary form.”¹⁴⁴ She cites as an example the distinction made in the manual between a “series system” of arrangement, based on documentary form and a “dossier system” based on subject. However, this distinction is not borne out. In the context of discussing the actions which might be taken by a new administrator, the Dutch archivists cite as an example: “Whereas formerly, for example, the deeds and mortgages were put together in a single series, he will make two of them.”¹⁴⁵ Thus, it would

¹⁴¹ Holmes, 171.

¹⁴² Miller, 60.

¹⁴³ Michael Cook, *The Management of Information from Archives* (Brookfield, Vermont: Gower Publishing Company, 1986), 88.

¹⁴⁴ Linda Janzen, “Series: History, Theory and Practice” (MAS thesis, University of British Columbia, 1994), 41.

¹⁴⁵ Muller, Feith, and Fruin, 40.

seem that more than one form may appear in a series. As well, the manual cites an instance where there may be two series of resolutions in an archival collection, in conjunction with discussion on what might constitute the “backbone” of that collection, the conclusion being that the two series of resolutions together might serve in this capacity. This would suggest that the same form may be organized into different series. Therefore, while it is certainly the case that there was a strong correlation between form and series (as, to a lesser extent, is the case today, with series of reports, correspondence, etc.) it was not the case that the Dutch archivists used the term “series” in the sense of it being a set of files associated exclusively on the basis of form. Instead, the “series system” is contrasted in the Dutch manual with the “dossier system” in that the dossiers would be composed of material dealing with a specific situation, similar, it would seem, to a case file.¹⁴⁶

Jenkinson also uses the term “series” in its modern sense, although again Janzen states the he links series to a “group of records of a particular documentary form.”¹⁴⁷ This does not seem to be the case, however, as in his exploration of the second stage of differentiation in the “evolution of archives,” Jenkinson describes this process as being “based upon either the form or the subject-matter of the documents in question,”¹⁴⁸ and then he provides examples in which he specifically names the differentiated units as series.¹⁴⁹ Of significance, however, is a characteristic which Jenkinson does offer as applying to series without exception--the connection of series with function. He states, “In point of fact Archive series must always refer into some administrative Function, because without it they themselves would never have come into existence. A single Archive series may refer into a single function or into two or more, or it may

¹⁴⁶ Ibid., 79-82.

¹⁴⁷ Janzen, 43.

¹⁴⁸ Jenkinson, 26.

¹⁴⁹ There is also some confusion on his use of the term “class” as opposed to “series.” Jenkinson describes “classes” as “each being composed of one of our original and newly-made” series, this then being a term to generalize over series both established by the creator and composed by the archivist. (Jenkinson, 116.)

refer sometimes into one and sometimes another; but refer it must into one of these.”¹⁵⁰

Schellenberg takes a similar view. In his text on archival handling he states: “A series may be defined as a group of documents, folders, or dossiers that has been brought together for a specific activity,”¹⁵¹ and later elaborates on this point.

Regardless of what factor led to the creation of a series, it is likely that the series was created in the course of performing a particular kind of action. . . . If, for example, the series was established because a group of records was arranged according to a particular filing system, such a series is likely to embody records resulting from the actions of a particular office. Or a series consisting of a particular physical type of records is likely to denote a particular class of actions, for physical types are created in relation to classes of actions--reports for reporting, questionnaires for questioning, and so forth. Or a series established in relation to a subject is likely to reflect action in relation to the particular subject of concern to an office or an office.¹⁵²

As well, Terry Eastwood, in the course of determining a means for relating the parts of the whole within the internal structure of a fonds, states that “the most obvious solution is to define series not as a classified system but as a classification device to group all the documents accumulated in the course of an agency’s accomplishing a particular function.”¹⁵³ This suggests that a functionally-based interpretation of a series is not at all inconsistent with those other structurally-based definitions, which are simply describing the effects that its functional nature has on the series unit.

The discussion in archival theory regarding function, however, is not exclusive to the series. Throughout the literature, from the Dutch archivists to contemporary times, there has always been an appreciation for the central role that function plays in the creation and use of archives--the Dutch archivists in 1898: “an archival collection comes into being as the result of

¹⁵⁰ Jenkinson, 111.

¹⁵¹ Schellenberg, 60.

¹⁵² Theodore R. Schellenberg, “Archival Principles of Arrangement” *American Archivist* 24 (January 1961): 11-24.

¹⁵³ Eastwood, 11.

the activities of an administrative body . . . [and] it is always the reflection of the functions of that body";¹⁵⁴ Schellenberg in 1956: "the subject-matter relationships considered for [the purpose of allocating textual records by record groups] are defined mainly in the terms of the general functions of the agencies that created the records";¹⁵⁵ Duchein in 1983: "The archival document is present in the heart of a functional process, of which it constitutes an element, however small it may be";¹⁵⁶ and, most recently Eastwood in 1999: "The notion of the fonds of an entity is . . . closely tied to the notion of the functional nature of records."¹⁵⁷ The central role of function in archives would therefore appear to be one of the few points of general agreement throughout discussions on the nature of archives since the widespread adoption of the fonds concept in the nineteenth century.

The concept of function has been brought forward, not only as a central characteristic of archives in general, and series perhaps in particular, but also as a means for addressing the problem of isolating a fonds with respect to provenance.¹⁵⁸ According to MacNeil, "the external structure of the fonds is determined by the provenancial relationships that have shaped the fonds' creation, accumulation and use: the administrative and custodial context in which a fonds as a whole and any subdivision of it, determined on the basis of provenance . . . is created; and, more specifically, the functions, activities, and transactions that give shape to it."¹⁵⁹ However, it is a more complicated issue to use function as a creator-determining criterion at the level of the fonds, as opposed to the level of the series. At the level of the series there is a concrete link between a creator fulfilling a specific function at a particular time and the organically segmented and sequenced series of records that have related in the past and still do relate to that function. At

¹⁵⁴ Muller, Feith, and Fruin, 19.

¹⁵⁵ Schellenberg, 182-183.

¹⁵⁶ Duchein, 76.

¹⁵⁷ Terry Eastwood, "Systematic Identification of Archival Documents," Paper delivered at the Annual Conference of the Association of Canadian Archivists, London, Ontario, June 1999, TMs (photocopy), School of Library, Archival and Information Studies, University of British Columbia, 12.

¹⁵⁸ Heather MacNeil, "The Context is All," 202.

¹⁵⁹ *Ibid.*, 204.

the level of the fonds it is necessary to see these functions in groups, as opposed to free-floating and in one-to-one correspondence with a single record construct, and therefore some separate criteria must be found to link functions with the fonds construct as a whole.

The notion of competence provides this additional criteria. Luciana Duranti defines competence as the authority and capacity of carrying out a determined sphere of activities within one function, attributed to a given office or an individual.¹⁶⁰ This authority takes different forms. It may be natural, as is the case for an individual operating in the context of society, it may be assumed, as in the case of a commercial enterprise, or it may be appointed, as in the case of an elected government. In each case, the concept of competence involves both authority and responsibility. For an individual, there is the authority accorded by the juridical system to conduct his or her own life within certain parameters in pursuit of personal goals involving such things as education, work, travel, recreation, health, marriage, and raising a family. Concomitantly, there are such responsibilities as abiding by the limitations imposed by law and of paying taxes. For a business, there is the authority to establish the commercial enterprise and do business, with attendant responsibilities such as paying taxes on profit and providing the goods and services according to certain standards. For elected governments there is the authority to create laws, establish policy, punish transgressions, and collect taxes from those who are within its jurisdiction. In return, governments are responsible for operating within the constraints of their authority and providing service to the public.

There is a fundamental link between function and the authority-responsibility relation of competence. Function is an abstract concept attached to an administrative context as a whole, and it is fulfilled by means of particular activities, performed individually and sequenced into process, and therefore it is a bottom-up concept. The notion of competence, on the other hand,

¹⁶⁰Luciana Duranti, "Diplomatics: New Uses for an Old Science (Part III)," *Archivaria* 30 (Summer 1990): 19, nt. 10.

while also abstract and attaching to the structure as a whole, emanates from the top. In the administrative context it is the right of authority held in totality by the upper reaches of the structure, that is meted out to administrative divisions and subdivisions at successively lower levels. Competence thus works its way down the administrative structure to operate over functional activities that work upwards, and the two forces combined locate the individual divisions that have received the sanction of competence over a certain sphere of functions and that fulfills this sanction through its activities. Function is therefore realized as activity and is sanctioned by competence, while competence is realized as authority and responsibility and is achieved by function, and the two meet in the documentary context at the level of the series.

It is at this point that the two routes available for solving the problem of archival arrangement structure in complex administration begin to intersect. One route has meandered through the development of archival theory and debate to a point that: (1) there is a rationale for separate treatment of records and record creators; (2) the concepts of competence and function are assumed to be an important aspect of the context in which archives are created, and; (3) the series level is theoretically associated with competence and function. The other route, with no theoretical foundation in archives whatsoever and independent of the debate, arrives at the same destination directly, through a systems-based approach to archives.

Beginning with the separation between treatment of records and treatment of record creators, archival theory reaches this point as a result of steadfastly adhering to both the basic archival principles of *respect des fonds* and respect for original order, in the spite of multi-provenance records that would appear to make such adherence impossible. As noted, these archival principles are consistent with a systems approach, in that they operate on the presumption that an archival fonds is an organic whole, essentially dynamic in nature, composed of interrelated parts, borne of context, and when left in its natural state a reflection of that

context. The principle of provenance, as a comprehensive notion encompassing both *respect des fonds* and respect for original order, establishes the theoretical perspective taken in a systems approach because these two structure-fixing principles are expressing and thereby signifying the necessity to preserve the structure, internal and external, of the record system. *Respect des fonds* applies to the external activity system of the creator to mark the boundary and relationship between it and the record system arising as a by-product of this activity. Respect for original order is then the same principle as *respect des fonds* applied internally to the record system, formalizing the boundaries and relationships occurring between records and record groupings within the record system at that point in time. Each order that might be placed over the records in successive administrative contexts is a stage of evolution in the system, and prior orders may be interesting from an historical perspective, but must not be seen as more important than the final product which includes remaining traces of previous orders, which in themselves as traces are important.

With the external boundary and internal structure of the fonds secured, the five noted qualities of records are then preserved automatically as a by-product of the record system. The quality of inter-relatedness stems from the relationship between records and the functional processes from which they emerge; that is, the steps of a functional process are related, the various functions of the creator are related, and therefore so too are the records produced in the course of carrying out these functions. This is a given if the creating context as well as the record construct is assumed to be systematic, with the record system nested inside the encompassing creator system. The quality of naturalness attaches to records because they are created and accumulated spontaneously in the course of day-to-day activity. This spontaneity arises through the dependency of the record system upon the human activity system, a mapping relationship that operates over the boundary between the two systems. Finally, the quality of uniqueness refers to the fact that each document is unique with respect to its placement within the classification

scheme. If the record construct which traces these relationships is assumed to form a system, this quality follows because each part within a system plays a unique role within the context of the system as a whole.

As well, and similar to the effect of the two basic principles of *respect des fonds* and respect for original order, each of these three qualities of inter-relatedness, naturalness, and uniqueness is addressing the same record system characteristic to derive a different statement on the same thing. The principles deal with the characteristic of system structure in terms of its internal and external organization, while the qualities deal with the characteristic of system parts, which are the individual records. Specifically, these three qualities reflect the properties that the records hold by virtue of their role in a systems environment. The other two record qualities of impartiality and authenticity then relate broadly to the notion that these various features of internal and external context transform individual records, the parts of the record system, from information vehicles to particular items of evidence. Impartiality refers to the quality which records hold by virtue of being by-products and not end-products of activities, and because of this quality they may be considered authentic with respect to their capacity to reveal the nature of those activities.

The principles of *respect des fonds* and respect for original order are therefore a means through which the fonds structure is fixed internally and externally so that it may serve as the enfolding cloak which protects all of these qualities held by records and emanating from the creation context, the record context, and the interface between the two. This structure and these qualities, all of which are system properties, are encoded and protected in traditional handling through the concept of the fonds which forms the interface between, and therefore entails, both the external and internal contexts. From a systems perspective, the two principles and the five qualities are all parts of a single package and there is no option of maintaining the principle of

respect des fonds and violating original order so as to accommodate the problems associated with multi-provenancial records.

In the archival debate, this was the position held by many theorists in accordance with their professional ideology and often against what would appear to be the pragmatics of modern administrative reality. This stubbornness led to a search for some means of dealing with complex administrations and their complexes of records which abided by the principles of traditional theory, and the conclusion was that the creating context and the records must be treated separately. This conclusion was prompted by the recognition of a mismatch between the way that changes in the allocation of competence and function affect the administration context and the records.

From the systems perspective the separation of creators and records is a given, because the activity system and the record system are two separate entities, each designed to achieve a separate purpose. The purpose of the activity system is to fulfill the functions of administration through activity; the purpose of the record system is to serve that activity system by recording the performance of actions that fulfill administrative functions. Both systems theory and certain approaches in archival theory would therefore compel separate treatment for records and their creators, based on the way that function, in correlation to the necessary delegation and alterations of competence, operates in administration in relation to records.

Under a systems approach, there is a significant reason for this central effect of function. The term “function” as it used in archival theory is taken from its general sense of an action that is specially fitted for some purpose. According to dictionary definition, the use of this term implies a definite goal to be met, or a particular kind of work intended to be performed, by the

action.¹⁶¹ But there is more to the concept of function, even in its general sense, than this.

Richard Gregory has explored the concept, which he explains through the practical example of a machine and its parts. He notes as follows:

It is curious that functions are often supposed to be associated rather simply with the parts of machines, yet they are seldom if ever identified with particular parts in isolation, and are not removed, one by one, in any simple way as the parts of a machine are removed. One finds, rather, that bizarre things happen when parts are removed; or nothing may happen, except under special conditions such as extreme demands or loading. For example, spokes of a bicycle wheel can be removed, one by one, with little effect until there is a sudden collapse. . . . The point is that parts contribute, often in subtle ways, to functions requiring interactions of many parts and sometimes of the entire machine. . . . In truth the relations between parts, and their causal interactions, and the functions that they achieve, are highly complex and subtle beyond common understanding.¹⁶²

Functions then operate systematically, as a product of the system that does not belong to any one part, but instead emerges from aggregations of discrete actions that interrelate in the context of the system as a whole. Recalling that there are three basic characteristics of a system--structure, process, and parts, the concept of function is simply a different way of depicting systems, using process as the basis, with functional performance being an emergent property of the system as a whole.

Initially, in archival theory, the focus of attention was either on the parts--the records, with their five qualities, or on the structure--the fonds, governed by the two principles. In tandem discussion with respect to the creator context for the records, the focus was also either on the parts--the individual actions that give rise to the creation of records, or on the structure--the organization of the administrations which created the fonds. However, the purpose of archives is not to have some body of individual records that comprise the whole of a fonds, and the purpose of organized activity is not to commit acts that result in administration. Both accumulations of

¹⁶¹ Webster's Ninth New Collegiate Dictionary, s.v. "function."

¹⁶² Richard L. Gregory, Mind In Science: An exploration of the significance of ideas and of experimental findings in the study of Mind and Matter, from pre-Socratic Greece to present day (Middlesex: Penguin Books, 1981), 84.

records and organized activity exist for the express purpose of fulfilling particular functions. They are fundamentally functional entities. Therefore, the third system characteristic of process, presented in its abstract sense as function, has naturally emerged, through increasing complexity of the systems under study and challenges to basic archival principles that guide their treatment, as pre-eminent in relation to the other two characteristics as the means to appropriately represent both the activity system and the records system, which combine to produce archives.

Function, however, cannot be examined in the absence of competence. This is true from the systems perspective and also now a topic for discussion in archival literature. In terms of a systems approach, the notion of competence relates directly to one of Checkland's criteria for determining a system construct; that is, that systems have a boundary formally defined by the area within which the decision-taking process has authority to cause action to be taken. Therefore, competence is a criteria for determining a fonds, and for determining its internal structure. In complex situations, assuming a record system in the context of an encompassing human activity system, the boundaries of both systems are as wide as is necessary to find the mapping relation between the two. For example, in the case of a franchise business, the fonds is the accumulation of records, generated by some franchise unit that groups into a coherent operational system of activity and interacts with the records. If this inclusive context extends beyond a single filing system or beyond a single franchise, so be it. The processes of accumulation and retrieval sets the interface and so sets the system. The more complicated situations of conglomerated business enterprises and multi-tiered government bureaucracy can be handled in similar fashion. The level of competence which has the authority to cause action to be taken with respect to the record system is the creator, and the expanse of records within that reach is the fonds. For example, if the head office of a conglomeration or the heads of government have the authority to direct all departments, offices, and other subsidiary bodies to begin using only letter size paper and eliminate legal size, then this authority sets the level of

competence determining the external context of the creator and the internal context of the fonds.

Within this context there may be many levels of delegated competence resulting in levels of sub-systems. This hierarchy of fonds is to be expected, as one of the defining characteristics of a system is that it is composed of sub-systems, and at each subordinated level these sub-systems are defined along the same lines as those which determine the highest level of structure. This reality of record constructs in complex situations has been problematic for traditional arrangement practice because of the abiding goal of determining some specific locale within a complex administrative structure to designate as remarkably the place that the creator of a subordinate fonds is to be found. In fact, according to systems criteria, such points may occur throughout the administrative hierarchy based on indicators attached to the record system, not the activity system. Under this approach, there is no need to contrive the status of a fonds creator in order to determine a fonds construct, because the records themselves are offering the necessary criteria.

With respect to the problem of multi-provenance series, the question that archival theory has dealt with is functions transferred from one delegated authority to another within the creation context with the effect on the fonds structure of records that appear to have more than one creator. From a systems perspective this is not a problem. The points of contact between a record system and the activity of a complex administration form an evolving line of interface between the two systems. The approach taken by the Australians, which bases the designation of fonds boundaries on the naturally occurring structure of record-keeping systems and allows for a succession of links between the two systems, operates in terms of the systems view of multi-provenance. The fact that the records are transferred from one part of the creation environment to another simply extends the line of interface to incorporate all creators involved within the interface between the external and internal contexts, and every portion of the activity system that

contributes to the record system is a part of its pool of creators.

There has been some unease in the archival community towards this approach, particularly with respect to idea that it compromises the integrity of the fonds concept, the basis for past and generally contemporary methodology. Terry Cook states that “[Scott’s] relative failure lies in not providing a sophisticated mechanism for linking [descriptions of the administrative context and of the physical records], thus obscuring at least partially an appreciation for the “whole””¹⁶³ Similarly, Smith states, “the series system treats the principle of respect for provenance as being subservient to, or part of, the principle of respect for original order.”¹⁶⁴ There appears to be a perception that by linking creators with series, rather than with fonds, an aspect of archival nature is lost with regard to the central concept of provenance.

However this is true only if two assumptions are maintained. The first assumption is that, within the encompassing structure of a superordinate fonds, there should throughout the structure be a stable one-to-one relation between delegated creator units and subordinate fonds units. However, from a systems-based approach to archives, this would not be required. Provenance is defined as a stable whole only in terms of the system of the relevant sphere of human activity as a whole, which establishes the entire encompassing structure within which there may be multiple embedded levels of subordinate creating context, with multiple creators over time for particular portions of the record system.¹⁶⁵ This creator status is determined on the basis of competence to interact with that part of the record system, and this competence is delegated and subject to change. Delegated competence may then produce complex creator contexts within this whole,

¹⁶³ T. Cook, 68.

¹⁶⁴ Smith, 88.

¹⁶⁵ Within the provenancial context, there may be administrative divisions and structure that are not reflected in the records, but that do relate to concepts of natural and juridical roles. These may be significant from the perspective of analyzing the activity system, but if they do not affect the record system, then they should not be considered in analyzing the the records. From the archival perspective, the records offer the relevant viewpoint on reality, and to attempt to encompass more viewpoints than this is likely to distort the picture. (For additional discussion, see section 3.3)

related to any variety of complexities in the record context, similar to those depicted in the Australian approach. It is possible at any point in time to locate the range of the record construct which is the fonds of a particular creating agency, but this is not a fixed structure and should not be. The purpose of depicting the activity system and the record system is to plot the evolution of relationships between records with respect to creators and functions, and evolution involves change.

The second assumption that must be maintained to support the notion that the Australian Series System treats the principle of respect for provenance as being subservient to, or part of, the principle of respect for original order is that the relationship between the creator context where *respect des fonds* is operative is on even footing with the documentary context where respect for original order is operative. This assumption can be maintained only if the two principles are considered to apply in the same generalized context of records and creators of records, with no boundary between the two; that is, within the context of a single system involving records and creators of records. Only then is it necessary to hold one of these principles as primary with the other accorded secondary status. However, from a systems perspective the relationship between the provenancial and documentary contexts takes place between two different systems and over a systems boundary, with *respect des fonds* applying at the boundary of the record system outwards and respect for original order applying at the boundary inwards. As a result, the two principles are maintained simultaneously, but separately, in the Australian approach.

Many archival institutions, particularly at the nation level of government, face situations similar to the Australian Archives, but generally not as extreme in terms of function and record motility. As a result, these institutions are afforded the alternative of determining a group of series to be a fonds under the provenance of a particular department within the complex of

creation context. It is often the case that an accounting of competence for the individual department includes information on functions that have been transferred to and from it, this transfer information linking an historical route of function and records between various departments within the complex. When at some later time there have been subsequent transfers, the competence account has to be updated for all departments involved in the transaction. This approach is creating and revising "snapshots" of live action, which alternatively, as is the case with the series system, could be depicted as motionary through the division of the two contexts which intertwine to compose the sequence of events.

Within a dynamic view of a complex of fonds, when the record context is treated separately from the creation context, the concept of fonds becomes an abstract entity, available through inference from a grouping of series associated to a single creator division, but subordinate fonds are no longer the guiding structure of archival arrangement. Instead, focus shifts to the series, a level of structure that is central in a complex record system. This is because it is at the level of the series that the relationship between activity--as it is reflected in individual records, and authority--as it is allotted from administrative control, encounters a natural boundary which has been recognized in the Australian archives approach, in Evans' depiction of the series construct as akin to an organism, and in Terry Cook's description of the series as being, unlike the embedded fonds structure, "a clear, organic entity with easily identifiable characteristics."¹⁶⁶ This organic nature of the series, wherein it has a distinct shape and internal structure, reflects its status as the direct link between records and the emergent property of function within the system of administration.

This direct link is crucial in terms of the process nature of both record and creation systems, with process being realized as functions; it is at the level of series and administrative

¹⁶⁶ T. Cook, 70.

units that the two systems associate most closely, because this is where functions localize within each system. For the record system, function localizes at the series level through its internal organization, an organization imposed by the creator in relation to activities which fulfill a functional responsibility, and in the creator system this responsibility localizes to its administrative units. This middle level of both records and administrations in complex situations is therefore significant within the overall structure of embedded and associated systems. It is where the work gets done, and as this work becomes more complex, the systems that perform it also become more complex. Specifically, as functions increase in number, variety, and points of detail, there is a development of complexity at the middle level of both the activity and the record system, a complexity that is associated with characteristics of autonomous systems.

As a result, these record series and administrative units evolve to become systems in their own right, nested and embedded within the encompassing higher systems of the complex. This process of increasing complexity and nested systems does not in any way compromise the holistic integrity of the encompassing superordinate systems, but instead is an organic outcome of a growing maturing system.

This growth process is addressed in traditional archival theory through Jenkinson's description of the evolution of archives, and has been explored in more recent discussion in systems work, which finds that systems generally evolve into associated and embedded complexes of systems and, "as a rule, middle levels characterize any system most richly."¹⁶⁷ This is how a system grows, by generating new systems at the middle level of series and administrative units, where activities accomplishing functional process move upwards to meet autonomy accorded by structurally delegated competence moving downwards, a combination of factors not operative at lower or higher levels of the system.

¹⁶⁷ Ahl and Allen, 83.

There is another feature of systems, called “homeorhesis,” which also characterizes this pattern of internal growth. Homeorhesis means “preserving the flow,” and describes the motivation for certain changes that occur in a system, particularly in a progressive system (as opposed to an end-state system, which is not designed to endure) as it acts in response to the effects of growth. As the system grows, input increases in volume and variety, leading to increased demands on processing activity and instability in the operations of the system. In order to maintain operations, to preserve the flow of input through the components, the system responds by building strength internally with more components performing specialized functions or a different alignment of components, perhaps with additional levels and other adjustments to structure and processes. In the administrative context, this takes the form of functional differentiation and movement, leading to “evolutionary” development and higher motility in those record units that document activity at the functional level, namely series.

The connection between function and such units situated within a complex of level ordered structure is explored in Murray Code’s book on the philosophy of Alfred North Whitehead. According to Code:

Whitehead offers a unified system of thought which is based upon the concept of organizations within structured organizations, beginning at the very basis of physical reality and extending upwards into increasingly complex structures. One may conceive of this structure of structures as a hierarchy of organisms with a base level of purely physical (i.e. material or “non-living”) organisms underlying all complex organic (i.e. “living”) organisms. The various levels can be distinguished, although not necessarily in any exact sense, by the degree of complexity of organization within its members. In Whitehead’s view, this hierarchy of organisms is characterized by various degrees of “organic unity.” That is to say, there is not just one order of unity within the hierarchy nor is there a uniform change in the order of unity as one progresses through the various levels of the hierarchy.¹⁶⁸

In the context of archives, this philosophical approach addresses the variation in level

¹⁶⁸ Murray Code, Order and Organism: Steps to a Whiteheadian Philosophy of Mathematics & the Natural Sciences (Albany: State University of New York Press, 1985), 140.

unity that is to be found within a record system. At the level of the individual record is the lowest level in the hierarchy of "organisms." Here, Code states: "One is concerned with physical phenomena having minimal claim to substantiality."¹⁶⁹ The physical phenomena in the archival circumstance are the actions, transactions, and communications that give rise to individual records. Actions, transactions, and communications in and of themselves are insubstantial, they may leave no trace--unless they are recorded; in a sense, the record unit preserves the event. This unit is complex, in that it is referenced to the physical features of the transitory event (i.e. date and location), and it formalizes through formulation the nature of the event and the persons participating. Therefore, the level of the record, which is where the parts of the record system relate directly and discretely to the encompassing human activity system, is a level of complex unity.

The next level up is the file. Within the file is an accumulation of records that share some feature, such as subject, form, or time span. It may be that a group of records within a file relates to a complex event, or covers a significant span of time, but whatever the rationale that brings the records together in a file, it is not a higher order of complex unity than the record, other than what is dictated by the external environment. This is a unitary level of low complexity.

The series then arise as a set of files, relating to the performance of actions, captured by documentary recording. It is at this level that the functional competence of the creator is addressed and complex relations arise between the files and between the records within the files. These relations are maintained in the organism-like structure of the series and, in the context of the field of sub-atomic physics, Code discusses the relationship that occurs between such organisms and their related functions:

An event which is pure activity possesses, like a biological organism, a regulated structure. Incorporated in this structure there are probably hierarchies of lesser but still regulated

¹⁶⁹ Ibid., 141.

structures which partly accounts for the nature of the whole entity. But the event-organism will always be more than the sum of these parts, however far this analysis is carried out. For mere combination of parts does not explain the fundamental feature of the whole, namely, its function. In this respect, the analogy between physical organism and biological organism seems almost complete. . . . A physical organism, like a biological organism, is essentially a functioning entity. Its dynamical characteristics are fundamentally different from those of a Newtonian particle of matter, an entity which essentially is isolated from the rest of the world. Indeed, what *is* known about primitive physical organisms concerns only their interactions with other organisms; those particles which do not interact with other particles have, for the physicist, a dubious claim to existence.¹⁷⁰

Therefore, in terms of its association to function, which is fulfilled by the action-oriented files and items ordered within its expanse, a series is a complex level of unity because it records and makes permanent the interrelationships between these records which are the means to accomplish a function, in the same manner that the individual records make permanent the features of a transitory event that are the means to accomplish an action, transaction or communication. The order of files in a series, the significant sequencing which makes a series so recognizable an entity, is thus directly related to its functional nature, in the same way that the sections of a document are ordered with respect to the activities they document. Code discusses the internal structure of such physical organisms, and states that for delineation of such entities to occur "there must be distinct and enduring forms within pattern which are capable of being recognized."¹⁷¹

For series, these "forms within pattern" are generally chronological, alphabetic, or numerical. However, this is the end result of ordering, and not the process of ordering itself. The process of ordering is a separate subject, and it is described by David Bohm and F. David Peat as beginning with the formation of categories:

This categorizing involves two actions: *selection* and *collection*. According to the common Latin root of these two words, *select* means "to gather apart" and *collect* means "to gather together." Hence categories are formed as certain things are *selected*, through the mental

¹⁷⁰ Ibid., 128-129.

¹⁷¹ Ibid., 135.

perception of their differences from some general background. 172

In the formation of series categories, the general background is the administrative context of a record creator, and the process of categorization occurs when there is some extent of record file-level units that either all relate to some certain sphere of activity, in which case they may then be just ordered, or they pertain to some range of activities. If there is some range apparent then selection occurs, whereby certain files are seen to stand apart from the general extent with respect to their relation to the activities of the creator, and so form groups which are different from the background of the files as a whole. Within the selected group, the difference is shared, and this is a point of similarity between the files. With this similarity serving as the criteria for gathering the files apart, the group itself is a unit, and the initial difference may be put to the background. Within the uniformity of the unit, then, there is a higher order of differences, which suggests and guides in the choice of criteria that may be used to establish order within the unit. As Bohm and Peat note, "Two things can be related only if they are different [from each other.] To 'relate' comes from the past participle of 'to refer,' which means to 'carry back.' In this process two things are, at least in the mind, carried apart to difference and then carried back to similarity and relationship."¹⁷³ The relationship of differences then guides in the ordering of the files within the series.

This determination of similarities and differences can go on indefinitely. As some differences assume greater importance and other are ignored, as some similarities are singled out and others neglected, the set of categories changes. Indeed the process of categorization is a dynamic activity that is capable of changing in a host of ways as new orders of similarity and difference are selected.¹⁷⁴

This process of series categorization and ordering lies at the heart of archival

¹⁷² David Bohm and F. David Peat, Science, Order, and Creativity: A dramatic new look at the creative roots of science and life (Toronto: Bantam Books, 1987), 112.

¹⁷³ Ibid., 145.

¹⁷⁴ Ibid., 112-113.

arrangement; it is the process undertaken within the creating context of first differentiating records in terms of their relations to functions against the background of administrative activity, and then establishing the order of similarities between those differentiated records. In this way are established the correlations between a function and the records that relate to the function.

The process is not only upward, in the sense of files being selected from the general group and elevated to the status of a series. There is also the organizational activity that occurs across the series level as functions evolve in number and complexity, and this reflects mental involvement between record keepers and the record system. Bohm and Peat describe this mental involvement in terms of the word "intelligence":

The word *intelligence* is often used in a general and fairly loose way today, but something of its original force can be found in the Latin root *intelligere*, which carries the sense of "to gather in between." It recalls the colloquialism "to read between the lines." In this sense, intelligence is the mind's ability to perceive what lies "in between" and to create new categories. This notion of *intelligence* ... acts as the key creative factor in the formation of new categories. ¹⁷⁵

Through the process of categorization, then, which occurs through the activities of determining differences, similarities, and then higher-order and intervening differences, and which is applied to the accumulated body of the records in relation to the functions of the creators, there is a reflective intelligence embodied within the evolution of the series level. The results of this activity, done with practical goals in mind, is the reason for the organic coherence of the series unit, which connects it to the functional grouping of activities directed under competence of the creator.

The series themselves are then gathered into fonds level segments of record structure dealing with various groupings of function. But these groupings are generally along

¹⁷⁵ Ibid., 114.

administrative lines in terms of the delegation of competence, and not on the basis of activity driven criteria. Therefore the series level is more complex than that of the fonds. The fonds, like the file, is basically a coherent gathering of units from the lower level, without the addition of crucial structure. This, again, is in accord with the Whiteheadian theory that "there are various grades of organism in the hierarchy of organisms, and a specific level in the hierarchy is characterized by the relative degree of internal organization of its members." In the archival hierarchy, the pattern alternates as the theory would predict: the item is complex; the file is not; the series is complex; the fonds is not. Also noteworthy, are the correlations between complex functional levels and the source levels for the central characteristic of systems; the level of the item introduces the parts within the system; the level of the series captures the functional process; and the level of the fonds, which breaks the pattern as a simple level, embodies the structure.

However, the fonds level, as the embodiment of system structure, involves a different kind of complexity. Bohm and Peat view structure as, essentially, the pretext of order: "The concept of order is, by itself, of very general interest. But one of its most fundamental and deepest meanings is that it lies at the root of structure." Structure is generally taken for granted; it is seen as simply the scaffold or framework on which the action plays out. As they state:

Structure is often treated as being static and more or less complete in itself. But a much deeper question is that of how this structure originates and grows, how it is sustained, and how it finally dissolves. Structure is basically dynamic, and should perhaps be better called *structuring*, while relatively stable products of this process are *structures*. But even these latter structures would not be considered as basically static, for they are the results of processes which sustain them and keep them, for a time, more or less within certain limits.¹⁷⁶

Therefore, the attribution of series as the central unit of functional significance within the record system should not be taken as a demotion, in some sense, of the importance of the fonds

¹⁷⁶ Ibid., 140.

construct. The purpose of the fonds, its function, is as the structuring force for the records, mapping against the whole complex of the relations of functional activities and competent authority of the creator.

The task of how to relate records to record creators is the fundamental point of contention in current archival discussion on arrangement. Generally, once the parameters of the archival constructs at hand have been determined, the archivist is left to delve into the records and proceed with arrangement according to traditional guidelines. With the insight available through systems notions, the first difficult step which precedes the discovery of nested internal structure--items within files, files within series, and series within fonds--may be made somewhat simpler. As well, this approach provides some means for standardizing arrangement as a precursor to preparing standardized descriptions.

3.2 Description

“The name of the song is called ‘Haddocks’ Eyes’.”

“Oh, that’s the name of the song, is it?” Alice said, trying to feel interested.

“No, you don’t understand,” the Knight said, looking a little vexed. “That’s what the name is called. The name really is ‘The Aged Aged Man’.”

“Then I ought to have said ‘That’s what the song is called’?” Alice corrected herself.

“No, you oughtn’t: that’s quite another thing! The song is called ‘Ways and Means’: but that’s only what it’s called, you know!”

“Well, what is the song, then?” said Alice, who was by this time completely bewildered.

“I was coming to that,” the Knight said.

Lewis Carroll, Through the Looking Glass

Once the arrangement of the records has been determined, description is the next step in archival handling. "Description" is used as a broad term in this context, covering both the process of recording information about archives and also all the products of the process. Both the process and its products provide physical, administrative, and intellectual control over the holdings from the time they are accessioned into the repository until they reach their final state of availability for use as an archival resource. The central descriptive mechanism is the inventory, which is the representation of a fonds as determined by arrangement. The inventory has long been a traditional mechanism for representing the fonds and, according to the Dutch archivists, "Once we have agreed that the arrangement of the archival collection must correspond to its old organization, it appears obvious that the inventory must likewise be in conformity with it."¹⁷⁷ To the extent that there is a theory of archival description, this is the basis: the link between the inventory and arrangement by provenance. Beyond this and in general terms, archival description is a practical activity performed to serve practical needs in the repository.

The systems approach provides a means for composing a more explicit theoretical framework for description. This framework offers to extend the domain of archival theory from arrangement to description, create a solid intellectual foundation for description activity, and standardize both the process and the products of description. It achieves this through the same avenue that made arrangement available for systems treatment, this being the systematic properties of record constructs, and this connection between systems and record constructs carries forward into description through the fonds inventory. In a systems approach to archives, an inventory is the model of a record system.

The notion of a model, like that of the system, is well known in its common sense, but it is a formal notion as well. A model is a device used to create an abstract structural representation

¹⁷⁷ S. Muller, J.A. Feith, R. Fruin, 125.

of some object. It is abstract in the sense that it represents the object selectively, and the selected features are mapped from the object onto the model so that there is an isomorphic relationship between the two, that is, a one-to-one correspondence. Stripped of non-selected features, the model then reveals the object in some way. According to Wartofsky, the model is a central tool in the activity of science. As he states:

The means to . . . scientific thought is the representation of . . . facts in some model, some abstract construction in a language within which relations among the facts are made explicit, and within which the form of such relations may be expressed. Such a conceptual and linguistic abstraction becomes a means of operating with the surrogates of tokens which are taken to represent the facts and their relations, instead of operating with the facts themselves; it substitutes the manipulation of symbols for the manipulation of things and events, reflective inference for direct action and intervention in the world of facts.¹⁷⁸

It is not the purpose of a model to represent all the possible features offered by the object. If this were done then the model would become a duplicate of the object rather than a model of it. Instead the purpose of the model is to represent, and offer for understanding and manipulation, some version of the object that is distilled from its reality on the basis of certain identified features classified into a framework of relations. The process of identifying and classifying are crucial, for this is how the model features are selected and this is what leads to a useful isomorphism between the model and the object.

This characterization of the function of the scientific model parallels that of the archival inventory. In the archival context, the process of identifying and classifying is the basis of the arrangement process, as the archivist explores the external and internal contexts of the record and activity systems, extricating salient features such as creatorship, functions, and relations within the record constructs and between the records and creators. These features, as determined through current arrangement methodology, substantially correlate with the features that would be

¹⁷⁸ Marx W. Wartofsky, Conceptual Foundations of Scientific Thought: An Introduction to the Philosophy of Science (New York: MacMillan Company, 1968), 123.

selected to create a systems model of archival constructs. The correlation is a result of the inherently systematic approach of the traditionalists, which directs that archives be arranged as holistic entities in the context of their creation. However, the systems approach differs from archival tradition in that it justifies and requires unequivocal centrality for the fonds inventory model within the realm of description, because this is the process and product of modelling the fonds as a system. From the systems viewpoint, this task of modelling a system is not simply sequenced after arrangement of records. Instead, arrangement analysis is the precursor to describing the system into a model. Under this approach, arrangement becomes a process of description, with the inventory model its product.

Applicability of the systems model concept to archival description is made possible by the capacity of description to represent the contextual and relational structure of a provenancially determined body of records. Description has not always been used to represent information about archives in such a way, and it is only as a result of this innovation, leading to recent efforts at standardizing the descriptive representations, that the systems modelling approach becomes a logical next step towards theoretically governed description.

The modern concept of description arose in conjunction with the fonds concept, introduced into the archival field in the nineteenth century in the wake of problems caused by eighteenth century deviation from classical arrangement practice. For much of the history of repository management, records had been arranged according to their creation context and generally left in original order. This was not done under guidance of any particular theory, but instead was a product of repositories being an extension of record-keeping administration established in the creation context. Record constructs transferred to the archives were handled in terms of this administration and kept in their original state because no other handling method was

either required or deemed appropriate.¹⁷⁹

Then came the eighteenth century Age of Enlightenment, a time of influence for a philosophical movement that rejected traditional social, religious and political ideas and advocated an emphasis on rationalism. The foundation of the Enlightenment can be traced back to the reductionist science of Descartes and Newton in the seventeenth century. Their picture of a rational and mechanical universe changed the attitude that people had towards the world and their place in it. Under the resulting reductionist point of view there was an awakening to the power of reason as the basis for discovering ultimate truth within a logically organized universe. The movement had far-reaching effect on the conduct of personal, commercial and public activity in society. As a part of the reforms that swept through Europe in the wake of this mindset, many government administrations were restructured, leading to the closure of long-standing offices and departments, and the closure of their record systems.

Subsequently, the holdings of archives were often not simply accruals of old records belonging to active creators, but instead became more obviously the only tangible remnants of a bygone time. As a result, archival institutions began to move away from their identity as administrative adjuncts of record creating administrations and acquired cultural standing as repositories of an historically significant resource. In response to a growing interest amongst both record creators and researchers in the use of this resource, historians were hired to serve as archivists and to enhance the utility of the records. In accord with the prevailing rationalist philosophy, this was seen to be best done by re-arranging the records according to an analytical structure of topical classifications that were anticipated to be of historical interest. This was essentially a systematization effort, with the various topics to which the records might pertain being arranged in relation to each other, and then the records mapped into an artificial

¹⁷⁹ Luciana Duranti, "The Origins and Concept of Archival Description," *Archivaria* 35 (Spring 1993): 47-54.

arrangement according to the topical structure.

Under this approach, it became standard practice to dissect record constructs along topic lines and then combine individual files, documents, registries, and registry pages of various provenance that related to the same topic. Then the re-arranged records could be easily described in terms of the devised topical classification scheme. The practice continued for more than a hundred years and, by the turn of the nineteenth century, the penalty to be paid for dismembering archival constructs became obvious. Not only was it found to be impossible to divide records rationally along topic lines, but also, as a result of the failed re-arrangement effort, the contextual links between the records, their creators, and the historic reality from which they arose, had been lost.

From this disarray emerged the principle of *respect des fonds*. It was introduced into law in Naples in 1812 and spread throughout Europe over the course of the nineteenth century, with the corollary principle of respect for original order being formulated by Francesco Bonaini in 1869. The notion of a fonds, to be protected externally as the product of a creation context and internally as a certain ordering of records, could not, however, be simply instituted into archival practice as the guiding directive of archival handling to be followed from then on. There was still the matter of how to deal with vast holdings of archives that had been dismembered by past practice. The creation context and order of these records was no longer apparent, and an effort had to be made to reconstruct this information so that there would be some level of constancy in the resource of record holdings, both those acquired in the past and those to be acquired in the future. The option of re-arranging all of the records into their original order according to creation context was not viable, because too often the traces of the original fonds construct had been obliterated. It was then discovered that description offered a means for solving this problem, through its capacity to represent the arrangement of records intellectually as opposed to just

relating the existing physical order. The records could be left in physical disarrangement, yet construed in their original state. It is at this point that a theoretical framework for description begins to appear. Through its capacity to convey the content, organization and context of the fonds independent of its physical state and location, description became a modelling device capable of translating apparent disorder and discontinuity into coherent representations that reveal the structure and relations of the modelled object.

As well as serving the initial goal of returning holdings descriptively to their provenancial order, additional benefits from this modern notion of description have emerged over time. One of these is its capacity to deal with large-open ended record systems that arrive in incremental acquisitions. In this circumstance, it is not possible to preserve physically, in one storage area, a perpetual stream of records emanating from a single creator, yet the integrity of the fonds can still be maintained through expanding descriptions, linked to the various storage locations of that creator's records. In this way, model descriptions capture a subtle feature of record reality, because the fonds of an active creator that regularly transfers inactive records to a repository never does exist in one coherent ordered construct, except if it is construed through the enlarged context of both creation and repository custody; that is, while accessions of old records are held in the repository, the creator may still be generating and ordering new records. Therefore the fonds as a whole is the product of a spatial and temporal complex involving the organization of records in the creation context, the procedure of transfer to the archives, and the holding of those records in the repository. Using the capacity of description for abstract representation, this sense of the record history is preserved automatically by the documentation of accrual activity, with the expanding inventory intellectually drawing the fonds together into a coherent whole.

As well, the inventory model elicits and holds an enhanced representation of the fonds that includes the context of provenancial information. This contextual aspect of the fonds model

was introduced early in its evolution, because the process of recreating an intellectual arrangement of a disarranged fonds required that the archivist investigate the derivation of records in terms of the history of record creation activity in the offices of origin. Sometimes the particular locale of creation could not be determined and identification had to be based on a linkage in date span between the functions to which the records related and the scheme of particular creator activities. The information thus gathered on creation context and activities provided a valuable adjunct to the record descriptions, shedding additional light on the significance of the record resource, and such information on creator context is now accepted as an important component in the modern inventory. As a result, the resource of archives has become more accessible to researchers. Before the advent of model descriptions, researchers had to rely upon the specialized knowledge of archivists for preliminary research information necessary to access the records, such as creator identity and functions. Now such information is communicated through the inventory. This has also increased the variety of description products available, based on the variety of information components in the inventory, so that a repository may comprehensively represent their holdings through description both for the purposes of control and access.

Given these significant benefits of modern description, the obvious next step was for the archival community to standardize the representations. This would have significant benefits to all those who have a stake in archives. For researchers, predictable descriptive products would make it possible to acquire familiarity and facility with the procedure of accessing the records. For archivists, uniform description practices would enhance professional skills and the transferability of those skills within the profession. For the repositories, there would be cost savings in not having to compose, test, and revise institution-specific description policies, and an increase in staff productivity and efficiency. The archival field has long recognized these benefits of standardized description processes and products, however the

difficulty of establishing and implementing the necessary guidelines across entire archival communities was an obstacle.

The impetus for several recent standardization programs came with the advent of information technology in the 1970s.¹⁸⁰ At that time, computers were appearing in the workplace and revolutionizing the creation, control, and manipulation of information. Linked to this was a new perception of information as a conceptual object that can be handled and explored through information management, theory, and science. In a brief period of time, society as a whole began to gain a sense of the globality of the resource that exists in information and the potential uses of it, and a significant portion of this resource resides in the scattering of large and small archival repositories located in the various regions around the nations of the world. By the 1980s archival communities at the national level in Great Britain, the United States, and Canada were beginning a concerted effort to address the issues that emerged in this age of information, and to form a plan of how they would participate.

Underlying the initiative was the goal of ultimately developing standards for the presentation of archival information in a database format suitable for automation. This guided the descriptive standard efforts to address the specific constraints associated with database formats that would require archival information to be structured and formulated in a uniform manner. This is a topic that falls under the subject of information processing and management. In this context, information is structured to create data, which is a restricted kind of information, constrained by three levels of control. These are: (1) data structure, which is the framework used to segment and organize the information; (2) data content, which is the substance of the information segments that are organized into the structure; and, (3) data value, which is the vocabulary used to express the segments of information. These levels of control are similar to

¹⁸⁰ Michael Cook, The Management of Information from Archives (England: Gower Publishing Co., 1986), 2.

language rules. Data structure is the syntax that regulates the organization of expressive terms so that they hold predictable significance through their placement in relation to other terms. Data values are the lexicon, which stores expressive terms, with data content being the product of selecting and combining these terms for placement in the structure, to generate semantically complex and meaningful expressions of information. In terms of the systems nature of this operation to restrictively represent complexes of information, the structure of the system is the syntactic data structure, the process is the formulaic expression of semantic data content, and the parts are the data values that serve as lexicon vocabulary. The result is an information model and it is this approach to information that is used to create databases, both automated and manual, for the purpose of communicating organized information.

In the archival environment, automated databases make it possible to create a network of information exchange between repositories and beyond. As such, they can serve as an extension of a repository's description program. However, they do not extend from this program if the database system is hosted external to the archival community, because this requires adaptation of archival descriptions, not to more fully or appropriately represent archival material, but instead to meet the standards set by the host. Most commonly these standing database networks that the archives field might use have been established by the library field, which has its own sets of descriptive standards.

When the national archival communities began their work to compose description standards, the question of whether or not to use these ready-made vehicles for automated information exchange was a crucial one. If it would be possible to adapt library description standards for archival use so that record descriptions could be entered into the standing bibliographic databases, this would vastly simplify the step into automation. There are three types of standards to be adapted, one each for the different control levels of data structure,

content, and values. The bibliographic standards available for adaptation were, for data structure the Machine-Readable Cataloguing (MARC) format, for data content the second edition of the Anglo-American Cataloguing Rules (AACR2), and for indexing vocabulary the Library of Congress Subject Headings (LCSH). All of these standards are well-established in the library community, and therefore extensively tested and revised there.

In the library field, these standards function to guide the creation of a uniform surrogate record, which may serve as a catalogue entry for a publication in order to identify and describe it and provide a means for retrieval based on user needs. Such surrogate records serve as a model representation of the published item, which may be in the form of a book, sound recording, video recording, or an electronic resource such as a site on the World Wide Web.

The creation of these surrogate records involves the cataloguer in two processes: (1) bibliographic description or descriptive cataloguing¹⁸¹ and (2) subject cataloguing. Descriptive cataloguing is currently based on the 1998 revision of the second edition of the Anglo-American Cataloguing Rules (AACR2) which guides in the selection and transcription of descriptive details such as title, statements of responsibility, facts of publication, physical description, and the like, and also in the choice and formulation of name access points derived from the description. Name access points may be for persons, corporate bodies, governmental bodies, or the publications themselves (i.e. titles). These name access points are used in searches for a known item, that is, when the searcher knows the title and/ or author of a particular book for example. However, many library catalogue searches are not for known items but are instead for information about a particular topic. Therefore, in order to satisfy users' demands for topic-oriented material the cataloguer also analyzes the subject content of publications to include controlled-vocabulary subject headings in the surrogate record, chosen from a standard list such

¹⁸¹ The term "description" is used in a more restrictive sense in the library field than in the archival field, in that bibliographic description does not include assignment of subject access points.

as LCSH. When completed, the record is ready for use in an automated environment such as an online public access catalogue in a library.

This process is similar to that of creating archival description models of individual fonds constructs, whereby the archivist identifies the creator and informational content of the records and provides access points based on names, places, subjects, and activities reflected in the records. This suggests that it would be not only possible, but perhaps also a move towards efficient generalization of information resources, for the library and archival fields to share modelling standards. Also arguing in favour of the move to adapt library standards for archival use was the precedent of the library standards having already been applied to a limited extent to archival materials; many libraries collect manuscripts and treat them archivally if they are accessioned in complex groupings of a single creator, and the standards have been used with some adjustment to enter descriptions of these records into the bibliographic databases.

Significantly, though, there are crucial differences between archives and the bibliographic material for which these library cataloguing standards were created. Published materials generally have a "chief source of information," one of the important concepts underlying AACR2. This is a component in the various classes of bibliographic materials that can be designated and used consistently over time and by different cataloguers as the source of the details necessary to compose the description and select the name access points. For books this chief source of information is the title page. For non-book materials, the chief source of information is usually what would be considered analogous to the title page of a book. For example, the title and credit frames of a motion picture or video recording together constitute the chief source of information for cataloguing purposes. The reason published material of various forms have this component is that it is produced for the purpose of communicating its content. Certain set characteristics will follow from this, such as there being a named creator, publisher,

date and location of publishing, title, etc. and this information both lends itself to encapsulation in a title page (or its equivalent) and also serves the practical goal of explicitly identifying both the item and all those who participated in its creation and who therefore should be credited.

An archival fonds, however, has neither a title page nor its equivalent. This is because, unlike published material, records are not produced with the intention of communicating their content outside of the reality from which they arise. Instead this material is created spontaneously and unconsciously to serve practical needs in the creation context, and it is after these needs have been served that the records remain as evidence of this context and therefore constitute an archival resource. Thus the concept of a title page is not directly relevant to archival nature.

As well, there is the issue of "aboutness." Most material acquired and catalogued for a library is topic-oriented and so what it is *about* can be expressed readily in one, a few, or at most a short list of controlled-vocabulary subject headings. The correlate of an archival fonds does not have a single topic focus, instead dealing with a wide range of topics that aggregate within the construct only on the basis that they pertain to the activities of a single creator. Furthermore, bibliographic material is generally mass produced, self-contained in terms of the information that it provides, and appropriate description of this material does not usually depend upon an extensive analysis of the specific context in which it was created. Archival material, by nature, is unique and relationally complex. Its meaning depends on both its internal and external contexts, and each archival fonds connects with other fonds within the encompassing context of the documentary universe. Given these significant differences, the various standardization efforts had to address the possibility that library cataloguing standards might be fundamentally inappropriate for serving as the foundation for archival description standards.

Therefore, the archival communities of Great Britain, the United States, and Canada that

set to work in the 1980s to establish descriptive standards had difficult decisions to make. Each community had to decide which aspects of description would be addressed, by what rationale, to what extent, and in what manner, in order to create a set of standards that would be sufficiently general to be adopted and applied by all variety of repositories, yet sufficiently specific to result in uniform descriptions that would potentially be consistent with the constraints imposed by automated databases. In common to all the national projects was a theoretical acceptance of the fonds as the fundamental archival construct, and of the multi-level nature of this construct. However, in each case, the initiative for creating descriptive standards was motivated by different practical considerations, deliberations took place against a different background of archival tradition, and the effort led to a different type of descriptive standard. The work that was done, the challenges faced, and the conclusions drawn provide the details of a framework for description theory that the systems approach to description may build upon.

Stemming from a background historically specific to its archival community, the British effort focused on the standardization of descriptive products. Since the middle of the nineteenth century and with significant increase in number after World War II, county record centres had been established in the absence of centralized guidance and organized training programs in the British archival community, and they were labouring against an overwhelming backlog of records emanating from historic family estates, businesses, parish churches, and various institutions.¹⁸² There was no unity or conformity of archival handling in this large community of repositories and so the impetus for creating description standards in Great Britain was to provide the multitude of small and isolated repositories scattered throughout the country with a means for standardizing their programs for description. The future prospect of entering descriptions in a national computerized database network was considered but did not direct the effort. Rather, the concern was to provide a means for constructing uniform finding aids in order to simplify access

¹⁸² Michael Cook, "Description Standards: The Struggle Towards the Light," *Archivaria* 34 (Summer 1992): 50-54.

for researchers, regularize the administration of all archival institutions, and support repository staff in their efforts to describe archival material efficiently and effectively.

The finding aid standards were published in the Manual of Archival Description¹⁸³ (MAD). These standards are comprised by data content elements that segment information about fonds constructs, and data structures that provide the framework for various finding aids. The data content elements fall into two element types, one type dealing with information for archival description and the other dealing with information pertinent to the management of holdings within the repository. Filling in the elements in the basic presentation mode produces an inventory. The process of creating different finding aids then involves drawing from the articulated list of data content elements and fitting them into the various finding aid frameworks provided, keyed to the standard levels of arrangement proposed by Oliver W. Holmes in the U.S. in the 1960s, which remains the accepted view on the subject. Specifically, these levels are repository, management, group/collection/fonds, series, item, and piece, with the three levels of the fonds, series, and item corresponding to the universal levels of archival constructs. No level is compulsory in terms of arrangement or description, so long as the three universal construct levels are applied appropriately. From this standardization program, then, comes insight into the process of organizing standardized descriptive products so that they are consistently linked to the various levels of archival structure and repository management.

At around the time that Great Britain was composing its finding aid program, the United States archival community had also begun work on description standards. Unlike the British archival community, the U.S. community was motivated primarily by the prospect of entering archival descriptions into bibliographic databases. Therefore, the goal was not so much to

¹⁸³ Michael Cook and K.C. Grant, Manual of Archival Description (London: University of Liverpool, 1986); Michael Cook and Margaret Proctor, 2d ed. (London: Aldershot, 1989). In 1991 the British National Council on Archives accepted in principle a recommendation that MAD (by then in the second edition) should be adopted as a national standard for archival description.

standardize archival description, but instead to compose database entries for archival materials that are consistent with bibliographic catalogue standards, so that both published and archival material would be available through the databases. From this effort, then, comes an approach to archival information that draws it upwards into the wider domain of information resources, necessary for participation in the exchange networks.

The program which took this as its aim was a collaborate effort, involving both librarians and archivists, and the challenge was to adapt existing library standards to describe archives. On the archival side was the Society of American Archivists (SAA) and on the library side was the Library of Congress (LC). The first step was taken by the SAA National Information System Task Force (NISTF), which worked for five years to adapt the MARC format standard to create MARC-AMC (Machine-Readable Cataloguing formats for Archives and Manuscript Control), which was presented to the archival community in 1983. This would serve as the data structure standard for archival catalogue entries. The next step was to compose data content standards consistent with bibliographic descriptive elements and compatible with the MARC-AMC structure. This aspect of the standardization program was a complicated endeavour, as recounted by Stephen Hensen.¹⁸⁴ Hensen worked in the Manuscript Division of the Library of Congress at the time, he was a participant throughout the process, and would be the author of the resulting standards presented in the publication Archives, Personal Papers and Manuscripts (APPM).¹⁸⁵

Efforts toward data content standardization began in 1978, around the time that the NISTF was beginning work on MARC-AMC. The data content endeavour, however, was not in conjunction with the data structure work, but instead the result of a project by the Library of

¹⁸⁴ Steven L. Hensen, "Squaring the Circle: The Reformation of Archival Description in AACR2," Library Trends 36 (Winter 1988): 539-552.

¹⁸⁵ Steven L. Hensen, comp., Archives, Personal Papers, and Manuscripts: A Cataloguing Manual for Archival Repositories, Historical Societies, and Manuscript Libraries, 2d ed. (Chicago: Society of American Archivists, 1989).

Congress to update the Anglo-American Cataloguing Rules to produce the second edition. Up to then, manuscript curators and archivists had composed archival descriptions according to the guidelines provided in the manuscript chapter of the first edition of AACR (now known as AACR1). The second edition was initially presented to the archival community for comment, first being made available in-house by the LC Cataloguing Division to the LC Manuscript Division shortly before publication, and then after publication being distributed throughout the community of archivists and manuscript curators. The reaction was not positive.

This was due to the fact that the data content standard had been updated to reflect a more modern approach to bibliographic description, based on the "Paris Principles."¹⁸⁶ These principles place "more emphasis on physical characteristics and title page information than on intellectual aspects and content."¹⁸⁷ However, as noted, archives do not have a title page and their primary significance, a significance that would have to be captured descriptively to properly identify them, lies in their intellectual aspects and content. According to Hensen, the thought behind the new approach taken in AACR2 "was an altogether laudable and understandable desire on the part of the international library and publishing communities to remove cataloging from the realm of the analytical and subjective and to establish it once and for all as a fundamentally practical discipline."¹⁸⁸ The formulators of AACR2 applied this practical cataloguing approach throughout the code book, including the chapters on special materials and manuscripts. This resulted in the loss of flexibility previously available in AACR1--a flexibility that addressed the needs of non-book cataloguing. Therefore, while AACR1 could be used with relative ease to compose the data content of archival descriptions, AACR2 could not.

The remedy found for this problem and presented in APPM was to attribute bibliographic

¹⁸⁶ Report, International Conference on Cataloguing Principles (London: n.p., 1963): 91.

¹⁸⁷ Hensen (1988), 546

¹⁸⁸ *Ibid.*

status to the description models of records. According to Hensen:

Archivists and manuscript curators have always understood, implicitly at least, that some sort of "bibliographic" identity needed to be created for the materials in their custody (although they almost certainly would not have recognized it in those terms). They cataloged and identified their materials through the preparation of archival finding aids such as inventories, registers, and guides. Whatever particular form these findings aids took, and in spite of their various local differences, nevertheless they nearly always contained similar categories of information regarding the creator, nature, source, extent, and so on, of the manuscript collection or record series. It is probably not altogether coincidental that the various elements of description found in archival inventories had certain parallels with some of the elements of library description. It was only necessary to recognize these similarities and to declare the primacy of these finding aids as legitimate sources of cataloging data.¹⁸⁹

Therefore, it is through the modelling of archival constructs that a connection occurs between the informational nature of bibliographic and archival material, and it is this relationship that is drawn out of archival description through APPM-derived data elements and then organized into MARC-AMC data structures.

With respect to its utility for composing a systems based framework for description, this standardization program does not speak directly to the task due to its heavily bibliographic focus. The intent of the program is to make archives look like bibliographic material as far as the automated networks are concerned. However, it is useful in that it demonstrates that a modelled representation of archives can be translated into a different informational model that captures and conveys some aspect of archival nature. The challenge not met is how to standardize the basic archival inventory model, and to coordinate all levels of description up to and including the level of transferring information from the model into a generalized database format.

This was the challenge that guided the Canadian archival community in its standardization work. Here, too, the effort makes use of AACR2, but the approach taken is an

¹⁸⁹ Ibid. 544-545.

attempt to mediate between the two environments of bibliographic information exchange and archival description, rather than simply interpreting archival nature into a bibliographic format. The project began with a report from the Consultative Group on Canadian Archives, published in March 1980, which recommended the development of description standards to support the systematization of information resources at the national level. In response to this recommendation, the Bureau of Canadian Archivists set up a study into current descriptive practice in Canadian repositories with specific reference to description used in finding aids. The study was done through surveys and research conducted by a Working Group, which was to report on four specific areas:

- i) the extent to which current descriptive practices had developed along similar lines and might be further codified
- ii) the prospects for the production of a Canadian data element dictionary
- iii) the prospects for systematizing finding aids both within and between Canadian archival repositories
- iv) recommendations on the development of information exchange networks with respect to the holdings of these repositories.¹⁹⁰

However, while the initial goal of the Group was “to develop a basic, overarching standard to guide description practice,” in the end they concluded “that no single standard could be made to apply to the broad range of archival materials and finding aids without being so general as to be meaningless.”¹⁹¹ Therefore, the goal of the Group was revised, to the creation of an explicit list of recommendations that would serve as “the script for the logical development, dissemination, and implementation of descriptive standards for archival material. Given the vast array and variety of archival descriptive systems and methods currently in place, the Group felt it

¹⁹⁰ Bureau of Canadian Archivists, Toward Descriptive Standards: Report and recommendations of the Canadian Working Group on Archival Descriptive Standards (Ottawa: Bureau of Canadian Archivists, December 1985), 3.

¹⁹¹ *Ibid.*, 54-55.

must first establish a framework based on agreement on certain principles and assumptions basic to any system of archival description."¹⁹²

The recommendations of the Working Group, published in 1985, dealt centrally with the principles and concepts that would form this necessary framework, and reflected a shift in focus from standardizing descriptive products generally to standardizing a fonds model format for direct entry onto bibliographic databases. Among the principles and concepts devised to guide the effort was the formal adoption of the fonds as the basic archival unit, with directives that the data structure to model the fonds be organized by specific levels of arrangement and description, and that description proceed from the more general to the more specific levels arrangement, that is, from the fonds to the series and so on. With this general framework established, a Planning Committee began meeting in 1987 to implement the plan of action set out by the Working Group. A major focus of this effort was to modify the framework of the first general chapter of AACR2 (revised) by analyzing "each area in AACR2R, to evaluate its applicability to archival description and to modify the rules, explaining the reasons for any modifications." Once made, these modifications were "to reflect those archival principles governing the arrangement and description of a fonds and its parts".¹⁹³ Serving as a structural framework in terms of the order of elements, and punctuation, was the General International Standard [for] Bibliographic Description (ISBD-(G)), which forms the underlying skeletal structure for AACR2. Therefore the rules for both the data content and the data structure are adaptations of bibliographic standards.

The first products of this initiative were a general outline of the descriptive standard and a procedure for applying the standard to textual records. This work was published in 1990 as two chapters of Rules for Archival Description¹⁹⁴ (RAD), a guidebook of rules that are "an extension

¹⁹² Ibid., 77.

¹⁹³ Ibid., xv.

¹⁹⁴ Planning Committee of Descriptive Standards, Rules for Archival Description (Ottawa: Bureau of Canadian Archivists, 1990).

of AACR2R to be applied to the description of a fonds.” Work by other groups built upon this foundation to provide additional chapters to guide description of different media, and to produce supplemental publications on various areas outlined by the initial working group’s recommendations, such as authority control and subject indexing.¹⁹⁵

As noted in its preface, RAD specifically “does not not provide guidance on the types of finding aids archives should develop, or the form in which they are presented or distributed to users. This is a matter of institutional policy.”¹⁹⁶ Therefore the only data structure given in RAD is entailed by the component format presentation of fonds descriptions that is compatible with the ISBD-(G) data structure. Beyond this, institutions are left to construct their own system of institution-specific finding aids using the data content standards of RAD, along with controlled data vocabulary as guided by supplemental authority control and indexing handbooks issued in companion with RAD.

The central focus of RAD is to standardize the fonds inventory model for entry onto a bibliographic database. As a result of the modifications made to the bibliographic standards, the resulting model preserves archival character in terms of structure and relationships. This is achieved through provision for multi-level representation to distinguish levels of arrangement, and separate treatment of the external creator context and the internal context of the fonds construct. However, primarily due to the underlying bibliographic standards for data elements and data structure, there is some problem in that the rule system itself is not in concert with the materials being described. For example, the standard does not distinguish in either the data elements rules or their structural presentation between parts of the standard that relate to

¹⁹⁵ Louis Gagnon-Arguin, Planning Committee of Descriptive Standards, An Introduction to Authority Control for Archivists, (Ottawa: Bureau of Canadian Archivists, 1989); Report of the Subject Indexing Working Group, Planning Committee on Descriptive Standards, Subject Indexing for Archives, Publ. no. 4 (Ottawa: Bureau of Canadian Archivists, 1992).

¹⁹⁶ Planning Committee, Rules for Archival Description, xvi.

information about archives, and those that are fundamentally bibliographic in nature and do not really relate to archives at all. As a result, the relationship between the RAD model format and a traditional archival inventory format is not obvious. As well, given that the standard specifically does not intend to guide in the creation of descriptive products, the fact that the central mechanism of a fonds inventory emerges from the description process would appear to be almost an accident. These are problems primarily of application, and the guidelines do succeed in addressing both archival nature and bibliographic standards, which satisfies the revised goal of the standardization program.

In terms of the priorities established, the problems encountered, and the goals achieved, these three national standardization programs together contribute much of the practical detail necessary for articulating a systems framework for description. The British program offers the example of using standardized data elements and structures for the creation of finding aids, the U.S. program demonstrates the utility and flexibility of the inventory model as a vehicle available for adaptation to a variety of information formats, while the Canadian program provides data elements consistent with bibliographic standards and the example of encoding archival nature into an adapted bibliographic format.

The systems approach cannot be built directly over this groundwork, though, because these standardization programs operate exclusively in the domain of description and do not incorporate a necessary link between arrangement and description, except with regard to the preservation of arrangement in description. In systems terms, description and arrangement cannot be dealt with as separate activities, because the task of descriptive modelling follows on and is the product of arrangement analysis. The two are crucially linked. This is why it was only with the appearance of the modern notion of representational description based on fonds arrangement that the archival picture is completed to the point that it can be treated systematically. Therefore,

in order to apply systems notions to description, the viewpoint of study must expand to incorporate both arrangement and description. Then it is possible to make use of insights acquired through the standardization efforts and apply systems notions to compose a systems version of the inventory model and a framework for description theory.

There are guidelines available in systems theory for this expanded treatment of archives, although most do not apply directly to the archival environment because they have been devised for the analysis and modelling of what are known as “hard” systems, such as those involving computer engineering and industrial production. These situations are different from dealing with systems in the archival context in two ways. In the first place, it is generally the case with hard systems that analysis and modelling form only part of a larger operation of systems management conducted in order to improve productivity and efficiency, cut costs, and simplify operations, and this involves altering the system so that it better serves the purposes of its creators and/or users. Therefore, in hard systems study, analysis and modelling is done as a preliminary step to systems re-engineering. This re-engineering aspect of systems management does have application in the documentary context with respect to records management, wherein a record keeping system is analyzed for efficiency, modelled schematically, and then re-engineered to provide for better organization in relation to the activities and needs of the creator and for easier filing and retrieval. In the archival context, however, where the central system under study is a body of records that is no longer in active use and is therefore closed, the archivist is approaching the system with no expectation for re-engineering.¹⁹⁷ This is a specialized application of the systems approach, because rather than re-engineering the system, the goal is to access the past reality that gave rise to record creation through the resulting record system: to explore and unfold one system in order to reveal and discover the other. The study must operate over both of these systems, the records which are in the hands of the archivist, and the human activity context

¹⁹⁷ Prior to the advent of the *respect des fonds* principle, the early re-arrangement programs designed to facilitate topically organized description of records is an example of archival systems re-engineering.

which was the environment of record creation, the two systems being intertwined through the classification scheme which was devised over the records in terms of creator activities. As a result, only a portion of systems management procedure, the initial steps of analysis (arrangement) and modelling (description) applies, but over multiple related systems.

A second difference between dealing with "soft" systems, such as archives and human activity, as opposed to hard systems, is that the soft varieties are less transparent--their structure, processes and parts less obvious, which makes the job of resolving their nature more difficult. However, there has been some work done on the study of soft systems, which offers guidelines for applying systems theory and methodology to the archival environment. A useful example is the work by Peter Checkland who has composed a framework for soft systems management by generalizing over the the tasks involved in a standard industrial systems management project, and then summarizing these into a list of methodological steps. The task of arrangement of archives is captured in the first three of the five steps, with description occurring in the fourth step:

1. *system examined;*
2. *system formulated;*
3. *root definitions composed;*
4. *conceptual models built;*
5. *comparison of "4" with "2";*
6. *feasible/ desirable changes determined;*
7. *action to improve the problem situation.*¹⁹⁸

The first three steps, these being the steps that are accomplished in arrangement, also group together conceptually, and Checkland characterizes them as a passive exercise of learning about the system as it is. From a science perspective, this is a procedure of observation which,

¹⁹⁸ Checkland, 162.

with respect to experimentation may be viewed as passive, but in fact is a process rich in subtle activity. As science philosopher Marx Wartofsky notes, "What we observe is largely a function of intent and context, and depends to a very great extent on frame of mind, attention, on what we know to look for."¹⁹⁹ Therefore, when the analyst studies a system, in anticipation of creating a model of it, this is not just a process of gathering raw data based upon what is seen, heard, and otherwise sensed about the system, but instead is an organized search for evidence. Regardless of the system in question, whether it be an industrial plant for canning food or the archival fonds of that canning company, the analyst brings to the task of understanding the system a conceptual framework based upon knowledge of how systems work generally and, according to experience, an anticipation of the sorts of structures, processes, and parts that will be found to characterize this particular system. With respect to Checkland's methodology, the first of the three observational steps is *examination*, a procedure of basic analysis, whereby the complex whole is rationalized into an organization of component parts. The second step of system *formulation* is then the procedure of synthesis, whereby the organizational and relational links are drawn between the parts of the system, and in the third step a definitional *root statement* is composed that represents the results of analysis and synthesis.

In applying this procedure to archives, the first step of examination determines the structure of the parts in the context of the whole, and the processes at work. For the human activity system, structure involves staffing, supervisory, reporting, and delegation relations. Analysis of processes in the human activity system finds functional responsibilities associated with a creator and the activities that meet these responsibilities. For the record system structure involves record groupings associated with a creator, and their hierarchy of relations. Analysis of processes in the record system focuses on the classification of records created in the course of this activity, and draws a link between process and structure in the two systems. After this

¹⁹⁹ Wartofsky, 101.

exploration of structure and process of both the creator context and the record construct, and the relation between the two, the second step is formulation of all separate and interacting structures and processes. This requires that all information gathered by analysis be synthesized to accurately establish context and relationships.²⁰⁰

In the third step, the information compiled in the first two steps is organized into root definitions for the systems examined and formulated. The root definition is a basic statement on the system that will guide in the modelling process. Checkland uses the mnemonic CATWOE²⁰¹ to describe the five features required in a root definition. The features are as follows:

1. The core of a root definition of a system is a **transformation process (T)**, the means by which defined inputs are transformed into defined outputs.
2. There is **ownership (O)** of the system, some entity having prime concern for the system and the power to cause the system to cease to exist.
3. Within the system itself are the **agents (A)**, who carry out or cause to be carried out the main activities of the system, especially the main transformation.
4. Within and/or outside the system are **customers (C)** of the system, beneficiaries or victims affected by the systems activities.
5. There are **environmental constraints (E)** on the system, features of the systems environment and/or wider systems which it has to take as “given.”²⁰²

Added to these elements is a sixth feature, which is a **world view (W)**. Checkland defines this as an outlook, framework, or image that makes the particular root definition meaningful. In essence, this is the environment of the system that enlarges the field of interest to make the

²⁰⁰ The product of this dual treatment achieves results similar to those of the Australian series system [see Chapter 2], although it is not restricted to operate at the series level, but rather at the highest level of holistic structure which, in simple cases, is the fonds.

²⁰¹ It is not a good mnemonic because the order does not follow a logical presentation of the features.

²⁰² Checkland, 224-225.

context external to the system available to the procedures of analysis and modelling.

These six features, as offered by Checkland to capture the findings obtained by observing a soft system management situation, can be reorganized to fall into three pairs of features, each pair addressing a different domain of the system under study. These three domains are the system interior, boundary, and exterior. The transformation process is operative in the system interior. This feature describes the function of the system to move input through the structure to produce output. The environmental constraints limit and control this process, and so pair with it. The ownership of the system sets the boundaries of the construct, and interacts with the system through the agents delegated to serve in this capacity. The world view then designates the external environment, with customers providing the immediate interaction with the system that rates its performance with respect to this environment and activates feedback within the system. In each case, there is an abstract feature (transformation process, ownership, world view) paired with a concrete feature (environmental constraints, agents, customers) that bonds with the abstract feature in a constraining, enacting, or instantiating capacity. As a result, assignment of these features to an analyzed and synthesized system elevates understanding of that system to a coherent whole, delimited by boundaries established in context, and portrays the mediation that occurs between its abstract nature and the concrete realization of the nature in operational mode.

With this reorganization of Checkland's definitional statement, the various archival systems can be defined through feature assignment in preparation of modelling. The central system to be addressed is the record system, and the features of a root definition are assigned generically as follows:

Transformational process: input - document / output - classified document

Environmental constraints: classification scheme, two-dimensional construct devised to encode three-dimensional relations

Ownership:	creator - provenance of documents and controller of the classification scheme
Agents:	classifiers, file clerks, maintainers of the system
World view:	practical activity/needs of creator
Customers:	retrievers and users of documents

These features formalize the traditional archival mindset for arrangement methodology. The transformational process of an unclassified record becoming a classified record captures the focus of arrangement analysis, as this has determined the organization of the records, limited and guided by the environmental constraints. The ownership is the provenance, in that the creator has the authority to generate records, and to alter the record system or cause it to cease. The agents are those delegated by the creator to maintain the record system by determining placement of records, and providing either the consistency and accuracy of placement or the lack of it. The customers are those who were affected by the good or bad performance of the system, who needed to have the records placed appropriately and to have access to them. The world view is the external environment of the record system, where record creation occurred and retrieval was necessary. This assignment of features in the CATWOE statement does not direct arrangement analysis, which may be conducted with little alteration from the procedure set out by traditional methodology. What the statement offers is a conceptual framework on which to place the information derived through arrangement analysis, so that the outcome of this activity is schematized in a standard manner.

A part of this conceptual framework is the explicit link drawn from the record system to the activity system, through the feature of world view which is the environment of record creation. As a result, the nesting relationship of records within a creation context is properly represented in the framework, and arrangement of the records leads the archivist from the records

to the creators. The features of a root definition for the activity system of the creator context are then assigned as follows:

Transformational process:	actions/ transactions (performance of functions)
Environmental constraints:	form, procedure, policy, bureaucracy, law
Ownership:	person, business, government (juridical person)
Agents:	persons in terms of functional responsibilities and juridical roles
World view:	juridical system, sphere of functional responsibility
Customers:	parties involved in/affected by actions/ transactions

Analysis of the records and creators provides the archivist with the assignment of features to this activity system, and results in a detailed picture of the record system in context. Within the parameters of traditional handling, this completes arrangement of the record system in preparation for writing the inventory. However, within the broader parameters of systems handling, the analysis is not complete. There are more systems to be addressed because when the record system is transferred into a repository and is put into the hands of an archivist, it undergoes a change in world view. Historically, the world view remains that of the creator context with all of the features of the record system associated to it; however, in the transition from records to archives there is an expansion and shift in the immediate world view of a construct from that of the creation environment to that same record creation environment within the wider context of the documentary universe, whereby it enters into new relationships and is accorded the status of records deemed worthy of permanent preservation. This requires assignment of an additional set of features, overlaying those already associated with the record system:

Transformation:	records to archives ²⁰³
Environmental constraints:	archival handling, policies, procedures
Ownership:	if part of records management program, creator; otherwise repository
Agents:	archivists
World view:	documentary universe
Customers:	users of archives (creators, researchers, archivists)

With this shift from the status of records to archival records, there is also a change in the activity system which serves as context. The new context is the repository, which is a participant in shaping the record system into an archival state through activities directed to managing this portion of the documentary universe on behalf of either creators (when archiving is the final stage in a records management program) or of society. The features of this contextual activity system are assigned as follows:

Transformational process:	acquisition & preservation of, access to archives
Environmental constraints:	mandate, education, standards, space, funding
Ownership:	creator or society
Agents:	repository
World view:	creator needs or needs of relevant communities: archival, repository, information management, cultural, social
Customers:	posterity

Many of these features are common to all repositories, such as the transformational

²⁰³ Distinguishing between records and archival records is a concept used by Schellenberg in a much different way. He uses this distinction to find records to be tools of administration and archival records to be tools of research so that license is obtained to discard records that are not obviously useful for research. Under the systems approach, the integrity of the record system endures in the transition to archives, and in fact the overlay of the archival system features serves to preserve the record system into the archival environment rather than providing justification for altering it.

process of acquiring, preserving, and providing access to archives, with posterity as the ultimate judge of system performance. Other systems features, such as the environmental constraints and world view, are specific to the individual institution. Once assigned, these common and specific features articulate the context of activity that has transformed the record system into an archival system. Of the two activity systems--creator and repository--which interface with the archival record construct, this is the one most often disregarded in description, in that it is generally not accorded a separate component in the inventory, and not all repository actions affecting the construct are noted. However, to whatever extent it touches on the archival construct, in terms of why the construct was acquired, how, what was done during processing, and so on, this information must be analyzed, synthesized, and defined in its own context, in order to fully characterize an archival system, and to ensure that each of the different systems involved is respected as a separate entity and does not interfere with representation of another.

With the four basic and association systems analyzed, synthesized, and defined, the fourth step in applying Checkland's procedure to the archival environment is the construction of a formal conceptual model of the system or systems under study. This model is the inventory, and under a systems approach it must evenly address all systems directly affecting the modelled record construct, including those of its active and archival states, as well as the creator and repository contexts. Each of these four systems logically forms a distinct component of the inventory, centred on the record system with linkages to the other three.

These linkages direct that the first component presented in the inventory model deals with the world view of the record system, which is the provenancial activity system. This component of the model identifies the administrative unit of the creator, established as a juncture of competence and function. According to the Australian method of analysis, this juncture associates with some level of ownership control over a particular record-keeping system,

providing a natural correlation between record constructs and creation activity that does not rely upon any definitional notions at odds with the reality of the records. Included in this component of the inventory are the various systems characteristics identified with the creator and captured in the first three steps of arrangement analysis, specifically addressing the administrative hierarchy and delegation of competence (structure), sphere of functional responsibility (processes), and activities performed to fulfill these responsibilities (parts), as well as predecessors and successors serving and operating in this same capacity. All of this information is selected on the basis that it contributed to the contextual environment in which the records accumulated.

A description of the record system produced in this context then forms the central component of the model. In this section is information on the organizational structure of the fonds, record extent, format, inclusive and bulk dates, and general content and arrangement. This sets the structural parameters of the fonds as the encompassing framework for the nested levels of series within the fonds and files within the series, along with any intermediate or progressively subordinate levels. The descriptive scope of a fonds inventory is the series and in situations of complex structure, like that of a government administration, this component of the inventory may alternatively be drawn from entries of series level record information associated with administrative unit creator information, as is set out in the Australian approach.

Whether composed as a model of a stable fonds associated with set creatorship, or of an expanding domain of series associated with a sequence of administrative units, this systematic description of both the provenance of the records and the record constructs can be expressed using standardized data elements such as those set out in the RAD guidelines. This facilitates the later step of adapting record model descriptions for entry onto automated networks, using the inventory as a bibliographic resource in accord with the approach taken by the U.S. standardization effort.

With the provenance and record systems addressed in the first two components of the model, the third component traces the transition of the record construct to an archival state, providing information on custodial history, terms and nature of acquisition, actions taken in the course of processing, conservation status of the records, accrual history, and the storage location of the records. In a standard inventory this last point, a notation as to the location of the records, is considered a purely administrative matter. However, with a separation between the record system and the archival record system, this becomes information as to the arrangement of the records by the creator, except in this case it is the creator of the archival system, which is the repository, and the storage location is the arrangement of the records determined in the course of a repository managing and organizing its holdings. As a result, the generalization is maintained that arrangement of records is determined by the creator, and there is a significance attached to the manner in which accruals and fonds are handled within the context of the repository.

The fourth and final component then relates the repository context. In this section is described the mandate of the institution, how these records relate to the mandate and to other records within the holdings, and additional information such as finding aids, and restrictions to access.

To a large extent, this procedure for analyzing and modelling the fonds corresponds with the traditional approach to arrangement and inventory description. The significant difference between the systems approach and all other archivally based approaches, both traditional, contemporary, and varietal, is that it addresses archives comprehensively as systems entities. Therefore, all contexts, both internal and external, over the entire environment of record creation and archival treatment are included in the inventory, and introduced in a modular fashion to reflect the complex structural framework that affects and is reflected in the archival resource. As

a result of this approach, the prevailing archival dictum that information be noted in its appropriate place is extended by segmenting the inventory according to the various systems operative in the archival environment. The traditional format makes this provision only in terms of information relating to different levels within the archival construct. By extending the requirement that information be placed where it belongs, the systems format provides a more explicit and regulated framework for the inventory model.

Presentation of the systems model is the last of the four applicable steps set out by Checkland for the study of systems. This, however, does not complete a systems study of description. The inventory model is the central descriptive mechanism within a general program of description activity, and all of the products of this activity, including the inventory, compose what has been termed a "finding aid system," which is the next level of description to be addressed. This was the focus of the British standardization program, and as Cook notes:

The way the separate descriptions are put together constitutes the finding aids system of an archives service. It is best if the result is truly a system, in which the components are planned, and the linkages between them designed from the beginning. In real life, most collections of finding aids have grown up in response to particular needs in the past, and have not developed integrated linkages or common entry points.²⁰⁴

Contrary to Cook's approach, though, a more stringent application of systems theory would not designate a collection of all the descriptive products of a repository as a "finding aid system," in that it is not actually a system in its own right, nor are all the descriptive mechanisms that currently fall under the heading designed for the purpose of "finding" records. The variety of descriptive products within a repository carries this misnomer comfortably, because the term captures their role as the systematically related output of another system operating, this being the activity system of the repository. The purpose of the repository is to process records, and descriptions are the product of this process. Therefore, a systems study of the products of

²⁰⁴ M. Cook (1986), 106.

description requires examination of the repository system processes.

The first of these processes is accessioning. An individual accession arrives at the repository as some group of records, perhaps from one record creator or from many, perhaps in the form of complete record constructs or only parts of constructs, the only feature necessarily in common among these records being that they are within the same accession group. Analysis of this unit identifies the records and summarizes their points of origin, condition, and general content. The descriptive product of this analysis is an accession report that registers the acquisition and provides initial control over the records. These accession groups are the input to internal components of the repository processing system.

Processing then continues as the accession is segmented according to provenance, which is the preliminary step to arranging the constructs as provenancial units. Arrangement analysis and inventory modelling, operating on the distinct system of the record construct, proceeds as previously outlined. At completion of this processing, the repository has information on the content of the records, their relationship to creators and functions, extent, media, shelving location, and state of preservation. The product of this processing is descriptions in the form of shelf and box lists, conservation reports, and the inventory. Through this array of descriptive products the repository establishes full intellectual and physical control over the records, in that the identity, status, location, and content of the records is known and documented.

This is the low level activity of the repository system processing structure. Overtop this level, the repository develops a variety of additional mechanisms to fulfill the wider role of its archival function, which is the management of information within the community of repositories, this information contained in archives which all have their own place in the context of the documentary universe. At the lower level of repository activity, emphasis was placed on control

and concern for the material aspect of record constructs in order to fulfill the basic responsibility of the repository to acquire and preserve records. With these issues addressed at the lower level, focus at the upper levels of repository activity shifts from control to access with emphasis on the intellectual content and relevance of the records.

These higher level descriptive mechanisms build on the inventory model, which has been composed at the lower level as the descriptive product of acquisition and arrangement and now emerges at the higher level as a representation of the documentary and provenancial significance of the record system. This significance arises through the mapping correspondence established between features of the record system and the systematic model of the descriptive inventory. As a result, the inventory stands available in true model fashion to serve as a surrogate of the record construct from which various additional descriptive mechanisms may be created and upon which others may operate in order to enhance the utility of the records.

Building up from the inventory, vertical mechanisms are created. These gather together descriptions of all the record systems within a particular repository organized in terms of provenance. Where the descriptive scope of an inventory is the series level, this is one step up, with the descriptive scope being the fonds level, and the product is a guide to the holdings of the repository. As set out in Holmes' theory of level organization, this is the management level of arrangement and description. A systems approach associates this level with the "creator" of the archive system, which is the repository, where there may be various record systems of different provenance. This interpretation provides a wider characterization of the archival system, as being more than simply the result of the record system undergoing archival processing. The archival system is the elevated representation of a record system that enters into complex relations with other archival systems within the repository in terms of both its physical arrangement and intellectual content, and it is the archival system that then appears as a guide entry, described in

the context of all the holdings of a particular repository. The traditional mechanism of the guide thereby receives a significant status as a description, not of the records held in one repository, but instead of the archives generated by that repository, a level of natural archival structure higher than that of the fonds, and associated exclusively with the repository context.

Other descriptive mechanisms operate upon the inventory horizontally, cutting across construct levels to find common points of access. These points of access are determined from models of reference devised by the repository in relation to both the world of inquiry and the content of its holdings. These reference models may be of two types. One type involves standard reference for the proper names of entities, such as persons, businesses, organizations, and administrative units, that create records and participate in the activities that they document. The model identifies and classifies these entities in standard terminology and provides links from non-standard to standard terms. In information management work this is known as authority control, with the standardized references being the authorized form. The effect of this control mechanism for description is to provide standard vocabulary for data values that name the agents and the objects of documented activity.

The other type of reference model provides the vocabulary values needed to complete the picture by naming the activities themselves in a standard manner. This vocabulary is not nominal but instead is derived from verbal concepts, which relate to the functional process nature of topical reference occurring in the records. Terms are selected from the sphere of functions to which records pertain and are identified and classified into a map of topical reference, so that there is logical separation and linkage between the topics within the map. This results in a controlled listing of activity-based terms that segments the world of topics so that each term refers to a unique and appropriate subject. Through this listing, then, access routes are provided to lead from subject-based queries to records that relate to those subjects. These listings are

called thesauri or subject headings, and are often composed specific to the individual repository.

These reference models are the mechanisms used to create indexes, which may be used in one of two ways. An indexing procedure can be applied to completed inventories to identify records that relate to the entities or topics set out in the reference models. These records can then either be presented through a catalogue, organized according to the index terms, or made available by means of a search and display option on automated database descriptions, accomplishing through description what the failed 18th century re-arrangement effort attempted to achieve working directly on the records. Alternatively, with automated database descriptions, the vocabulary provided by the reference models may be used deliberately in the course of composing the descriptions, so that no subsequent indexing procedure is required.

For both vertical and horizontal descriptions, automated databases have simplified access in many ways. This is not a different form of access, but instead a different way of providing access based on the standard mechanisms. It is through this use of databases that the centrality and utility of the inventory model within a description program becomes most apparent, as the inventory serves as the basic descriptive device from which all others may be drawn. Given the situation of all individual inventories mounted on a repository database, this provides the fonds level descriptions and, in aggregate and with a selected presentation of the various elements of the inventories, may also be used to compose the repository guide. The inventory descriptions can be used for entity and topic searches, and with the assignment of index terms, the repository catalogue can be drawn from these entries. As well, the lower level descriptive mechanisms such as location lists can be generated from inventory information. In this way, the use of automated databases may serve as an extension of the descriptive program of the repository. These databases may also be shared outside of the repository to represent the holdings of an archival community, another vertical step up from the level of repository guides. Alternatively, or in

addition to this approach, is the use of bibliographic database networks for global exchange of information.

These various descriptive mechanisms, from acquisition registers and shelf lists, to catalogues and guides, do not compose a stand-alone system, but instead organize into a pattern of systematic relationships, as a result of being products of systematic processes undertaken within the repository. The repository process system is an active and not a closed system, and therefore both the processes and their products may be re-engineered. Standardization is a fundamental move towards re-engineering and the higher the level of the descriptive process, the more important it becomes that there be a constraining and regularizing influence of description standards within the community of repositories. The domain for such standardization contains three levels. There is the level of processing the individual record construct that is modelled to preserve and communicate its archival nature; there is the program of activity that builds from the model to produce a variety of descriptive mechanisms within an individual repository to control and provide access to holdings; and finally, there is community wide activity to create database formatted entries for the global level of automated information exchange.

Each of these progressively expanding domains of description has been addressed in some manner in the different national standardization efforts, and the incorporation of a systems approach to archival handling generally and description specifically would suggest different modifications to each. For the British approach, which addresses the issue of standardized inventories and other products of description, incorporating the systems approach would lead to restructuring the inventory format, using essentially the same data items, which then forms the basis of the "finding aid system," organized to compose a product model resulting from systematized repository processing activities. The Canadian effort has launched its standardization program at what a systems approach finds to be the widest and last domain of

concern--the creation of descriptive entries for automated information exchange databases. The systems approach would redirect attention back to the creation of standardized low and intermediate level descriptions which is the groundwork for this final step. This would result in a standardized format for various descriptive products using RAD compliant data content elements, in particular an archivally-based inventory model format. The information presented in this model would then feed into the bibliographically based RAD structures. The U.S. approach also has begun at the highest level of description domain, although this effort has not been made in concert with specific archival needs, and so all levels would have to be addressed.

It should be apparent from this discussion of systems and description activity that archives are situated in an environment of interactive systems. The extent to which these systems are recognized, articulated, and utilized, as they relate to documentary information and significance, depends upon the insight, skill, and care that is brought to bear in the course of basic archival treatment. With an understanding of systems, archivists will be better equipped to apply this treatment with professional consistency and competence.

3.3 Appraisal

There arose a tumult of anger among those who would be supposed to have had the papers if Crocker did not have them, and a rigorous search was instituted. Then it was discovered that he had absolutely--destroyed the official documents! They referred to the reiterated complaints of a fidgety old gentleman who for years past had been accusing the department of every imaginable iniquity. . . .

This was a new crime. Wicked things were often done, but anything so wicked as this had never before been perpetrated in the department. The minds of the senior clerks were terribly moved, and the young men were agitated by a delicious awe. Crocker was felt to be abominable; but heroic also, --and original. It might be that a new opening for great things had been invented.

Anthony Trollope, Marion Fay

Of the three basic tasks involved in archival handling, appraisal has the greatest potential for affecting the record system. This is because appraisal involves evaluating documents to determine whether or not they are to be preserved. If they are preserved, they are arranged and described and join into relation with other archives within a repository to form a part of the documentary universe. If they are not preserved, they are destroyed. Unlike a decision made on arrangement of records, which usually can be reversed intellectually if not physically, and unlike a decision made on description, which does not touch the records directly, the decision to not preserve has permanent consequences. Therefore, it is important that the procedure of archival appraisal be consistent, judicious, and systematic.

Not all appraisal decisions are made to determine acquisition by an archival institution; many appraisal decisions are made in the creation context and are a part of the shaping of the record system. The decision made by the creator to keep a new record in the first place is an appraisal decision. Then, when the record has fulfilled its purpose, there is another decision to be made as to whether or not the record is retained in a semi-active state for future reference. This is a process of attrition that finds a selected portion of the record system surviving to approach the inactive state.

Archival appraisal is traditionally then done on these inactive records, and it may occur at two stages in the course of record handling. At the first stage, an archival repository decides whether or not a particular fonds construct is to be acquired.²⁰⁵ The decision to acquire depends upon the relevance of the records to the repository mandate, which operates in the context of the repository community. This, again, is a systems issue, as relevance is determined on the basis of whether or not the records fit into the repository mandate, and the mandate operates within the sphere of functional competence accorded to or adopted by a particular repository in relation to

²⁰⁵ If the repository is a part of the record creator's administration, this decision is a part of the records management program, and acquisition is dictated by the repository mandate.

the repository community. Some repository mandates are based on a geographic region, some are topic oriented, others are associated with particular creators. Thus, each repository takes within its holdings records that pertain to a particular component of the documentary universe. This is an organic organization, in that there is traditionally no overriding control within an archival community to document every region, topic, and creator. Instead, the driving force is that people in a particular region, or who have a certain subject interest, or who are creators of significant records, recognize a need to preserve those regional, subject-related, or self-generated records and so a repository is established with a mandate to collect, preserve, and provide access to them. Thus, it is a product of society's interests and its documentary sense that lead to the establishment of repositories with particular mandates, and records are acquired by those repositories if they are relevant to the mandate. If they are not relevant to the repository mandate then the disposition decision is not to acquire the records, with the possibility that they may be referred to another repository where they would be relevant to the acquisition mandate, or they are simply left to their fate. As a result, this stage of appraisal determines the character of documentary heritage, which is administratively structured through the organic arrangement of repository mandates.

At the second stage of appraisal, the records have been acquired by the repository, and decisions may then be made as to whether the construct as a whole is to be preserved, or only a part of it. This is reduction appraisal, and is done if it is anticipated that only some parts of the construct are significant, particularly in consideration of existing repository holdings and resources. If not all the records may be retained, the archivist must decide what is to be kept and what discarded. Records may be retained in groups so that relations are maintained between the records, or a vestige of each grouping may be retained, and this would result in the loss of relationship structure but preservation of a sample of the construct as a whole.

Decisions made at both the level of appraisal for acquisition within the context of the repository community and appraisal for reduction within the context of the individual repository, depend upon an evaluation of the records. There are various criteria used in the evaluation process, which focus on the capacity of the records to reveal the activities of the creator and to serve users' needs. These criteria are function based and fit easily into a systems approach in that one set operates in terms of the creation context and another in terms of the repository context. With respect to the creation context, value is accorded to records generated by creators engaged in core activities, and this value is increased by the records holding strong evidence of those activities. Particularly in the case of "in-house" repositories (those mandated to serve a particular creator) high value is accorded to records that retain administrative, legal, and fiscal values because these are needed to serve the on-going business of the creator. Regardless of the allegiance of the repository, records holding these values may also be deemed significant for general purposes because they are important in, and therefore strongly indicative of, the creation context. These are all values that derive from the relational interface between the record system and its external creation context.

Appraisal also involves evaluating the records in terms of their capacity to complement the holdings of the repository, and so these values derive from the relational interface between the archival record system and its external context, which is the repository system. One of the criteria relevant in this context is extrinsic value, which the records hold if they refer to particular people, events, and activities that are likely to be significant to repository clientele or to posterity in general. Another consideration is the intrinsic value of certain records, which resides in their artifactual or documentary characteristics. While the appraisal focuses on determining these extrinsic and intrinsic values, there also must be a general evaluation of the record content with respect to the completeness of documentation, the time span, and the general quality of the

information in terms of detail and concentration, and range of subjects covered.²⁰⁶ The appraiser then determines the extent to which the records hold such values and their likely endurance, and the extent to which the records augment the repository holdings.

Through this evaluation and decision process the archivist is placed in the position of shaping the documentary heritage, and of all tasks performed this may require the most careful judgment and the greatest skill and understanding of archival nature. It is not possible to systematize the process to the point that it is automatic. Appraisal decisions are a part of the archival craft. However, an awareness of the systematic nature of archives provides an additional tool for the archivist to use in this difficult and delicate procedure. On the other hand, and as has been seen in the study of both arrangement and description,²⁰⁷ an incomplete or misapplied notion of systems may complicate an already complex task and possibly lead to grievous error. For appraisal, the difficulties caused by misusing the concept of systems and the benefits of using it appropriately can be demonstrated in a study of appraisal practice for public records.

Appraisal of public records provides fruitful ground for this study for three reasons. (1) The practices which guide handling of public records generally have a long history and are significant within the archival community because they influence the perspective taken within the jurisdiction of the government that produces those records. In some countries, such as Canada, the government archives have a comprehensive mandate to acquire business and private records as well as public records, and this further influences the regional community of repositories that acquire the same types of records. (2) Government repositories managing public records are an arm of the creator's administration, which allows for the full scope of archival involvement in disposition decisions. (3) A "systems" based approach to appraisal has been attempted by the

²⁰⁶ G.F. Ham, "Archival Choices: Managing the Historical Record in the Age of Abundance," ed. N. Peace, *Archival Choices* (Toronto: D.C. Heat, 1981), 133-148.

²⁰⁷ The examples referenced are the attempt to systematize arrangement of records according to topical classification and the attempt to systematize description according to bibliographic standards.

National Archives of Canada and demonstrates the potential problems associated with applying this notion without an explicit understanding of systems and systems concepts.

Appraisal activity as a part of archival handling first emerged in this context of government archival institutions.²⁰⁸ These repositories were established in order to service the record preservation needs of governments and they managed all records that had passed into the inactive stage and were transferred for storage. Initially, these records were considered the property of governments. Then, with the general trend of governments moving from autocratic to democratic rule, archives came to be the property of society as a whole, and all records--both public and private--to be of interest. As a result, the archivist was placed in the position of taking posterity into consideration in the course of deciding which records were worthy of preservation. This was in the late eighteenth century and, at that time, there was no immediate need for appraisal to reduce volume, as record creation was a sober act, requiring literacy and writing materials. While paper, ink, and education were not readily available or affordable, records were produced at a modest pace and repository storage space was generally not strained by the volume of material that came through the doors. It was not until after the First World War that volume became a concern. At that time advances in document creation and reproduction technology began to change the nature of the documentary universe from a condensed and manageable resource to a tangled thing growing wildly beyond control. Two problems resulted and continue to challenge the archival field. One problem is administrative, in terms of finding space to store the records. The other problem is operational. Unless measures are taken to control the bulk of material preserved, that which can inform and illuminate may be buried to the level of irretrievability within ephemera and duplication.

Because the tasks of maintaining records and making them available are the responsibility

²⁰⁸ Ernst Posner, *Archives in the Ancient World* (Massachusetts: Harvard University Press, 1972); and "Some Aspects of Archival Development since the French Revolution," *American Archivist* 3 (July, 1940): 159-72.

of the archivist, it is therefore now required of archivists that some appraisal be done to produce a manageable resource. This said, a rationale for the practice of appraisal has yet to be determined, and the task has been undertaken according to a variety of methodologies and principles. Generally, most of the approaches adopted have been based on traditional theory and therefore operate in some sympathy to a systems approach. However, the extent to which the systematic nature of records is respected in the course of appraisal, and the manner in which this respect is shown, varies widely, and the different approaches relate directly to the debate over whether records or users should be the focus of the archival mandate.

Comparing the approach to appraisal taken by two leading theorists in the field demonstrates the divergence and the nature of the debate.²⁰⁹ One of these theorists is Hilary Jenkinson, who dealt with the issue of appraisal as an archivist in the Public Records Office of Great Britain. The other theorist is Theodore Schellenberg, who devised appraisal procedures for the U.S. National Archives as that country faced tremendous increase in record volume.²¹⁰

Writing more than seventy years ago, Jenkinson maintained that the only form of appraisal that does not interfere with the unconscious nature of archives is that which is conducted by the creator of the records. Under such a policy the same mindset and mandate which results in the existence of the records also controls their ultimate fate. However, Jenkinson formed this view before the advent of the modern record crisis. When that crisis subsequently became a pressing issue for the Public Records Office in the 1950s a governmental study, commonly known as the "Grigg Report,"²¹¹ advocated a certain procedure for the appraisal of public records which was in essence faithful to Jenkinson's approach, with modifications dictated

²⁰⁹ Richard Stapleton, "Jenkinson and Schellenberg: A Comparison," *Archivaria* 17 (Winter 1983/84): 75-85.

²¹⁰ T.R. Schellenberg, "The Appraisal of Modern Public Records," *National Archives Bulletin* 8 (Washington: National Archives and Records Service, 1956).

²¹¹ Great Britain. Parliament, "Report of the Committee on Department Records," Cmd. 9163 (London: HMSO, 1954).

by necessity. The procedure has a records officer within the creating organization reviewing record files five years after they have been closed and destroying those deemed to have no value at that point in time. The need for preserving non-administratively relevant records which do, in fact, possess some significant historical value is addressed by having the archivist "accompany" the records officer through the review. In a subsequent review, twenty-five years later, the records are then further culled and channelled towards ultimate archival preservation, with the interests of the research public safeguarded through increasing participation by the archivist in the review process.

This finds the records passing through a transition of appraisal control that reflects their transitional usefulness, first in relation to the administrative needs of the creating body, then into waning administrative relevance and an emerging archival state, and finally into the hands of the archivist. The archivist therefore participates in the appraisal procedure in order to represent the interests of those other than the creator who may want to use the records, and the archivist is seen to be qualified to represent these interests as a result of experience gained through dealing with archives users and through having a wider awareness of the nature of the documentary universe. Jenkinson's position that the archivist, by definition the guardian of records, should not be placed in the role of the destroyer of records is maintained through the nature of archival intervention in the review process. The archivist primarily mitigates decisions to destroy when it happens that records in which the administrator finds no value may yet hold value to others. These records are taken out of the discard pile and returned to their place in the documentary universe.

American archivist Theodore Schellenberg approaches the problem of appraisal from a different direction. He maintains that records are janus-faced entities that serve an initial function to their creators within the administrative context and then serve a secondary function as research material when they pass out of administrative usefulness. The archival perspective is situated at

the endpoint in this line of destiny, where records stand ready as archival resource material, and the archivist's professional responsibility is to the users of the resource. This responsibility is fulfilled by conducting appraisal on records to ensure that research material is specifically preserved, and material which is not useful for research is destroyed to make the useful material more accessible. Due to training and experience, the archivist is uniquely in a position to evaluate what shall be saved in circumstances which require that most cannot be.

The practical approach to appraisal which attends this view is one of taxonomic evaluation. Given that the ultimate goal is clearly in view--that only material of use for research is to be preserved--it is possible to approach the task of appraising records armed with a list of what constitutes value in records. This list represents in articulated form those qualities which the Jenkinsonian archivist essentially intuitively interjects into the appraisal process in order to hold back that which should not be destroyed. Under the approach advocated by Schellenberg, records are critically examined to determine if they possess such qualities, and if they do not then they are destroyed. This is goal-oriented appraisal which fashions the documentary universe in terms of the desired product.

The important distinction between these two views resides in the archivist's role in the appraisal process. The British method has the archivist walking with the record through time from its participation in the administrative context to its ultimate destiny, with the creator maintaining primary control in the process and the archivist acting as advocate for the documentary universe. Schellenberg has the archivist acting as advocate for the users of archives, actively approaching the documentary universe from this point of view to choose what is to be accepted into the archives and what is not.

This distinction between the Jenkinsonian view of the archivist as guardian of archives

and Schellenberg's view of the archivist as facilitator of archives use is a product of the environment in which each of these theories was developed. Jenkinson worked in Great Britain around the turn of the century, handling ancient records that came into his care through the process of natural attrition. Through these records he came to understand the nature of the documentary universe as the material at hand unfolded to reveal the essence of the times in which they were created many centuries ago and through which they happened to survive. He did not, however, have the opportunity to apprehend the problems that would develop with modern record keeping. Schellenberg, on the other hand, came into the archival field in the United States after World War II, when the issue of bulk was first being recognized as a major problem, particularly within a society that formed the vanguard of advance into modern record technology. There was not the wealth of antiquated records to demonstrate the virtues of an unconsciously evolving documentary resource. There was, however, the pressure of researchers lobbying for access to a backlog of unprocessed records in order to establish the historical face of a young country whose documentary heritage showed signs of expanding in bulk beyond the point where it would constitute a useful resource.

These disparate views on appraisal also relate to different theoretical approaches to archival practice, that parallel the systems versus reductionist debate in science. Not surprisingly, the British approach to appraisal and archival practice correlates to the systems viewpoint and stems from the provenance approach of traditional European archival theory which links records to the circumstances of their creation and use. Such an approach focuses on the records as holistic constructs with intrinsic value, and to do otherwise than construe them in terms of their creation would result in a loss of the intellectual foundation that instills this value. Provenance is safeguarded through the two methodological principles of *respect des fonds* and respect for original order. As noted, from a systems perspective these two principles may be summarized as "respect the system." Through preservation of the records system, these two principles ensure

that provenance may provide information that results from the whole-part relationships among the records within the fonds and between the fonds and the circumstances of its creation and use. Stemming from the concept of provenance, Jenkinson's position that only the creator should make active decisions regarding the fate of records follows logically, as such a practice maintains the integrity of provenancial relations and the organic nature of the resulting body of records in terms of both its composition and organization.

Schellenberg's stance that appraisal should be conducted in terms of the needs of the users correlates to the mechanistic approach of science, because it focuses on the parts of the whole in terms of their utility. The value of the whole is thus determined by the usefulness of the parts and the whole survives selectively and is fashioned on this basis. The approach is also consistent with a more recent perspective within European archival activity proposed by Hans Booms in the 1970s, and realized through a program called the Documentation Plan.²¹² The explicit goal of the plan is to facilitate research by organizing the documentary universe according to a topical rationalization of societal structure. Because it operates in terms of topics, this approach is described as being based on pertinence. It constitutes a logical extension of the viewpoint that archival activity be conducted in terms of user needs, and deals with the documentary universe in terms of its parts and their usefulness, with the relationships between the parts expendable for practical purposes.

This approach would be implemented through a program amongst archival institutions to co-operatively determine the topics which will form the basis for their individual collection mandates with the ultimate goal of the repository community documenting society deliberately and comprehensively. The non-archival notion of collection is significant, because in effect this strategy entails that archival material is not acquired for or appraised according to inherent

²¹² Hans Booms, "Society and the Formation of a Documentary Heritage: Issues in the Appraisal of Archival Sources," *Archivaria* 24 (Summer 1987): 69-107.

qualities but instead strictly in terms of topics to which it is judged to relate. Where the provenance perspective brings into the archival domain a reflection of the social reality which contextualizes the records, the pertinence perspective brings into the archival domain an independently devised topical organization of this reality. In effect, a system of topics is mapped over the system of the record structure. This echoes the eighteenth century attempt to re-arrange records along topical classification lines in order to facilitate description, except in this instance the same sensibility is applied to the acquisition and disposition of records, to shape the entire documentary resource.

As was the case for topically oriented program for re-arrangement, this effort to topically organize the documentary resource itself will affect the organic nature of records because the pertinence approach maintains provenancial integrity only to the point that records of a single source relate to a determined topic. Past this point, if groups of records relate to topics which fall within the declared mandate of different institutions, the body of records of a single source are fragmented along topic lines and provenancial integrity is lost. There are various problems with this approach, beyond the prospect of breaking apart the systematic unity of a fonds. Fonds, as a rule, do not pertain to single topics, and therefore it is unlikely that a definitive placement for most could be determined. Even if fonds were kept intact and some rationale for placement could be determined, there still remains the problem of assigning repository mandates so that, as a community, they achieve some comprehensive organization of topics useful to researchers. Such an effort was attempted and abandoned in the re-arrangement program of so many years ago.

This is not to say that use should play no role in acquisition and disposition decisions. As Terry Eastwood maintains, whether the archival approach is based on provenance or pertinence, the criterion of use must play a role in appraisal decisions.²¹³ The contrary view is that, on the

²¹³ Terry Eastwood, "Towards a Social Theory of Appraisal," in The Archival Imagination. Essays in Honour of Hugh A. Taylor, ed. B. Craig (Ottawa: Association of Canadian Archivists, 1992), 71-89.

basis of the nature of archives as evidence of the past and therefore objective entities, "Appraisal is somehow an objective process of the acquisition and selection of objective things, which then may very well be put to interpretive use. That view proposes that the considerations of the use of archives have no place in appraisal." Eastwood then states, "The validity of that proposition may be doubted."

This doubt stems from the problems inherent in determining an objective basis for conducting appraisal. Eastwood discusses the two basic approaches, provenance and pertinence, in terms of their ability to ground an objective appraisal theory and finds both incapable of so doing. The provenance approach guides appraisal decisions on the basis of some externally derived criterion for determining the relative importance of the creator; the pertinence approach requires a similar appeal to the external, this time in terms of the relative importance of some topic. Both approaches therefore require appraisal decisions based on subjective evaluation because they require a creative extrapolation from the reality of the records to the world external to the records where it is predicted that the records kept will be more useful than those which are destroyed.

On the basis of the observation that the inherent purpose of archives is as memory-inducing devices which enable recall of that which they evidence, Eastwood proposes: "utilitarian things require utilitarian appraisal, that is, appraisal based ultimately but not exclusively on an assessment of use." As creations of society, therefore, archives should be "appraised on the basis of an analysis of the use to which they are put by the society that created them, all along the continuum of their existence--an existence, after all, determined, continued, and terminated on the basis of usefulness, however inadvertently recognized and acted upon." As for the methods by which such appraisal is to be conducted, Eastwood describes it as a process which "calls forth all one's knowledge of the world," with the objectivity/subjectivity question

“wrestled with in every case.” The individual effort and anguish foreseen in this depiction indicates how difficult it is to incorporate the criterion of use into an ideally objective process, as he states that appraisal activity “ought not to be intuitive; rather, it ought to be as scientific as possible.”

This effort is required primarily when the criterion of use is applied within the provenancially based approach to appraisal. Within the pertinence approach topics are set before appraisal is begun and so the appraisal process entails matching the content of the records to predetermined listings of what is expected to constitute useful topics. Under the provenancial approach the appraiser has no such guidelines and so the criterion of usefulness, if it is to be considered, must be inferred and hypothesized on the basis of the creator's role within society in relation to the administrative functions and the records themselves within the archival context.

A recently proposed appraisal program at the National Archives of Canada, which resides historically and geographically between the approaches of the British and American national archives, has attempted the challenge of incorporating notions of use into a provenancially based appraisal procedure, with application of explicit systems notions.²¹⁴ This appraisal program developed historically under the influence of two guiding principles in Canadian archival thinking. One of these is the “Total Archives Concept,” as it is described by Wilfred Smith, former Dominion Archivist of Canada. Under this principle, the public archival repositories of Canada take within their mandate all kinds of archives, both public and private, which relate to all subjects of human endeavour, occur in all media, and at all life stages of the records. The notion of life stages refers to the second guiding principle, that of the continuum approach to the records.

²¹⁴ Historical information on National Archives based on: Ian Wilson, “A Noble Dream: The Origins of the Public Archives of Canada,” *Archivaria* 15 (Winter 1982/83): 16-46; William Ormsby, “The Public Archives of Canada 1948-1968,” *Ibid.*: 36-46; Michael Swift, “The Canadian Archival Scene in the 1970's: Current Developments and Trends,” *Ibid.*: 47-57.

This second principle has altered slightly in recent times. The initial life stages approach separated the life span of records into two phases, one relating to records during the active portion of their life, the other to the inactive portion. The first phase included creation, classification, maintenance and use of the records within the administrative context, and then concluded with record disposition--either disposal or transfer to the archives. The second phase occurred within the archival context and included selection and acquisition of the record, description, preservation, and use of the record within the archival context.

In 1985 Jay Atherton argued against this two phased approach.²¹⁵ He held that it created an unwarranted separation between the active and inactive phases of a record's life span. This would be eliminated by an integrated approach that viewed the life span of the records as a continuum of interrelated stages which overlapped archival and administrative functions and responsibilities throughout the life of the record. Through such a handling greater and more effective control over record disposition could be achieved. Under this approach there are only four stages to the life span: creation or receipt, classification, scheduling which determines the planned life cycle of the record, and finally the maintenance and use of the information contained in the record. With this second perception of the life stages of records the notion of the "Total Archives Concept" is solidified to find the portion of the documentary universe which resides in Canada, in all forms and at all stages, to be uniformly within the mandate of, and of direct concern to, the archival community.

While this model was formally presented to the archival community only in recent years, in fact the "Total Archives Concept" reflects the Canadian archival viewpoint as it had been developing for many decades. This viewpoint first arose through discussions of appraisal centred

²¹⁵ Jay Atherton, "From Life Cycle to Continuum: Some Thoughts on the Records Management - Archives Relationship," *Archivaria* 21 (Winter 1985/86): 3-51.

on the notion of scheduling, which is a basic tool for gaining intellectual and physical control over active records from the archival context. In the 1960s, the Dominion Archivist of the time, W. K. Lamb, presented a procedure for implementing effective scheduling.²¹⁶ He argued for the involvement of the archivist in schedule implementation as a part of a systematic program for record handling keyed to the various phases of the record's life cycle. Lamb noted Jenkinson's objections to having the archivist involved in record destruction then proceeded to explore the alternatives. One option was to follow the British practice and leave appraisal to the creators of the records, the administrators, and records managers. Lamb argued against this, noting that both the administrator and the records manager would be unduly influenced by the need to reduce bulk and would be incapable of seeing the uses other than administrative to which records might be put. Another often cited option was to leave the issue of what might be destroyed to a representative body of the users of archives. Lamb argued against this also, on the grounds that, while it was true that researchers would view the records in terms of the non-administrative uses to which they might be put, their judgment was likely to be influenced by particular research interests. Lamb's conclusion: "Archival collections are rich in documents that have all sorts of unexpected values . . . the archivist is the person most likely to perceive them, or to suspect their existence. It is his business to take the long-term view." Therefore the archivist should have the final word on destruction of records. Lamb did not, however, view this responsibility as unilateral. Instead he argued for an archivally guided program that would combine with scheduling to manage the records into the archives. This program rested upon two components: storage facilities and a review procedure.

During Lamb's tenure as Dominion Archivist a records centre facility for public records was built.²¹⁷ This storage facility served dual needs. It served the creators through liberating

²¹⁶ William K. Lamb, "The Fine Art of Destruction," in Essays in Memory of Sir Hilary Jenkinson, ed. A.E.J. Hollaender (1962), 50-56.

²¹⁷ Jay Atherton, "The Origins of the Public Records Centre, 1897-1956," Archivaria 8 (Summer 1979): 35-59.

valuable office space and providing access to dormant records. As well, it served the archivists through providing an environment under their authority which would enable them to maintain the records in a state that would ensure their orderly survival from the time they passed out of active use to the time at which their ultimate disposition could be determined.

Determining ultimate disposition was the function of the review procedure, which was devised to secure sound objective judgment over disposal decisions by incorporating a wide range of viewpoints. The procedure was initiated by the government departments reviewing their inactive records then submitting to the Dominion Archivist a schedule which set out selective retention for certain of their records by requesting that others be authorized for disposal. A requirement for disposal authorization was written into the process through legislative stipulation, still in force, that the Dominion Archivist, now the National Archivist, must approve all destruction of public records.

With approval for destruction obtained from the Dominion Archivist the next step in the process was submission of a report to the Public Records Committee which was managed by the Dominion Archivist and comprised by representatives from various interested public departments. With approval from the committee the submission then underwent review by the Treasury in consultation with the Auditor General to ensure that there were no legal or financial reasons to retain the records. Only after this process of approval had been completed could records be destroyed. Lamb held that under this procedure only those documents that should be destroyed would be destroyed.

Wilfred Smith, who succeeded Lamb as Dominion Archivist, echoed these sentiments fundamentally, but had the benefit of several years experience of the review procedure. Commenting that the problem of record volume "cannot be solved by bricks and mortar," Smith

recognized a need for improved scheduling that would better control record volume because, while it was the case that only those records that should be destroyed were being destroyed, it was not the case that all of those records that should be destroyed were being destroyed. He proposed that the archivist take a more active role working with the creators to co-operatively set schedules, with the usefulness of the records keying their ultimate disposition. The creators would provide determination of the record's primary value; the archivist, with a knowledge of history and experience in the needs of researchers, could determine secondary values.

However, several decades later this revised approach has still proven insufficient for the task of dealing with the problem of modern record volume. Terry Cook of the National Archives therefore called for a more aggressive approach to appraisal, as part of a new archives management program.²¹⁸ Under his proposal, rather than waiting for records to be transferred to its control from the departments, the Archives assumes control over the order and manner in which the records are taken out of the creating departments.

The initial step in implementing this appraisal policy is analysis of the record creators; that is, the various government institutions. This analysis is conducted for the purpose of prioritizing the creators to determine which institutions are creating records that should be called in to the archives first and which institutions are creating records that may be left until the bulk of material has been controlled to some degree. Ranking of the creators is determined according to a variety of criteria: the "importance" or policy-making capacity of the institution within the government hierarchy, the breadth and diversity of its mandate, the size and complexity of its functions, and the variety of media in its records. The higher the score in terms of these various criteria, the higher the ranking. Also to be considered in the course of the analysis is the notion of

²¹⁸ "Government-Wide Plan for the Disposition of Records, 1991-1996," internal report (Ottawa: National Archives of Canada, November 1990); and Terry Cook, "Mind over Matter: Towards a New Theory of Archival Appraisal," in *The Archival Imagination. Essays in Honour of Hugh A. Taylor*, ed. B. Craig (Ottawa: Association of Canadian Archivists, 1992), 38-70.

generic functions, these being functions which cut across lines of governmental activity. Generic functions are seen to represent governmental activity to a greater degree than those which specialize within a certain institution and this is to be considered within the priority ranking process. The completed priority ranking is thereby expected to indicate the relative archival value of the institution's records independent of any examination of the records.

The second step of analysis is to determine the extent to which the functions of the particular institutions form a point of contact between the government and the citizenry. According to Cook, these points of contact are indicated by direct effect of policy upon the citizenry and by "evidence of significant changes, variations, and distortions between targets and results in the most important societal structures and functions."²¹⁹ This latter happenstance is crucial because it is at such points that the image of society is "sharpest."

Cook characterizes this approach as "macro-appraisal," as opposed to "micro-appraisal" which would involve taking the records as the starting point for analysis, as did the scheduling programs of Lamb and Smith. He criticizes the earlier approach in that it requires that values be inferred in the course of appraising records and then these values are elevated to axiomatic status and applied to other records. The alternate macro-appraisal approach, according to Cook, enables the archivist to achieve and maintain control over the appraisal process rather than being put into the position of reacting to the record flow. Further, this approach is designed to construct an archival resource that reveals the social mind behind the records and therefore results in a documentary universe of highest value to posterity. Cook characterizes this procedure for appraisal as being "top-down" in nature.

This is a concept within systems theory, the alternative being "bottom-up," which refers

²¹⁹ Ibid., 57.

to two basic methods in dealing with a system. A top-down approach deals with a system in terms of the top-most levels being comprised by component parts, starting with the general and working to the specific. In observational mode, this approach is the tool for systems analysis, the process of simplifying the whole into the parts of its internal structure. In operational mode, this approach describes a certain systems management style in which the component parts are directed from above, possibly in the absence of the necessary feed-back controls that come with monitoring of low level activities and the extent to which they are fulfilling system functions. Conversely, the bottom-up approach deals with a system beginning with the specific and working to the general, dealing with component parts in combination in order to build upwards towards the structure of the higher levels and the system as a whole. This view of a system is inherently process based, as it follows the path of input progressing through the system. The control exerted from the top down is implicit, as this is the rationale for a systems structure; this is what controls systems operation and holds the component parts together. Therefore a top-down approach may be either mono-directional or bi-directional through the system structure. The bottom-up approach is always bi-directional.

With respect to archives, the bottom-up approach focuses on activities and records and links between them to construct the successive levels of higher association that find the top-most link ultimately binding the activities together into an administrative unit and the records together into a fonds. This is primarily a methodology of the provenance approach to archives as it finds some function or activity of the creator associated with the higher levels of linkage between the records. The provenancially based appraisal approach advocated by Lamb and Smith is an example of a bottom-up approach in that the records themselves formed the focus for decisions throughout the appraisal process and schedules were devised in terms of the individual government institutions and departments.

The alternative of a top-down approach, however, is not necessarily a methodology of provenance. This will depend upon the criteria used for establishing lines of association from general to specific levels. If some criterion is used other than the natural groupings of records, then this procedure traces downward along lines of provenance relations only to the extent that the criterion chosen to establish the levels maps with the record scheme.²²⁰ The point at which the chosen criterion finds one grouping of records that relates functionally to another grouping with different provenance, lines of association between the records may be cut to link the two groups. In effect, the non-documentary criteria form a system that either does, or does not, map in concert with that of the records.

Cook presents this approach as being provenancially based in that the foundation for the appraisal process is an examination of the context of records creation. However, this macro-appraisal policy reinterprets the notion of context to associate it with abstract functions rather than the activities of people fulfilling functions and interacting with the record system, which is the traditional source of provenance. The functions in abstract are mapped onto a framework of social significance organized in terms of the usability of the records. As a result, a functionally based "provenancial" context is very different from a traditional provenance context. The two, one in which the functions relate and the other in which functional activities relate, map over the records together only insofar as functions are localized to the activities of individual creating agencies. Whenever a function can be found to cut across lines of activity, which is the whole idea behind the notion of generic functions, the links of provenance are broken.

The perception behind this plan seems to be that because all of these records involve a single fonds construct, this being the records of the government of Canada, the complicated realities of staffing, office space, and overlapping functions can be eliminated in a documentary

²²⁰ Duchéin's proposal for determining fonds creator status on the basis of competence is an example of a top-down approach.

record that shows the government as a machine composed of fully coherent and separate functional parts operating in seamless coordination. The plan would draw this idealized picture by using a manufactured system of functions to override the natural system structure of administration and records. This approach to appraisal sets a new standard for the notion of an "active" approach to archival handling as it moves the archival mandate into the realms of ongoing administration to organize government functions conceptually independent of the operations of either the creators of the records or the records themselves.

Soon after this plan was proposed there seems to have been some concern felt with the fact that the records played so trivial a role in the appraisal process. Richard Brown, also of the National Archives, presented a means for incorporating the bottom-up approach into Cook's model. This proposed addendum meant dealing directly with the records, but did not involve contentious use of values ascribed to or inferred from them.²²¹ Brown was addressing the problem that analysis of government functions would find these functions over-crossing, resulting in a network rather than a hierarchy of creating context. He therefore recommended that the top-down functional analysis be supplemented by a bottom-up analysis which examined records in individual departments for their discourse content. He termed this examination as "hermeneutical" because hermeneutics is the study of the methodological principles guiding interpretation of discourse to find the messages behind the words (or in Cook's terms "the mind behind the matter"). Such messages in records would reveal departmentally based functions in terms of origin, objectives, responsibility and authority. This, he proposed, would provide a picture of functional structure which does not arrive through a record-independent charting of functions, and it would account for the crossover effect of horizontal as well as vertical relations in terms of interdepartmental discourse.

²²¹ Richard Brown, "Records Acquisition Strategy and Its Theoretical Foundation: The Case for a Concept of Archival Hermeneutics," *Archivaria* 33 (Winter 1991/92): 34-56.

Eldon Frost of the National Archives also advocated inclusion of record analysis in the top-down approach through improved scheduling procedures as a part of the macro-appraisal model.²²² The appraisal process would begin with analysis of the structure of the governmental organizations, then proceed to a study of the linkages and interconnections of the record systems, the final step being actual contact with the records. This is an amalgam of the macro-proposal model with the earlier scheduling procedure, using the functionally based prioritization scheme to set schedules.

However, regardless of the measures taken to incorporate the reality of the records into a functionally based appraisal plan, such a plan automatically lines up with a pertinence approach to archives which allows violation of the natural systemic relations of provenance. The policy is more closely aligned with the pertinence theories of Hans Booms which advocate a rationalization of societal structure as the starting point for appraisal procedure. This alignment with the pertinence approach is seen most clearly in the emphasis which Cook places upon the incorporation of societal-governmental interface into the criteria for acquisition. The presence of this criterion within appraisal policy links appraisal decisions with predictions on the specific use to which the records are to be put. It is not simply a matter of which records most clearly express the activities, structure and function of the institutions. It is instead a matter of which activities, structures, and functions are likely to be of the most interest to researchers, the prediction being that it is those records which illuminate the impact of government on the citizenry which will be of most interest. This overriding assumption conditions the entire procedure, from the prioritization of institutions to the discussion of where and how to incorporate the bottom-up aspect of analysis without dealing with issues of record value.

Aside from the potential for breaking provenancial relations, there is a fundamental

²²² Eldon Frost, "A Weak Link in the Chain: Records Scheduling as a Source of Archival Acquisition," *Archivaria* 33 (Winter 1991/92): 78-86.

problem in conducting appraisal in terms of such judgments on the potential usability of the records; it is based on a faulty assumption. This approach assumes that, because it is the case that archives are a source of information on society's past, it is the case that they will be used primarily by those whose business it is to investigate the past, specifically historians. Historians, however, form only a part of the user-group of archives. Genealogists, lawyers, artists, surveyors, a wide variety of the public at large makes use of and therefore have a stake in the nature of the documentary universe which archival activity is expected to make available.

Even in terms of social science research the topics that are of interest are not predictable, because the interests which have been voiced in the past constitute only a fraction of potential interests. It may be in the future that researchers will want to study the handwriting of administrators to chart the effects of promotion and power on penmanship but most handwritten documents have been ephemeral to the conduct of business and creation of policy and so were destroyed in the course of appraisal. It may be that the transmission flow or variant formats of memos as discourse will be a topic of interest and yet memos have not been retained because any pertinent information they contain occurs in an aggregate form. It may be that the professional progress of people who do volunteer work will be a research subject yet the personnel records that might note such information have been sampled and the remainder destroyed.

Would the fact that archival appraisal decisions frustrated such user interests constitute a lapse in professional archival conduct? That is, in the absence of precedent should an archivist be held accountable for failing to anticipate such user interests? The answer to these questions is "yes" only if the archival community attempts to operate in terms of predictions of usefulness rather than in terms of the records. By trying to predict, by trying to do something which cannot be done, the archival community creates a potential for malpractice which is not necessary for the conduct of business and which is bound to occur.

This does not mean that the archivist's experience of research use should not play a role in the appraisal process. The process of becoming an archivist involves gaining experience in dealing with records, creators of records, and users of records. It is not possible, after this experience has been gained, to isolate and excise any aspect of that experience in order to make "objective" decisions. To attempt to extricate experience of use from the archival mind is as much a folly as to attempt to establish use as the primary criteria for archival handling. The problem centers on how use can be incorporated into an objective provenancially-based appraisal procedure. The Canadian experience would suggest that this is, at best, a difficult proposition because any attempt to objectify the process may quickly lead to the creation of an appraisal system based on predictions of usability which competes and interferes with the record system.

However, there is a means for incorporating use into an objectively based appraisal procedure offered in recent systems-based work, specifically in hierarchy theory,²²³ which recasts the process of scientific observation to incorporate the scientist within the analytic context. The central tenet of the theory is that observation by definition entails both an observed and an observer, and that this must be recognized explicitly in order to properly portray the observational process. Under this perspective, the role of archivist as analyst in the appraisal situation is to be understood as objectively present, impartial but not invisible or trivial. In this circumstance, the issue of use can and should play a part in appraisal decisions as an aspect of archival experience, and it is the responsibility of archivists to simply apply all aspects of their skill and experience to the task of handling archives.

Luciana Duranti has arrived at this conclusion from purely archival considerations.²²⁴ In comparing the foundations and implications of the pertinence and provenance approaches to

²²³ Ahl and Allen.

²²⁴ Luciana Duranti, "ACA 1991 Conference Overview," ACA Bulletin 15 (July 1991): 22-27.

archival activity, she finds that these approaches diverge in terms of their founding belief, their relation to the cultural context, and their view on the role of the archivist. However, she points out that there is convergence between them that forms common ground within the archival community. This common ground is formed over the understanding that it is not possible to exhaustively represent society within archival holdings, that archival institutions must co-operate to enable the best possible documentary universe under such constraint, and that this universe is best understood through the jurisdictional and administrative context in which the records are created. Based on this convergence a third perspective of the archival mandate for appraisal is possible.

This perspective focuses on the relationship between the archivist and the documentary universe, reflecting an implicit understanding within the archival community that the archivist operates within the societal context as a mediator between the records and the society which both creates and uses those records. The provenance and pertinence perspectives assume that this dual allegiance requires priority to be given to the interests of one side or the other. In systems terms, this translates to a preconception that the archivist handles records either exclusively in terms of the creation system or alternatively exclusively in terms of the repository system. This third perspective finds allegiance defined within the function of archival activity to mediate between these two contexts. Duranti proposes that if archivists focus on the records as a reflection of society, instead of on that facet of society which created the records or on that facet which will use the records, this approach finds the most objective possible documentary universe preserved for posterity which also, as noted, is the world view of the repository system, the wider context in which it is situated. Duranti argues that the archivist can thereby be viewed as "the societal officer responsible for maintaining the essential values of his or her society by preserving the evidence of its actions and transactions." In the conduct of archival activity the archivist "serve[s] the polis by serving the records." And because the archivist is situated within society, is

acting as a servant of society through serving the records, "Where the system expressly gives the archivist power of veto on the final disposition of records, the archivist's decision will be an integral part of the record's context, and thereby will not compromise the innocence of the records. . . . The criteria guiding appraisal reflect our appreciation of our time . . . that is, they are a source of understanding of our culture as much as the documents chosen for permanent preservation are."

Independently derived from the common ground of two divergent approaches, Duranti's third approach formalizes the relationship between the documentary universe as a system, and the archivist as analyst of and advocate for that system. This perspective does not involve allegiance to interested parties or to one particular context system or another, and it does not dictate a top-down or a bottom-up approach to archival analysis. These are preconceptions that distort the archival view. Instead this approach establishes an agent -> the archivist, an object -> the records, and an activity -> appraisal, and uses the resulting event, referenced in time and place, to provide a rationale for the archival mandate. These criteria provide all the necessary and sufficient conditions for the archivist to serve society through serving the records in the repository context. As for all the other criteria which various approaches find essential: creators, users, and functions, they are introduced organically from this context, because these criteria all play a role within a proper conception of the documentary universe. Therefore the objectives which these alternative perspectives attempt to explicitly address are within this perspective implicitly addressed. This holistic approach operates with the unconscious inclusion of the use criterion as a part of archival experience, crucially reorienting archival activity to focus on the records.

Within the archival community, Duranti is not alone in her perception that archival activity should be refocussed onto the records. With reference to each the three disparate

approaches: the pertinence approach operating in terms of the user's needs, the strictly provenancial approach operating in terms of the creator's context, and the amalgam approach operating in terms of functional context and based on usefulness, there have been cautionary voices defending the role of the records within the archival perception.

Within the pertinence approach Barbara Craig comments upon Hans Booms' proposal of the Documentation Plan arguing that, while it is necessary that appraisal be perceived as operating within the context of society, still the forms and the functions of the records must be a part of the appraisal concept.²²⁵ She argues that "plans and contextual analysis [need to be] anchored in the firm knowledge of documents, of records and their forms. . . . The reality of the record base must be an indispensable component of all aspects of appraisal. Without an understanding of documents and records, of their forms and of their functions, and of how they were created and used, a plan can be so easily upset by the attractiveness of concentrating on information divorced from the realities of its documentary expression."

Voicing a similar argument is J. P. Sigmond, an archivist in the Netherlands National Archives where the provenancial approach guides archival activity.²²⁶ He maintains that archivists should use record form and function as well as administrative context to determine the disposition of records. Form in particular, he argues, is a constant within the perennial fluctuations of administrative context, and therefore provides clues to the content of records which may be used to guide appraisal.

Heather MacNeil takes up this proposal from the viewpoint of the Canadian amalgam approach.²²⁷ She argues that, rather than separating the dynamics of records analysis into a top-

²²⁵ Barbara L. Craig, "The Acts of the Appraiser: The Context, the Plan and the Record," *Archivaria* 34 (Summer 1992): 175-180.

²²⁶ J. P. Sigmond, "Form, Function and Archival Value," *Archivaria* 33 (Winter 1991/92): 141-47.

²²⁷ Heather MacNeil, "Weaving Provenancial and Documentary Relations," *Archivaria* 34 (Summer 1992): 192-98.

down versus bottom-up approach, as does the National Archives policy, these approaches should be assimilated to find form (bottom-up) and function (top-down) interwoven because "the top-down approach is itself just a starting point and should properly be viewed as a supplement to, not a replacement for, the more traditional bottom-up approach. The illumination of the provenancial and documentary relationships embodied in organizational structure and bureaucratic procedures, and embedded in documentary forms, depends upon an analysis that continually mediates between acts and the documents that result from them." In maintaining the virtues of a clear picture of provenancial relations MacNeil places herself on the other side of a fine line from Cook within the domain of appraisal approaches. Similar to the fine line which separates experience of use as a part of the archivist's knowledge from the notion of usability as a predictive appraisal tool, this fine line marks the subtle distinction between MacNeil's taking function to play a role in top-down analysis as opposed to Cook's interpreting functions rather than records to be the central concern for archivists and researchers.

Therefore, within all three of the approaches--pertinence, provenance, and somewhere in between--there is concern voiced from within the archival community that in theory, policy, and practice, appraisal approaches are in danger of losing sight of the records by applying frameworks of theory based on something other than the defining characteristics of records that stem from their organic and systematic nature. These defining characteristics of records are what make them an impassive resource to be used for any variety of unforeseen reasons, and if the act of appraisal is based on anything other than these characteristics, then the resulting documentary universe becomes consciously acquired. Only through appraisal that is conducted in terms of the records and the record system, as opposed to any presupposed goal or superimposed framework, does the activity of the archivist achieve the level of impartiality through which necessary intervention may add to the quality, clarity, and expanse of the documentary universe, rather than distorting the view it affords.

CONCLUSION

Usually little attention was paid to papers not in current use. If they were placed under a separate clerk he would likely be that member of the staff least noted for intelligence, usefulness, and activity.

David W. Parker (1922)

"Some Problems in the Classification of Departmental Archives"

Archival efforts to arrange, describe, and appraise records are directed to the goal of preserving and providing access to the information resource of documentary heritage. The endeavour as a whole stems from the fact that society progresses along a continuum of the past, present, and future, or as Whitehead expressed it, that the present is really just the fringe of memory tinged with anticipation. Why is it, then, that there is a lack of recognition in the modern world for the importance of this resource that, for the most part, is the only tangible remnant of memory?

This lack of recognition is evidenced in the deficiency of support provided to the archival endeavour, a support that generally must come from society, through public interest and funding, which is appropriate because the work is performed on behalf of society. In Canada, the Total Archives concept was intended to ensure that the documentary heritage of the country as a whole would be preserved by mandating government repositories to acquire records from all spheres of activity. This vision is eroding as the responsibility for archives is first delegated from the government to regional and community repositories and then is not sufficiently supported. In particular, the issue of appraisal might not be so difficult if there were enough funds to provide the "bricks and mortar" and skilled staff necessary to handle the bulk of records. If society is in fact producing these records, then the volume itself reflects the times, and if the bulk of records

could be appraised, arranged and described appropriately, then the problem of volume would not be inducing hasty and ill-advised remedies and diverting the attention of the archival community from the records.

There is a school of thought in the archival community that a primary obstacle to achieving the required level of support is a lack of professional status accorded to those who manage repositories and handle archival records. Overcoming this obstacle is therefore a well discussed topic, and members of the archival community have examined various theories developed around the notion of professionalism.²²⁸ One theory from sociology proposes that, among the criteria which qualify an activity for the status of a profession are cohesion among the community of practitioners, the enactment and enforcement of standards, standardized education and training, articulated theory and precise methodology. Another theory presents a sequential process model to chart the creation of a profession:

- 1) an occupation develops training schools;
- 2) associations to support those indoctrinated are established;
- 3) there is political agitation for legal recognition;
- 4) entry standards and a code of ethics are established;
- 5) a profession emerges.

Such theories imply that once an occupational community has met all these internally driven criteria it becomes a profession and then is recognized as such by society. Obviously, this notion is a source of tantalizing frustration for archivists, because while it is not the case that the archival community has met all these criteria in full measure, it is the case that it has already met many of them to a credible extent. The implication is that archivists just have to work more and harder and their ambition will be realized.

²²⁸ Richard Cox, "Professionalism and Archivists in the United States," American Archivist 49 (Summer 1986): 229-47.

This is unlikely, because the development of a profession is an interactive process between those who work within the field, and the society for whom the work is performed. The criteria that characterize a profession, such as the rigours of training and the creation and enforcement of standards, are factors that will be present and reinforced to the degree to which society perceives the need for a consistently high quality of responsible archival care. Society determines what is and what is not a profession and rewards it accordingly. Under this characterization of professional status it is not difficult to pinpoint the problem faced by the archival community. Archival activity is not a profession because the general public has little understanding of the importance of documentary heritage to a well run society and to posterity. And so we return to the original question: Why is there so little recognition for the archival endeavour?

Finding an answer to this question requires some study of context, in this instance the historical context of what can be defined as the repository system, where documentary heritage resides. The structure of this system is the community of institutions that hold the record resource, and it is venerable. For as long as society has documented its activities through writing it has produced records. For as long as it has produced records it has valued those records and provided for their preservation. And for as long as records have been preserved, it has been the responsibility of the archivist to fulfil this function. This is the enduring picture of the archival endeavour, and there is much in this history that is familiar, in terms of the work done. As well, there is much that is unfamiliar, in terms of the status accorded to those who did and still do the work, and it is along the path of its history that the archival profession has become lost to view.²²⁹

²²⁹ Discussion of history of archives based on Ernst Posner, Archives in the Ancient World (Massachusetts: Harvard University Press, 1972); and E. Posner, 'Some Aspects of Archival Development since the French Revolution,' American Archivist 3 (July 1940): 159-72.

Initially, a member of the archival profession would have held a position of prestige in government administration. This was discovered in research on ancient Mesopotamian society of 4000 years ago, the same era and locale that finds the beginnings of science. Within this ancient society transactions were not considered valid unless formalized in writing. Excavation of a site in what is now Syria provided a rich source of information on early practices in record-keeping activity because of this emphasis on written records and because the records were written on clay tablets that have survived largely intact. This has greatly aided the task of reconstructing the nature of early archival activity.

The archives repository, which was situated in the palace, was an active part of government. The archivists were from amongst the elite of society--men who could write. They presided over this complex administrative domain and received the authority of a high officer in government. In the archives of Egypt in this same era, the record keeper would hold a position similar to that of a prime minister, being a key officer of administration and supervising all other departments in the government except the military. Dealing with a largely illiterate public, the archivist of these times provided an interface between the government and the people whose rights and duties were recorded within the archival holdings. The repository therefore formed a thriving hub of activity and the archivist was widely recognized by this ancient society as providing an essential and specialized service.

This began to change after the French Revolution at the end of eighteenth century. With the overthrow of an oppressive monarchy and the beginning of a republican society, the records about the people came to be the property of the people. The keeping of records safe and available became a duty which government owed to the people. Archives were centralized to co-ordinate the documentation of all aspects of administration and the repositories were opened to the public.

This new perception of archives spread as the political reverberations and reach of democracy extended across Europe. Historians were quick to avail themselves of the wealth of information then opened to the public and history writing proliferated. Soon, archives came to be viewed as the domain of historians and other scholars. The attitude then developed that, as the archives served primarily as an historical resource, to historians belonged the right and duty of archival administration, as only the historian could correctly judge and safeguard the value of material for historical purposes.

The archival profession thereby lost its identity as an adjunct to government administration and, cut adrift, it was left available to be claimed as a branch of historical endeavour. As such, it became isolated from public concern, as most members of the public expect that historians are the intermediary between them and the source material of history writing. This blurring of the archivist's role with the historian's also gained and held credibility in the scholarly world. Today, in Europe, the foremost training facilities in France, Italy, and Holland emphasize the prerequisite of an historical background, and historical topics are taught as a part of archival training. Leading theorists in North America still encourage the archival community to cling to its traditional entanglement with the historical field. There seems to be insufficient appreciation both within and outside the archival community that archives are the source of history but they are not the same thing as history, and that to confuse the two invites violations to the impartial nature of records.

As well, with the loss of governmental status, the role of the archivist was left to be confused with that of the librarian. This association also has long antecedents. Archives arose when writing systems were created. Initially, the written record was used administratively as a tool for government and commerce, and this textual material comprised the records held in the care of the archivist. Some time later the oral tradition of poetry and prose made use of the

permanence and currency of the written record, and for a very long time thereafter archival repositories held both archival records and these literary works. Society later came to view these records as different from the records of administrative activity and the simple bulk of material promoted an institutional separation between archival and literary works.

Yet, the basis for this common ancestry, the commonality of textual material, has given that portion of the public which is aware of archives the sense that the two institutions remain closely related; both house textual material and make it available. The differences are subtle to the public view, and those that are discernible do not favour archives because, while society's need for archival activity pre-dates the need for library activity, the holdings of a library in contemporary society are more visible and obviously useful to society than are those of archival institutions. Libraries contain textual material available to the general public for the purpose of enjoyment and acquiring knowledge. The larger public libraries generally all contain the same types of material and visitors know that any substantial library will provide them with the literature they want or need. Libraries are therefore seen to be operating in the interest of the public and their use forms a part of daily life.

Archives, on the other hand, have come to be places where information is obscure and not readily accessible. The public does not generally know what is held within an archival repository or how that material relates to their individual needs. Each repository has different and unique holdings; it is not the case that visitors can arrive at any one repository with a shopping list of what they want to find and be assured that even some of the information will be there. Also, there is always the sense for the uninitiated that the difficulty in accessing the material--the white-glove procedure that must be followed, and the need for assistance under surveillance--renders the effort avoidable. The recent emergence of "information science" as a sphere of professional activity which covers both the fields of librarianship and archives does not improve the situation,

nor does the appearance of archival descriptions on bibliographic databases. So here too there is a blurring of the archival identity, this time under dominance of the librarian profession, and the public is left to make a comparison between the two to find that the archivist is a particular sort of librarian who does work that is different from the librarian's in that it is generally irrelevant to them--but probably of great interest to historians.

There is more at issue here, though, than a loss of professional identity in society. As well, there has been a loss of appreciation for archives in the view of the originators of the endeavour, those very administrations of government that once deemed the holdings of records as a basic resource of their operations. Where once the repository would have formed the hub of government, where once the record keeper would have held a post of authority in the administration, many modern nations have demonstrated a less than hearty concern for their own records. This change in attitude also coincides with the rise of democratic-style government in the late eighteenth century.

The systems approach provides a means for examining the situation, and determining the operative factors. When a government is ruler oriented, often in history this would have been monarchical rule, the administration is autocratic. There is a single source of authority, and governing functions are addressed through the assignment of responsibilities and delegations of competence to those below the holder of a relatively supreme power. This is a thoroughly top-down approach to the administration of government, and while there is perhaps some feedback from the lower levels to the top in the form of attempted assassination, insurrection, and revolution, this is likely to be limited by the threat of unrestrained retribution. Therefore the autocrat generally has the luxury of operating in the expectation that this power will endure, with the primary threat in such societies being from outside the system in the form of military aggression from other nations. In such a government, the features of the system are assigned as

follows:

transformational process:	administration of government
environmental constraints:	financial, territorial, etc.
ownership:	autocrat
agents:	delegated government official (including archivists)
world view:	national jurisdiction
customers:	members of society

With respect to the role and use of records, an autocrat may function essentially like the leader of a vast commercial enterprise. Records created are owned by the autocrat; they are vehicles of communication, expressing and based on extensive authority, and they document the transactions and actions necessary for administering government. They are valued as documentation of government business and as a record of ruling history, and they are kept or destroyed according to a single set of criteria, which are those determined by the needs of the creator. In such a circumstance, the archivist is deputy to the autocrat, ensuring that the important records are preserved and available for use, operating at the dictate and within the best interests of the creator.

With the move to democratic government there is a shift in the balance of power and the system changes dramatically, schematized as follows:

transformational process:	administration of government
environmental constraints:	financial, territorial, etc. + franchise
ownership:	electorate
agents:	delegated government official (including archivists)
world view:	national jurisdiction
customers:	members of society

Certain features in this altered system remain constant, these being the transformation process of government administration, the delegated officials as agents, and the world view of national jurisdiction. The significant change is with respect to the ownership and customers of the system and the relationship between the two. In a democracy, the ownership of government no longer resides with the holders of authority, but instead transfers to the electorate that awards positions of authority to individuals through the recurring mechanism of the vote. This electorate receives the effects of administration and so is also the customer of the system. The system structure is still essentially top down, but the power of the vote instills a significant bottom-up feedback mechanism, that in turn, governs those who temporarily hold authority in the system.

In order for this system to be effective, its operation must be competitive. In any particular election, there is more than one faction attempting to take control of government, and the losers remain a part of the system as a sentinel to scrutinize the activities of the winners, because if they can discredit the government, they may then succeed in replacing the authority holders at the next election. As a result, in the course of government administration the interaction between the two groups, those who hold the authority and those who oppose them, takes the form of an ongoing judicial procedure in which the opposition continually challenges those governing and seeks evidence against them, which often can be discovered in the record of their actions. Record destruction thereby becomes a weighty issue, because any records removed permanently from reach must be demonstrated, not only to hold no enduring administrative or research value, but also to contain no evidence of significant actions.

Associated with the issue of record destruction is the changed status of ownership over, not only government, but also government records. As a structure of administration that persists beyond the particular assignments of authority, a democratic government has certain rights of

ownership, held in succession by different elected groups, over the records that result from governmental activity. These rights include decisions over management of active records, retention or destruction of semi-active records, transfer of inactive records into archival care, and regulation of the processing done there and provisions for access. As well, government records are generally deemed to have been created by these successive elected groups. However, in a larger sense, those who hold authority in government and who appear to be the record creators, are in fact functioning under a higher authority. Ultimately, the creators and owners of public records are the electorate who vote politicians into office, thereby delegating to them the competence necessary to run government. Therefore, the government is, in fact, acting in the capacity of a trustee over these records. This is the documentary result of placing government into the hands of the people.

It is therefore entirely appropriate that these records be made available to the public, except when either destruction or access restrictions can be fully justified. With this opportunity of closer scrutiny provided to those who hold ultimate power to depose a government, that government seeks some means to protect itself from both the reality and the appearance of mismanaging its administration. This leads to the creation of procedures, that will protect the government in two ways. (1) Procedure regulates the conduct of administrators to reduce the likelihood of error, which invites the operative assumption that there is an inverse relationship between the probability of error and the quantity of procedure. (2) The volume and layers of documentation created by procedure distance those who hold authority from the ultimate and perhaps unwelcome or inappropriate application of that authority directly on the electorate. Of note, the word "bureaucracy" comes from "bureau," which refers to the surface of a desk and that which covers it. This, then, is government emanating from desks covered in paperwork.

In these circumstances, there is obviously not the same straightforward connection

between records and government as with an autocrat who has the impunity to use documents in the course of exercising top-down authority. Instead, the records entrusted to a democratically ordered bureaucracy hold as much threat as value to those in power, and aside from issues of record creating and copying technology, the volume is by the nature of the situation going to be abundant. All of this affects and relates to the issue of access. With successes well publicized and failures lying quietly in an abundance of files, it is unlikely that any government would happily promote the exercise of access rights, either for the sentinel forces within government administration or the voters outside of it. There is a disinclination to establish such rights, to provide convenience of access opportunities, to hand over custody, and also to assume explicit responsibility for the records. This is not to say that neglect or concealment of their records is a deliberate plot by any particular democratic government to escape accountability for its actions. It is more a case that natural instincts for self-preservation create little desire to do otherwise, except under heavy pressure. In such circumstances, it is often the archivist who is left to advocate on behalf of a record resource in jeopardy.

The effects of this change in the relationship between records, archivists and government is borne out in history. Since archives have lost their role as a dedicated branch of top-down administration in the late eighteenth century, it has generally been the case that a government is in operation for some considerable length of time before its archives service is accorded a place within the bureaucratic hierarchy. This placement includes the appointment of a head archivist, space within the government facilities, and crucially some legislated authority to collect, manage, and destroy records as the basis for these other necessities of existence. There is strong reluctance to initiate the necessary legislation, and benign neglect is an inviting alternative. Records therefore accrue with no set guidelines for their management and preservation, until their utility and survival becomes endangered by the muddle. An alarm is raised, attention drawn to the responsibility of the government to provide proper record care, and then legislation enacted in an

effort to establish order to a situation either on the brink of, or already in the midst of, chaos.

The examples are numerous. It took forty years of modern administration before the Australian government appointed a head archivist. In the U.S. Schellenberg notes that "as early as 1810 a Congressional committee found the public papers 'in a state of great disorder and exposure; and in a situation neither safe nor honorable to the nation'," ²³⁰ yet it was not until 1934, more than a century later, that a national archives was established. David Parker, an archivist with the Canadian national archives in its early years, describes a situation of quiet mayhem arising in the state of the public records over the course of the first three decades of the Dominion's operations. ²³¹ Confederation of the original provinces was in 1867 and, until a repository was established in 1903, the archives branch was an annex to the Department of Agriculture and it had no control over the records of government departments. By the time Great Britain provided legislation in the mid-nineteenth century for the management of its archives, the government of the country had been doing business for centuries, there was an overwhelming amount of backlog material hidden away and mouldering, and current records were accruing at an alarming pace as a result of the growth of both population and procedure. The ultimate goal of an organized, preserved, and accessible national archives subsequently took a further century to achieve. These problems in establishing good archival management over public records in the context of democratic government do not so much reflect a sense of irresponsibility towards public records as they reflect the inherent conflict between political self-interest and the best interests of a nation. In this context, the archivist is no longer a valued servant to administration, but instead is placed in a potentially antagonistic role with respect to those who provide both the facilities and the authority to do the job.

²³⁰ Schellenberg, Modern Archives, 7.

²³¹ David W. Parker, "Some Problems in the Classification of Departmental Archives," Annual Report of the American Historical Association For the Year 1922, vol. 1 (Washington: Government Printing Office, 1926): 164-172.

The professional plight of the archivist begins to appear sad indeed. Considered a handmaiden to historians, a peculiar sort of librarian, and a sanctimonious irritant to those upon whose good graces the livelihood substantially depends, there would appear to be no place to turn for the refuge of good opinion, and there is little that the profession can do to remedy these particular problems. Like the records themselves, these circumstance have emerged spontaneously in the course of societies progressing into a modern world. However, there are reasons to believe that a remedy will similarly emerge to address the lack of recognized professional status for the archival field.

The first of these hopeful signs is a byproduct of modern bureaucracy and technology, which is record bulk. With more records being produced there is more work for archivists to do, and this deluge of record mass has developed a wider focus for archival activity. New ways of creating, disseminating, and organizing information, particularly through the use of computers, have induced the archival community to realign its practices and approaches with the information needs of today. The knowledge and training required to manage archives now provides the archivist with a comprehensive sense of record nature. Beyond the management of the paper record, this understanding of general record nature places the archival talent in a unique position to help a computer-dependent society make sense of and impose order on masses of electronic information threatened by disorder and technological obsolescence. Those in the archival community who take on this challenge exclusively form a specialized subset of archivally trained records managers. Such specialized activity is already recognized as a profession by the business world. But this view of archival activity does not speak to the heart of the matter. The archival mandate is to function, not as the mediators between hard copy and hard disks, but more broadly as the mediators between archives and society. Therefore, while this advent for a new source for recognition is certainly heartening to those in the community who happily wear the title of records managers, it does not directly remedy the loss of professional status for traditional

archival activity.

However, the information age provides profession salvation for this fundamental aspect of archival activity as well. With the deluge of information generated by the complex bureaucratic structure of modern society which is assisted by technology in the task of gathering and spreading this information easily, cheaply, and perhaps indiscriminately, the general public is becoming justifiably interested in and concerned about the information held and available which is about them or relevant to them. Governments have had to respond to this concern with freedom of information legislation that supports the right of public access to information generated in the public sphere. As well, there is a growing appreciation for the value of the impartial documentary record of a society that reinvents itself with ever-increasing speed. As people avail themselves of their right of access, and satisfy their interests in a rapidly disappearing past, the archivist will be brought into clear view in the role of mediator between society and archives.

The extent to which the archival field is then able to respond to this developing need for a preserved and accessible documentary resource, a resource increasing in volume and complexity, depends upon the specialized knowledge and skill that is brought to the tasks of archival handling. The traditional principles that guide handling methodology are not sufficient to supply the required scope of expertise, because they are devised internal to the field, and therefore have no objective theoretical substance. In fact, their efficiency as a discipline-specific methodology actually limits development of the field. As Peter Horsman once commented, the principle of provenance has been so effective in the Netherlands archival community that there has been little impetus for advance, and the field is left "grubbing in the clefts of this rock of archival theory."²³²

²³² Horsman, 55.

From the systems perspective, these traditional principles are not the delimiters of archival theory. Instead they are reinterpreted as the correct vehicle for articulating archival systems nature, a nature that is also available for theoretical explanation and exploration through the concept of systems, which addresses all other instances of organic organization and forms the subject matter for science throughout the ages.

When viewed from this perspective, the archival endeavour is redrawn along professional lines. When archivists use traditional methods of appraisal and arrangement, they are systems analysts. In the process of creating inventory descriptions they model these systems. If they participate in the management of active records, they are systems engineers. By virtue of the work that is done and the object on which this effort is directed, the archival community belongs within the professional sphere of systems specialists under the domain of science, in so far as the heightened responsibilities and opportunities entailed by this perspective are explicitly embraced.

Within this sphere of systems specialists, the archival field then gains access to a vast resource of research and insights from various branches of science that have applied the systems viewpoint to their own fields of interest. Conversely, application and adaptation of this approach in the archival field is likely to uncover subtle facets of systems nature that will inform the science viewpoint. Therefore, the concept of systems, and the theories associated with it, offer the foundation and framework necessary to elevate the archival craft to its appropriate status as a professional endeavour that uses scientific principles for practical purposes, and also to assign archives to their rightful place within the range of complex organized phenomena that compose the world as we know it.

However distinct may be our views, however vivid our conceptions, or however fervent our emotions, we cannot but be often conscious that the phraseology we have at our command is inadequate to do them justice. We seek in vain for the words we need, and strive ineffectually to devise forms of expression. . . . The appropriate terms, notwithstanding our utmost efforts, cannot be conjured up at will. Like 'spirits from the vasty deep,' they come not when we call; and we are driven to the employment of a set of words and phrases either too general or too limited, too strong or too feeble, which suit not the occasion, which hit not the mark we aim at; and the result of our prolonged exertion is a style at once laboured and obscure, vapid and redundant, or vitiated by the still graver faults of affectation or ambiguity.

Peter Mark Roget, Thesaurus of English Words and Phrases

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