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Joseph T. Tennis

Conceptions of Subject Analysis: A Metatheoretical Investigation

Joseph T. Tennis

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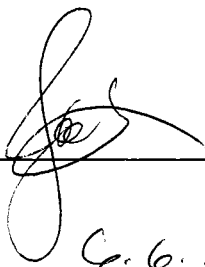
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Abstract

Conceptions of Subject Analysis: A Metatheoretical Investigation

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Little is known about the contemporary practice of subject analysis. However, there exists a rich theoretical literature on the interpretation of documents for their subject matter. This dissertation compares ten theoretical oeuvres (works) in order to create a lens for fieldwork. Each of these ten theoretical oeuvres represents a *conception* of the *concept* of subject analysis. Further, these *conceptions* of subject analysis have *attributes* that may be common or not. This metatheoretical investigation compares and contrasts those attributes across the conceptions, as embodied in these ten oeuvres. Taking a hermeneutic approach to these oeuvres, this dissertation analyzes them by reading them line by line, coding the attributes. These coded attributes then serve as the building blocks for the metatheory of conceptions of subject analysis. The metatheory is made of a Codebook for studying subject analysis the field, a Prototype of subject analysis work, used as a comparison point between the ideal and the observed practice of subject analysis work, and a Critique, that reflects on the theory presented in these ten oeuvres, and which frames the field research questions in terms of components of theoretical research in subject analysis. The dissertation closes with a discussion of the limitations of the study, a conclusion, and an outline of future theoretical and empirical research.

Table of Contents

List of Figures	iv
List of Tables	v
1. Introduction.....	1
1.1. The Concept of Subject Analysis	2
1.2. The Purpose of the Study	10
1.2.1. First Purpose: Create a Lens for the Study of Subject Analysis	11
1.2.2. Second Purpose: Gain a Deeper Understanding and Overarching Perspective of Subject Analysis Theory	12
1.3. Outline for the Dissertation.....	13
2. Rationale for the Study	14
2.1. Hjørland's Metatheory	17
2.2. Metcalfe's Definitions and Analysis of Subject Analysis Theory.....	20
2.3. Metatheory in this Dissertation	21
3. The Literature of Subject Analysis: Three Creative Tensions.....	23
3.1. Tension 1: Chief Source of Evidence in Subject Analysis	25
3.2. Tension 2: Valid Process of Subject Analysis	29
3.2.1. Rubric 1: Request Checklist.....	29
3.2.2. Rubric 2: Kinds of Knowledge.....	30
3.2.3. Method 1: Wilson's Four Methods	31
3.2.4. Method 2: Grammatical Model	33
3.2.5. Processes and Conceptions	34
3.3. Tension 3: Critique of Philosophy or a Critique of Research Agenda?	35
3.4. Need for a Study of Conceptions of Subject Analysis	40
4. Process of the Study	42
4.1. Texts and Theorists in Subject Analysis.....	44
4.2. Coding and Memo-ing Texts	46
4.2.1. Levels of Coding and the Vocabulary of Coding.....	47
4.2.2. Rules for Coding.....	50
4.2.3. Rounds of Coding.....	52
4.2.4. Codes and Reading Texts.....	53
4.2.5. Manual Coding in Coding Software	55
4.2.6. Memos.....	57
4.2.7. Data from the Process of Reading, Coding, and Memo-ing	58
4.2.8. A Note about Attributes - The Object of Study.....	58
4.3. Hermeneutic Metatheorizing.....	59
4.4. Evaluating the Method and the Resultant Metatheory	64

4.5. Summary of the Process	67
5. Results of the Process	68
5.1. Summaries of Oeuvres.....	69
5.2. Synthesis Process One: Grouping Attributes into Meaningful Relationships	73
5.2.2. Top-Level Attributes.....	73
5.2.2. Subject Analysis Components.....	75
5.2.3. Attributes Families	77
5.2.4. Prototype	78
5.2.5. Codebook	80
5.3. Synthesis Process Two: Reflection on Conceptions of Subject Analysis	82
5.4. Context of Results	83
5.5. Jerome Prosperi's Work	84
5.6. The Lens and Jerome's Work	85
5.6.1. Codebook in Studying Jerome's Work	86
5.6.1.1. Observing Jerome Work	87
5.6.1.2. Observing Elements in Jerome's Work	87
5.6.1.3. Using the Three Other Groups in the Codebook.....	88
5.6.2. Prototype in Studying Jerome's Work	90
5.6.3. Types of Data Collection and the Subject Analysis Lens Created in this Dissertation	90
5.6.4. Critique and Jerome's Work.....	91
5.7. Summary of Actions Taken	92
5.8. Conclusion	94
6. Discussion.....	96
6.1. Focus Areas for Subject Analysis Theory	99
6.1.1. Lack of Theory of Users of Subject Analysis	99
6.1.2. Lack of Theory Related to Indexers' Actual Work.....	100
6.1.3. Diversity of Purposes.....	101
6.1.4. Diversity in Interpreting Processes and Characteristics Interpreted as Significant	103
6.1.5. There is No Clear Delineation of Mission-Critical Problems with Current Information Systems	103
6.2. Component Subject Analysis Theory	104
6.2.1. Process of Subject Analysis (Elements and Steps).....	106
6.2.2. Perspective Taken in the Subject Analysis Process (Purpose and Means of Knowing Subject Analysis).....	106
6.2.3. Environment in Which the Process of Subject Analysis is Conducted	107
6.2.4. Summary of Three Attribute Families in Component Subject Analysis Theories	108

6.3. Types of Subject Analysis Theory	108
6.3.1. Component Subject Analysis Theory	109
6.3.2. Contingent Subject Analysis Theory	109
6.3.3. Adding Components	109
6.3.3.1. Helpful Theories	110
6.3.3.2. Trustworthy Theories.....	110
6.3.3.3. Robust Theories.....	110
6.4. Use of Component Subject Analysis Theory	111
6.5. Conclusion	112
7. Limitations of the Study, Conclusion, and Future Work.....	113
7.1. Summary of the Study	113
7.2. Limitations of the Study	113
7.3. Conclusion	114
7.4. Future Work	116
7.4.1 Future Theoretical Work.....	116
7.4.1.1. Expanding the Horizons of Subject Analysis Theory.....	117
7.4.1.2. Life-Cycle Model of Subject Analysis	118
7.4.1.3. Tools for the Indexer.....	118
7.4.1.4. Texts in the Subject Analysis Process and in Subject Analysis Theories.....	118
7.4.2. Future Empirical Work	119
7.4.3. Summary of Future Work	120
7.5. Closing	121
References.....	122
Appendix A. Initial List of Theorists	127
Appendix B. Final List of Theorists.....	133
Appendix C. Seed List of Literature and Theorists.....	135
Appendix D. Attributes	144
Appendix E. Prototype	153
Appendix F. Codebook.....	157

LIST OF FIGURES

Figure Number	Page
1.1. Relationship between concept and conception of subject analysis.....	3
1.2. Langridge's conception of subject analysis and the attributes of that conception	4
1.3. Subject analysis studied through its conceptions by means of its attributes....	5
1.4. Abstraction of the objects of study	7
1.5. Object of study, as seen through the textile metaphor.....	9
4.1. Rounds and levels of coding	47
4.2. Three axes of the hermeneutic interpretation.....	54
4.3. Screenshot from TAMS Software illustrating coding process.....	56
5.1. Parts of the Prototype.....	79

LIST OF TABLES

Table Number	Page
4.1. Code vocabulary and units in this dissertation.....	50
5.1. Top-level attributes.....	74
5.2. Thirteen components of subject analysis	76
5.3. Table of contents of the Codebook.....	81
5.4. Levels of analysis and synthesis.....	92
6.1. Components of Component Subject Analysis Theory and it Types	111

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DEDICATION

To my grandparents, who taught me how to work. To my parents and godparents, for their love, and who not only encouraged me to learn, but also made it possible for me to learn. And to my close friends who inspire me in every way. I love you all.

1. Introduction

This dissertation is concerned with the various theories of subject analysis. For our purposes, we define the theories of concern as those that address the interpretation of documents for their meaning. Turbulent changes in technology, disagreements about best practices of subject analysis in practical application and the cacophony of various disciplinary influences on the theories affect how they are conceptualized.

Subject analysis is applied in online library catalogs, in encyclopedias, in indexing services and on the corporate intranet. The technologies of these subject analysis applications shape the underlying theories. Likewise, a diverse set of practices in these contexts shape conceptions of the subject analysis process and hence its theories (Sauperl 1999, 2004; Oliver, 1966; Krarup and Boserup, 1982; Chan, 1994, Frohmann, 1990; Farrow, 1991). Technological and practice forces are joined by the various disciplines that have influenced subject analysis work ranging from artificial intelligence (Sowa, 2000) and information architecture (Rosenfeld and Mohrville, 2002) to philosophy (Wilson, 1968) and library science (Langridge, 1989).

A comparative understanding of the variations and the commonalities that obtain between the varieties of subject analysis theory will lead:

- to a greater theoretical understanding;
- to an overarching perspective on subject analysis theory;
- to evaluative mechanisms for subject analysis theory; and
- will serve as a prelude to future theory development.

Such a comparative understanding of subject analysis theory is a metatheory (Ritzer, 1991a p. 6; Colomy, 1991) of subject analysis and is the object of this dissertation.

The basic premise of this work is that to understand subject analysis theory, one must compare various theories. To know one theory of subject analysis is to know none¹. This metatheoretical study of the theory synthesizes and consolidates our basic understandings, offering a holistic view that will affect theory and practice, change standards, and provide a lens for future fieldwork. Such a lens is the keystone of this metatheoretical work.

1.1. The Concept of Subject Analysis

In providing access to information, librarians and other information professionals are asked to interpret documents and represent those interpretations in information systems. One form of interpretation is the interpretation of documents for their subject matter. This act of interpretation is called subject analysis. The concept of subject analysis is an elusive object of study because it, as a single concept, manifests in a variety of conceptions by a variety of authors in their works.

In offering one conception of subject analysis, D. W. Langridge, defines subject analysis as the analysis of documents for their significant characteristics in order to

¹ Comparative work is a part of most social sciences. Ritzer (1991) is an advocate of such comparative work. This particular maxim, "to know one theory of subject analysis is to know none," comes from comparative religion, and specifically from Friedrich Max Müller (1870/1882/1972), a linguist (or then philologist) and a founder of comparative religion, otherwise known as religious studies. It is a reinterpretation of his maxim *to know one religion is to know none*. Ritzer thought the same way about language.

represent those characteristics in an information system,² (Langridge, 1989 p. 5 and passim.). Langridge's definition is a conception of the concept of subject analysis. His conception is one among many of the manifestations of the concept. As researchers and practitioners, we can only know the concept of subject analysis through its various conceptions. Thus, conceptions of subject analysis stand between our understanding of the components and the structure of the concept. Figure 1.1 illustrates this relationship between concept and conception using Langridge. Thus, the researcher must *go through* Langridge's conception to study the concept of subject analysis.

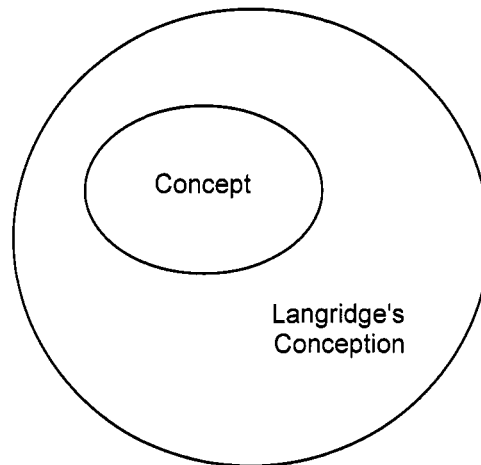


Figure 1.1. Relationship between concept and conception of subject analysis

However, as noted, Langridge's conception of subject analysis is only one conception among many. Other thinkers in Library and Information Science (LIS) have conceptualized the notion differently. Comparing these conceptions is the work of this dissertation. We take Langridge's conception as a starting definition of subject analysis,

² Langridge never states this definition in this form. We have presented it here as a unified definition derived from his work.

not as the ultimate or definitive definition. Our stance is pragmatic (Rorty, 1992 p. 89-108). The conversation about conceptions of subject analysis has to start somewhere, and Langridge's conception is useful to us. We could have started with another definition as expressed through a different theorist conceptualization, but we did not because Langridge's definition is a useful starting point to the comparative work in this dissertation.

Langridge's conception of subject analysis has five explicit attributes, or components consisting of: (1) analysis (2) documents (3) significant characteristics, (4) representation, and (5) information system. Figure 1.2 illustrates how readers of Langridge (1989) see the *concept* of subject analysis through his *conception*.

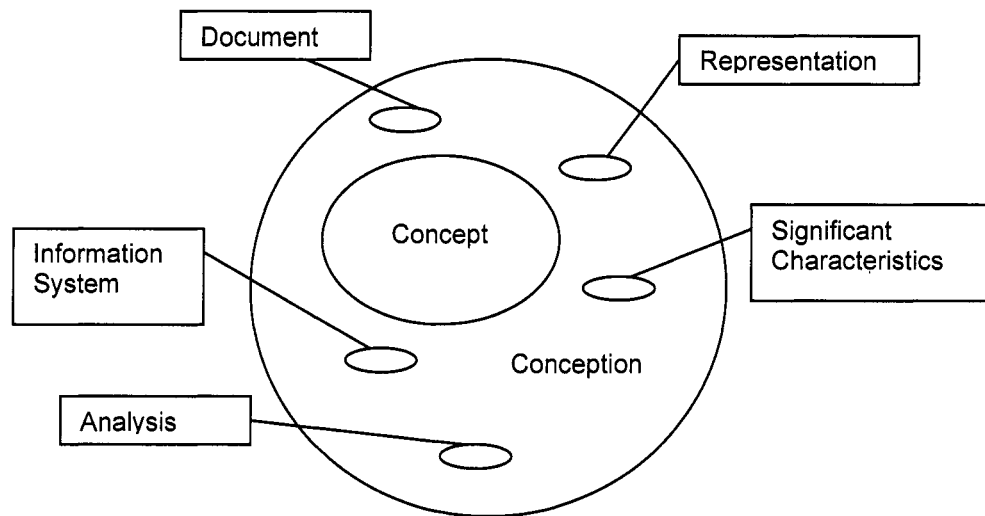


Figure 1.2. Langridge's conception of subject analysis and the attributes of that conception

Figure 1.2 can easily be transformed into a less concrete and more abstract, useful representation. Instead of the conception of a single theorist (Langridge), we are able to

substitute the multiple conceptions of any number of theorists. Thus, we are able to fill in any author's conception and any number or type of attributes as illustrated in Figure 1.3.

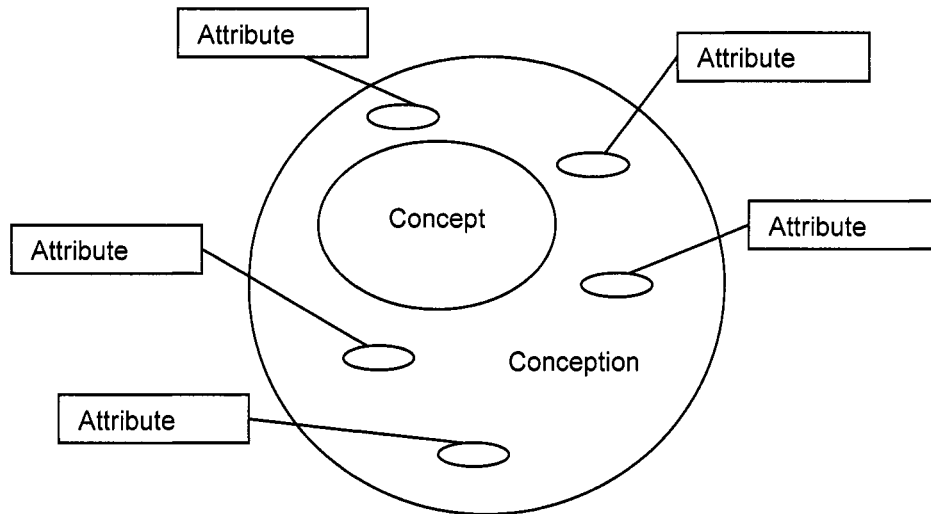


Figure 1.3. Subject analysis studied through its conception by means of its attributes

We will build on the abstraction illustrated in Figure 1.3; we will first discuss how attributes relate to conceptions in the process of this study.

As seen in Figure 1.2., Langridge's conception, with its five attributes, serves as a starting point for comparing how other conceptions address or do not address these attributes. For example, does Birger Hjørland's conception of subject analysis have the same or different attributes? Thus, attributes such as these also throw into relief how attributes are discussed in various subject analysis conceptions. For example, if Hjørland does talk about significant characteristics of a document, what does that mean, and is it different than what Langridge means by the term? It is also likely that some conceptions

will offer completely different attributes while ignoring the attributes most akin to Langridge's. For example, Hjørland's conception of subject analysis expressed in his 1997 book addresses issues related to the activity of a text in a particular scholarly discipline—say psychology. That perspective may have different attributes from Langridge's more general library approach that outlines the conception of subject analysis from a broad humanities and social science perspective. Herein lies the comparative work and the objects of study of this metatheoretical investigation—comparing *attributes* of various *conceptions* of the *concept of subject analysis* in LIS.

Figure 1.4 builds on the abstraction of Figure 1.3 in terms of this dissertation's objects of study. The concept of subject analysis is at the center of the Figure and its fuller understanding is only accessible by studying its various conceptions. Each of these conceptions of subject analysis has attributes. In the dissertation, we will be comparing those attributes, and, in doing so, we gain a deeper understanding of the concept.

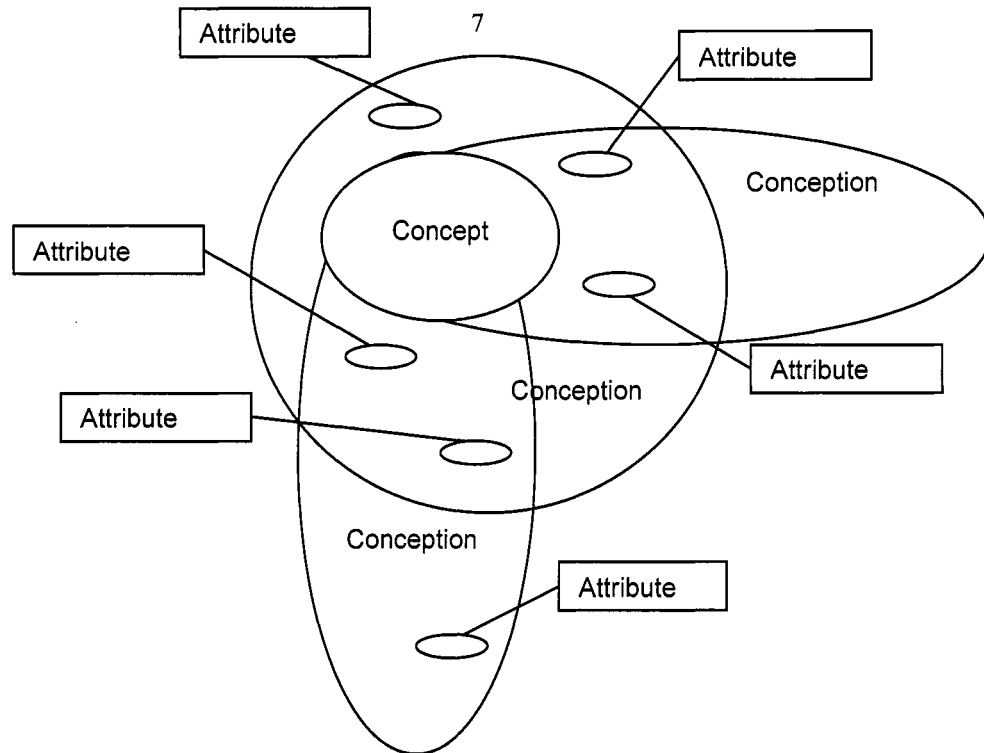


Figure 1.4. Abstraction of the objects of study

As an abstraction of the objects of study, Figure 1.4. is adequate as an introduction. However, it does not reflect the philosophy behind this investigation. The Figure poses two epistemological problems. First, it implies the existence of a *single* concept of subject analysis where no such *single* concept exists. It is the philosophical stance of this dissertation that any concept of subject analysis is constructed by the interpretation and phenomenology of its conceptions. Therefore, we, or any other interpreter, “construct” the Figure’s center. In sum, we can only speak of the concept of subject analysis through reference to its conceptions. Therefore, the concept of subject analysis is not verifiable because we can only access it by way of constructions resulting from its various conceptions. Thus, while we will refer to *the* concept of subject analysis, we understand that there is no *single* concept.

Second, Figures 1.1 through 1.4 do not adequately represent the attributes and their relationships to the conceptions and to each other. A better representation of attributes and conceptions and the epistemological nature of the concept would be as a weaving or textile. It is a better metaphor because a weaving, like any concept of subject analysis, is constructed from various threads or component parts. Here threads correspond to attributes in Figure 1.4. Various scholars (e.g., Langridge) have taken threads (attributes) and woven distinct conceptual fabrics. In a metatheoretical study, we can take individual threads from these various weavings, examine them, and weave them into a higher order fabric or prototype conception.

The *axsu* (women's skirt) from Tarabuco in Peru illustrates the textile metaphor. The *axsu* is composed of threads of many colors where disparate patterns of fabric are woven into higher order patterns. The patterns of the *axsu* are called *ch'aska*. For our purposes, the *axsu* is the concept of subject analysis. The *ch'aska* are the various conceptions of subject analysis and the threads are their attributes. In Figure 1.5. we show two conceptions with their various attributes, that if stitched together form our composite view of the concept of subject analysis.

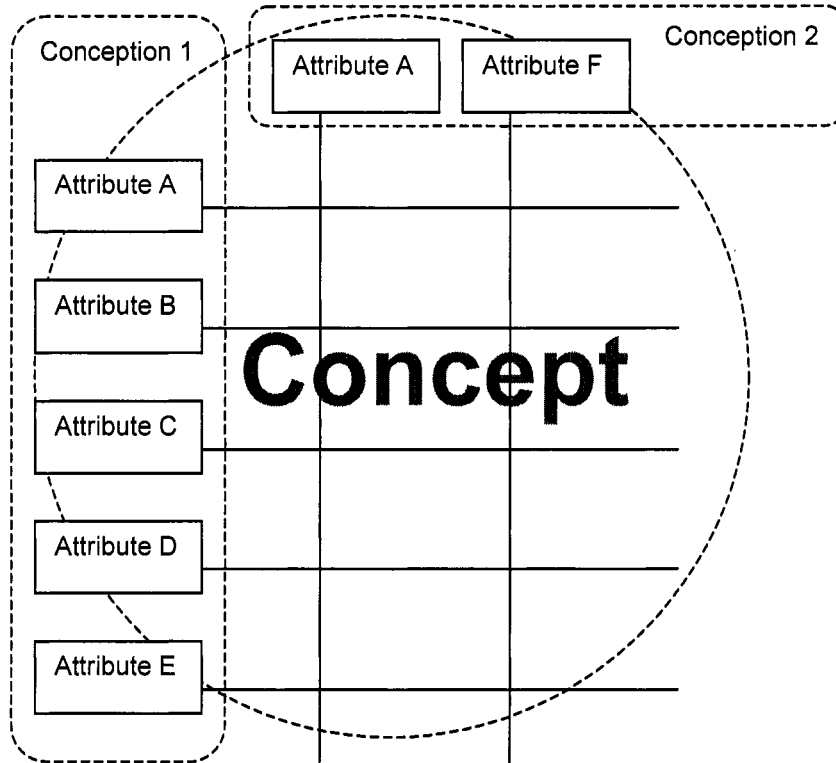


Figure 1.5. Object of study, as seen through the textile metaphor

Another way to look at the textile metaphor is to ask this question: show me the concept of subject analysis. It is not possible to point to the conception of subject analysis because we only know the concept of subject analysis through texts that present its conceptions. By reading one of these, we may understand one conception. If we only read one conception, we may refer to the concept of subject analysis as being identical to the conception. However, if our horizons are expanded, then we see that there are many conceptions that can constitute the concept of subject analysis. To return to the textile metaphor then, we know of many weave patterns (ch'aska) that can constitute an example of a weaving (axsu), but we may exclude or include them as we see fit. We still end up with a weaving (axsu) at the end of our work, but we may have included only two

patterns (ch'aska) rather than ten. Likewise, any given concept of subject analysis theory is understood through its conceptions, whether we look at two or ten conceptions.

It is possible to see this dissertation, metaphorically, as a study of weavings and threads. Each of the attributes is a thread with its own length and color. Each conception is a pattern made up of many threads. And when all of the conceptions are stitched together, they form a weaving (*axsu*), i.e., the *concept* of subject analysis.

Conceptions of subject analysis are discussed in both theoretical works and in practical manuals. This dissertation does not focus on the how-to guides like those at the beginning of the Dewey Decimal Classification, nor does it focus on the introductory textbooks like Lois Mai Chan's *Cataloging and Classification* (1994) or other practical manuals. Instead, this dissertation focuses its metatheoretical eye on theories of subject analysis extant in the oeuvre of subject analysis theorists. Chapter 4 discusses methodology and outlines the scope of the texts used. The main objects of study in this dissertation—attributes of conceptions of subject analysis—are explored through the theories of subject analysis and not through its practice. The study of the practice of subject analysis is intended future work. This brings us to the purpose of this study.

1.2. Purpose of the Study

There are two reasons to study conceptions of subject analysis. The first reason is to create a lens for fieldwork that helps us observe subject analysis work. In order for fieldwork to result in theoretically productive findings, it is helpful to enter the field with a theoretical lens in order to identify actions and statements as meaningful. The second

reason is so researchers and practitioners alike can gain a deeper understanding and overarching perspective on subject analysis theory. This dissertation advances our understanding of the scope and limits in subject analysis, thereby affecting theory, fieldwork, practice, and teaching.

1.2.1. First Purpose: Create a Lens for the Study of Subject Analysis

When researchers in LIS engage in studies, each casts a theoretical gaze on information systems, users, and contexts. When researchers go into the field to conduct investigations into subject analysis practice, they see, through their theoretical gaze, the complexities of this practice (Hjørland, 1998). They articulate what they see using a vocabulary fashioned for their theoretical gaze. Each sees through a lens; and, he or she discusses what is seen through that lens. This metatheoretical investigation develops a multi-faceted lens—constructed from a selection of extant theoretical work in subject analysis—that extends the theoretical gaze of LIS researchers through both comparative study and a combination of different subject analysis vocabularies.

A major contemporary concern for subject analysis fieldwork is the role played by user- and domain-ascribed meanings in the process of subject analysis (Mai, 2005). How and where this information comes into play in subject analysis is a point of contention. Preliminary studies of current practice among catalogers seem to indicate that there is a struggle between meanings that may be assigned to a document during the act of subject analysis. In this struggle, the user does not always win. Sauperl states: "[T]he study of 12 catalogers shows that the participants were fully aware of all three possibly different

meanings [author's, user's, and cataloger's], but they did not attempt to accommodate them all. Instead they consciously developed the cataloger's meaning," (Sauperl, 2004 p. 61).

A lens constructed through metatheoretical investigation may help tease out the nuances of subject analysis practice. This dissertation engages Sauperl when she says: "The inconsistent findings [of my study] call for further research into the importance of gaining and organizing catalogers' knowledge of users' needs, domains, and terminology," (Sauperl, 2004 p.62). The first purpose of this dissertation is to begin that work by studying conceptions of subject analysis.

1.2.2. Second Purpose: Gain a Deeper Understanding and Overarching Perspective

The second purpose of the dissertation is to gain a deeper understanding and overarching perspective on conceptions of subject analysis. The metatheoretical work in this dissertation will result in a Codebook, Prototype, and Critique of subject analysis. These three products, the vehicle for the second purpose of this dissertation, offer a comparative tool through which LIS can gain a deeper understanding of conceptions of subject analysis by understanding their constituent parts. The Codebook details the theoretical elements, actions, purposes, and philosophies at work in subject analysis work—and therefore offers detailed perspective on subject analysis work. The Prototype also offers an overarching perspective on theories of subject analysis, illustrating where theorists have focused their work and where future work can develop. Likewise, the Critique

offers a discussion of types of subject analysis theories—deepening our understanding of the components of subject analysis theories.

1.3. Outline of the Dissertation

The outline of the dissertation is as follows. The next Chapter provides a rationale for the metatheoretical study of conceptions of subject analysis, and provides a brief overview of previous metatheoretical work in subject analysis. Chapter 3 reviews the theoretical literature on subject analysis—paying careful attention to three contentions in the subject analysis literature: chief source of evidence, valid methods, and philosophical stances. In Chapter 4, following the review, we introduce the epistemological stance, mechanics, and logistics of the dissertation's metatheoretical investigation, including the collection of texts for analysis and their coding. Chapter 5 provides the results of the study including: (1) discussions of the context for the Prototype, (2) the Codebook, and (3) the Critique of subject analysis theory from the vantage point of the findings of this metatheoretical investigation. Chapter 6 opens a discussion of the components of subject analysis theory, and how they relate to future theoretical work. The dissertation closes with Chapter 7, which discusses the limitations of the study, outlines future work to be done in subject analysis theory, and provides a conclusion.

2. Rationale of the Study

Subject analysis is a process little understood (Mai, 2000 p. 20-33). Langridge claims his work to be the only full-length monograph that solely addresses subject analysis (Langridge, 1989 p. 6)³. Mai (2000, p. 21-22) concurs with Jones (1976 p. 118) that much of the literature on subject analysis is actually literature on indexes focusing on the maintenance and use of controlled vocabularies. If the majority of subject analysis literature is not about analysis, but is about indexes, then it has avoided or willfully ignored the subject analysis process. The majority of subject analysis theory has confused theories about analysis with theories about using indexes to represent the result of analysis. This leaves little discussion in subject analysis theory that addresses the act of interpretation as distinct from index use by the indexer.

The remainder of the theoretical literature presents an ambiguous understanding of what it means to interpret a document for its subject matter. For example, to some, subject analysis simply consists of assigning descriptors or class numbers (see for example the instructions in the Dewey Decimal Classification). How one actually understands what descriptors or class numbers are appropriate is not discussed in the theory, leaving the procedure of interpretation, at worst, to common sense reading.

The ambiguity of theoretical understanding seems to affect practice. Subject access points in the online catalog, the end result of much of subject analysis, continue to fail the user (Graham, 2004), and indexing fails the researcher (Weinberg, 1988). Strong arguments are made for expanding the knowledge subject analysts need to do their jobs

³ He makes this claim after being a collaborator on A. G. Brown's work *An Introduction to Subject Indexing*, which came out in its second edition seven years before Langridge's text. The first edition of Brown's work appeared in 1976.

(Fidel, 1994; Hjørland, 2002). However, these expansions constitute a wide variety of types of knowledge, ranging from macro-social investigations of domains (Hjørland, 2002) to requests that can be made of information systems (Soergel, 1975). The relationship between these additions to the subject analyst's toolbox and his or her current knowledge must be understood at a basic theoretical level and at an applied operationalized level.

As noted above, subject analysis as a single conceptual construct has a variety of conceptions. The foundations and subtle nuances of that variety of conceptions are not fully understood. Hjørland explores some of these foundational issues, linking much of his analysis to the epistemological stances of various conceptions (Hjørland, 1992). Others have done similar work. Frohmann has questioned the focus of research in subject analysis, favoring a social and discursive study of rule construction and normative or recommended practice (Frohmann, 1990). Others (Farrow, 1991) have been concerned with modeling the mental actions of text processing in order to identify its constraints and limitations. What do these conceptions of subject analysis have in common? How do they disagree? How do the attributes of various conceptions of subject analysis shape our theory development, fieldwork, teaching, and practice? It is taken as a starting point in this dissertation that an interpretation and a comparison by analysis and synthesis of the variety of conceptions of subject analysis will aid our understanding of theory, our development of theory, and serve us well in studying subject analysis in the field.

Current exploratory fieldwork derives little from subject analysis theory. To our knowledge, there are no published examples of a field validation of subject analysis theory.⁴ However, at least one theorist's conceptualization has been derived from empirical studies (cf. Endres-Niggemeyer et al., 1998). Yet preliminary findings from descriptive field studies of subject analysis practice seem to be at odds with some current theoretical trends. Sauperl's (2004) descriptive fieldwork found a disconnect between practice and what has become known as the domain analytic viewpoint (Hjørland, 2002; Mai, 2004). Sauperl's work identified the subject analyst's recognition of the domain interpretation and the user interpretation of a document in the subject analysis process, but more often than not, the subject analysts of Sauperl's study developed their own cataloger's interpretation and meaning.

Diversity abounds in theoretical conceptions of subject analysis, and little fieldwork has been done. This dissertation embraces that diversity, and the call to aid future fieldwork in subject analysis. In order to make sense of the diversity of conceptions and in order to develop a lens through which future fieldwork can be done, this dissertation constructs a metatheoretical analysis of conceptions of the subject analysis literature.

Metatheoretical research is not of one type but is quite varied in the social sciences and in LIS. Vickery (1997), Hjørland (1998), Brier (1997), Cronin (1998), Vakkari and Kuokkanem (1997), Dervin (1999, 2003) have all entered into

⁴ Krarup and Boserup's (1982) may appear to contradict this point, but the nature of their work makes it more interesting than useful for understanding the relationship between theories and testing theory. They base their work on a tacit theory of expert versus professional indexer quality of indexing, but their findings are problematic because of method, assumptions, and their small sample size.

metatheoretical discussions of LIS or topics within LIS. None of these thinkers has done exactly the same kind of metatheoretical work, but instead, each has focused on different aspects of such work – definitional, epistemological, methodological, or ideological.

Two of these metatheoretical studies are important to this dissertation. First, Hjørland (1998) discusses a metatheoretical approach that makes explicit the epistemological assumptions of a range of research areas in LIS. Second, Metcalfe (1957) surveys the then extant subject analysis literature and offers a clarifying argument that serves to elucidate some foundational problems in subject analysis theory. Both serve as examples of what can be done in metatheoretical work. Both point to a fruitful area of research—contemporary comparison of subject analysis theory from a metatheoretical perspective. Hjørland's work is more general, though it is contemporary; Metcalfe's work is more focused on subject analysis, though it is older. This dissertation steps in where Hjørland and Metcalfe leave off. We will describe their work and then place our work in the context of theirs. We will start with Hjørland (1998).

2.1 Hjørland's Metatheory

In his metatheory article, Hjørland identifies various epistemological positions that affect how LIS views various research areas from users, subject analysis, classification, information retrieval, to collection evaluation and development. He introduces and reviews three major epistemological traditions—rationalism, empiricism, and historicism. These various epistemological positions affect the way research is done. He does not simply provide a review of how various epistemologies affect LIS research, but offers his

perspective on what metatheoretical assumption LIS should adopt in order to overcome what he perceives as its difficulties (Hjørland, 1998).

Hjørland's metatheoretical analysis is a powerful tool through which LIS can view itself. However, there are obstacles to its utility, in terms of the exposition of his ideas in the article. For example, we only get a stark and simple taxonomy of epistemological approaches with a side note saying that "[o]f course, this is extremely simplified. ... This is a big field that many people study for a lifetime; it has its own journals, databases, and so on," (Hjørland, 1998 p. 607-608). So the reader is left wanting more.

Even with these obstacles, Hjørland's taxonomy of epistemologies is fruitful on both metatheoretical and theoretical levels. Hjørland himself has developed the theoretical level of his metatheory in the form of a theory of subject analysis (Hjørland, 1997; 1998 p. 610-611). Hjørland defines subject analysis as the act of prioritizing subjects that best serve user needs. These subjects are drawn from an infinite number of subjects which are defined as the epistemological potentialities of documents (Hjørland, 1998 p. 610). By doing so, Hjørland makes explicit his theory of epistemological positions of subject analysis and adds to the various perspectives on conceptions.

Hjørland's taxonomy of epistemologies in subject analysis is useful to this dissertation. It offers another attribute that can be analyzed in the comparative investigation of conceptions. Using Hjørland's work, we can ask: "What are the various epistemologies at work in the conceptions of subject analysis studied in this dissertation?" Do they look like Hjørland's? Are they different? Are there multiple

epistemologies at work? Can this metatheoretical work extend Hjørland's in the specific field of conceptions of subject analysis?

Second, Hjørland's metatheory is fruitful as an example of metatheoretical work in LIS. As a positive example, Hjørland's analysis shapes the way we look at LIS and specifically subject analysis. Subject analysis theory, with respect to Hjørland's work, cannot look at itself without taking into account its basic epistemological assumptions.

However, Hjørland's metatheoretical work can be refined, and future metatheoretical work can learn from his example. To that end, more can be done to systematize and fill out the taxonomy of epistemologies; and, more examples could be used to illustrate the relationships between rationalism and empiricism as they relate to positivism and other research areas of LIS. Historicism is a big family, as Hjørland admits (Hjørland, 1998 p.619). It would be nice to see this big family tree charted more explicitly. We also see open questions regarding Hjørland's metatheoretical perspective. For example, in what way can various epistemological approaches be combined? Can a research approach be a member of all three epistemologies? It would seem that a classification scheme built on empirical data, categories, and traditional and social aspects of a domain would combine all of Hjørland's epistemologies (empiricism, rationalism, and historicism respectively). Is that possible in Hjørland's metatheory?

Hjørland also opens a dilemma. If epistemological assumptions must be made explicit in his view, how explicit can implicit epistemologies be? Can the implicit epistemology that states researchers should examine implicit epistemologies be made explicit? When does the metatheorist, or any other kind of researcher, stop examining

implicit epistemologies of her work and others? Is one epistemology all that is reported in a research project? Does each section of a research project have its epistemologies? Is the researcher guided by one epistemology for the entire course of the project? These questions are operational questions, and, as such, are of concern for a metatheorist who wants to operationalize his or her work.

Hjørland's work is foundational work for metatheory in LIS. His work has recast the way we look at core issues and research areas in general and in subject analysis in particular. This dissertation builds on Hjørland's metatheoretical work, learning from his concepts and presentation.

2.2. Metcalfe's Definitions and Analysis of Subject Analysis Theory

In his 1957 work, Metcalfe offers his readers a witty romp through subject analysis literature that chronologically starts with Hulme, Cutter, and Kaiser in the early twentieth century. Metcalfe's work proceeds as a systematic and polemic analysis, organized by themes, like general versus specific subject analysis. Metcalfe's task in this text is to illustrate the lack of definitions and analysis in subject analysis literature, and rectify confusion by illustrating where innovation has occurred in subject analysis and where Hulme, Cutter, and Kaiser are enough. Ranganathan's work is under Metcalfe's microscope as is the work of the Classification Research Group. A key element of Metcalfe's 1957 work is his section on general propositions (Metcalfe, 1957 p. 15). They serve as his metatheory of subject analysis, though he did not use such a term. They do serve, when placed at the beginning of this work, as scope and as summary for the work

that follows. Though a comparison between Metcalfe's metatheoretical investigation and ours would provide some insight into theories of subject analysis, it is beyond the scope of this dissertation. It suffices to say that Metcalfe's work is a systematic metatheoretical treatment of subject analysis that lays the groundwork for definitional and purposive debates.

Metcalfe's work is highlighted here because it is almost fifty years old. It is a metatheoretical work written in a time when subject analysis can be considered to be very different than it is today. A historical metatheoretical text can throw into perspective the various attributes in conceptions of subject analysis that relate strongly with technology or particular professions. Technological aspects of subject analysis are not always considered in theoretical work, but it is very important to understand the technological constraints that shape the purpose of subject analysis discussed in various theories.

The metatheoretical work of this dissertation has a variety of examples on which to draw. The two mentioned here—one epistemological and one historical—illustrate the breadth and depth of utility metatheorizing can provide subject analysis.

2.3. Metatheory in this Dissertation

The metatheoretical work reported in this dissertation sits adjacent to both the work of Hjørland and Metcalfe. In comparing theories, this dissertation compares various epistemological assumptions and theoretical frameworks, and, therefore, sits close to Hjørland's work. Likewise, in examining the work of subject analysis, this dissertation sits adjacent to Metcalfe's work and his general propositions. However, in defining the

process and purpose of the dissertation, we look to neither Metcalfe nor Hjørland but rather to the work of George Ritzer (1991a, 1991b).

Ritzer's brand of metatheory states explicit goals for examining extant theory. They are to: (1) gain a deeper understanding of extant theoretical work; (2) provide an overarching perspective of that work; (3) serve as a mechanism for evaluation; and (4) serve as a prelude to future theoretical work. His work is different from Hjørland's and Metcalfe's in that it states that theories themselves are the object of study. Both Metcalfe and Hjørland are looking at research literature but not explicitly comparing theories. So while our work falls within the realm of metatheoretical work in LIS, it is more explicitly examining extant theories for three of the above purposes—as a prelude to future theory (lens through which to examine the field), and to both gain deeper understanding of, and provide an overarching perspective on, subject analysis theory. However, in its products, Metcalfe's work is quite similar to this dissertation in that we provide a small, contemporary addition to metatheoretical work in subject analysis.

The next Chapter moves away from metatheoretical literature and focuses on subject analysis literature. Specifically, the next chapter outlines three areas of diversity or creative tensions in contemporary literature of subject analysis.

3. The Literature of Subject Analysis: Three Creative Tensions

Throughout its history, subject analysis theory has most often been linked with particular controlled vocabularies, classification schemes, or indexes. Many theorists who addresses the topic of subject analysis do so in the context of particular systems for classification or indexing (e.g., Ranganathan, 1967). If the author is not concerned with a particular system, he or she is interested in a more general discussion of bibliographic tools (Wilson, 1968), domains (Hjørland, 2002), or communication processes (Andersen, 2004). As a result, subject analysis, when discussed in the theoretical literature, is conceptually linked with bibliographic tools, domains, and communication processes.⁵ One of the only examples of works that addresses subject analysis without addressing a particular scheme or other bibliographic tools is Langridge's *Subject Analysis: Principles and Procedures* (1989). However, even this work imposes an interpretive system much like a classification or indexing system of categories in order to discuss subject analysis.

So, to review the entire literature in subject analysis theory is to review the broader literature of knowledge organization theory, only excluding those texts that do not adequately address subject analysis as defined in Chapter 1. This review focuses on theory of document interpretation, and even more narrowly focused on diversity—specifically on the diversity of conceptions of subject analysis theory. It is only by acknowledging this diversity that we can justify a metatheoretical investigation. If all subject analysis theorists approached their work the exact same way, there would be no novelty, and therefore, no need compare conceptions of subject analysis. However,

⁵ Counter examples are Mai (2000), Hjørland (1997), Langridge (1989), and Brown (1982).

that is not the case. If there were no disagreement about this difficult problem, no progress toward better systems and practices would surface.

A difficult problem like subject analysis requires a creative tension between various theories and conceptions of subject analysis. The point of this review is to highlight and elucidate that creative tension. Three key contentions in the subject analysis literature make compelling evidence for why a metatheoretical investigation into conceptions of subject analysis is valuable. First, there is disagreement about what constitutes the chief source of evidence for a valid interpretation of a document's subject matter. To state it another way, there is disagreement about where the subject analyst is to get a valid interpretation of the subject matter of a document. The second contention is on valid processes. This point of contentions asks: What constitutes a valid process of subject analysis? When is the analyst done with subject analysis? When is a subject analyst independent of constraints on process, and when is he or she tied to a rule, a standard, or a particular best practice? Finally, there is a disagreement about "wrong" philosophical positions and individual research agendas. It seems that subject analysis theory does not allow for multiple research agendas without some critique of wrong ways and the championing of right ways of constructing subject analysis theory.⁶ Each of these three contentions is detailed below; and, each provides evidence for why a metatheoretical investigation is valuable in its own right and why it is important to construct a lens through which to do future fieldwork.

⁶ Hjørland (2002) would seem like a counter-example since he includes a diverse set of approaches in his domain-analytic approach. However, he has also written that LIS has had blind alleys in its research (Hjørland, 1998). So Hjørland's work is clearly part of the rhetoric about *right* and *wrong* subject analysis theories.

3.1. Tension 1: Chief Source of Evidence in Subject Analysis

A major point of contention in subject analysis theory is evidence. What constitutes the chief source of evidence for the valid interpretation of a document's subject matter? Is the chief source of evidence the document itself (Langridge, 1989)? Is it the domain's interpretation of the document? Is it the domain and the document together with user and indexer information that governs the interpretation (Mai, 2005)? Is it an individual user's request of the system (Fidel, 1994)? Is the valid source of evidence the text-processing minds of both subject analysts and users (Farrow, 1991)? Is the chief source of evidence for subject analysis a standardized set of discursive practices (Frohmann, 1990)? Is the chief source of evidence a match between words in the document (say the title) and words in a predefined list (Ranganathan, 1967)? Does the chief source depend on your epistemological stance (Hjørland, 1992, 1997)? Should the ultimate source of subject analysis consist of a mix of methods and approaches (Bates, 1997)? How are all of these approaches related to the representation of the subject in a controlled vocabulary—the end product of subject analysis?

Much work has gone into contemplating this chief source of evidence because, if we were able to identify it, LIS could build better subject analysis systems and make powerful recommendations for subject analysis practice. It is more common to see discussions of subject analysis linked to a particular scheme than not (as discussed above). However, there is a body of literature that examines subject analysis in and of itself. This body of subject analysis theory is concerned with substantiating the claim for one or another practice of subject analysis.

One practice, of many, roots valid interpretation in the document—the only stable evidence a subject analyst has in his or her hands (Langridge, 1989 p. 5; Mai, 2005). Langridge favors the term *content analysis* to subject analysis because of its focus on the document and its content (Langridge, 1989 p. 6). Furthermore he separates out use or potential use from content (Langridge, 1989 p. 9). Yet it is use that drives much of subject analysis theory. Mai (2005) adds three more analyses to Langridge's and focuses on use. The *domain*, the *user*, and the *indexer* serve as use-contexts at work alongside the document (and the indexing language). All of these are necessary for a valid interpretation of a document's subject matter. Mai's work and Langridge's work illustrate the range of approaches in subject analysis theory – a testament to its diversity.

Both Langridge and Mai provide a powerfully compelling argument for their claim about chief sources of evidence for valid interpretation of the subject matter of documents. Given the contemporary LIS emphasis on users, it stands to reason that an explicitly people-centered approach like Mai's will be viewed more favorably than Langridge's document-centered work. However, on closer examination we may not be able to compare Mai and Langridge in a straightforward manner. It is not a simple matter of document-centered versus domain-centered approaches.

The difference between Mai and Langridge is a difference between the objects of study, focus, and definitions. In Mai's case we are analyzing how a document might be used in a task within a particular domain, whereas Langridge is analyzing contents of documents based on a mixture of tacit and explicit criteria, made manifest in his concept of serving a broad community like a national library (Langridge, 1989 p. 9). The

difference is equivalent to various conceptions of computer science. Some might say that computer science is the study of algorithms. And as the science of algorithms, has nothing to do with interface design. However, another camp might say that computer science is about interface design as well as the study of algorithms. The diversity here is definitional, but this diversity is also about focus and objects of study. Like subject analysis theory, computer science has to make sense of its boundaries. It does so through definitions, detailing focus, and objects of study.

If that is the case, if there is a difference in definitions, focus, and objects of study, then Mai and Langridge may not be studying the same phenomenon. Under the rubric of subject analysis, Mai and Langridge may represent two very different camps focused on very different interpretive processes and practices, and researching two very different objects of study. To put it plainly, Mai seems to be studying use analysis, and Langridge seems to be studying content analysis. We say "seems" here because this diversity in conceptions of subject analysis, and others like it, are the impetus for this metatheoretical study. We are exploring the attributes of subject analysis in order to ferret out such differences.

It is obvious that there is a diverse set of conceptions of subject analysis—each making assumptions and claims of being theories of valid interpretation. Mai places the valid source of interpretation in a nested series of use-contexts. Langridge's valid source of interpretation is the document, but only when examined using his rubric which serves to disambiguate between *forms of knowledge* such as historical treatment or scientific report and *topics* such as pasteurization (Langridge, 1989).

In just this simple set of two types of analysis a myriad of questions arises. Is content analysis different from use analysis? Do they overlap or are they complementary? What are the assumptions that go into either? What is the evidence we have to support use of one or the other? Can we use both in information systems? If utility is the arbiter of subject analysis theory, it seems that the utility of either approach is contingent on a complex set of factors—factors at work in practice that become clearer when studied in a rigorous comparative fashion.

Subject analysis is a political and politicized research area that seems hostile to varieties of philosophical approaches. Much of the rhetoric of subject analysis theory reads as though only one theory holds the ultimate answer to the chief source of evidence (e.g., Hjørland, 1997). To the theorists of the domain-centered approach, they have *it*. To the document-centered approach, they have *it*. Contrary to both of these views Wilson claims that no one can have *it* (Wilson, 1968 p. 70-74). He says: "The difficulty in the notion of 'the subject' of a writing is to be located, as it were, in the word 'the' rather than in the word 'subject'" (Wilson, 1968 p. 71 n. 5). One might extend Wilson's thought on the subject to the chief source of evidence for subject analysis viz. the difficulty in the notion of "the chief source of evidence" for subject analysis is to be located, as it were, in the word "the". If this is true, a more robust study of conceptions of subject analysis will allow us the critical acumen to choose between, or combine at will, various conceptions of subject analysis in order to develop more nuanced theory, guide the study of subject analysts in the field, and by extension, better serve our users. Diversity here is seen as an asset not a liability.

Because diversity is seen as an asset, this dissertation examines the nuances and variances that obtain between conceptions of subject analysis. The chief source of evidence for valid interpretation of documents is just one place where the diversity among conceptions can be observed. Valid processes of subject analysis are also diverse in nature.

3.2. Tension 2: Valid Process of Subject Analysis

There are two types of processes of interest to this review: rubrics and methods. The first is a prescribed set of analysis categories that can be used by the subject analyst in the interpretive process. The second are suggested techniques the subject analyst can perform during subject analysis. The variety of the purposes, foci, and definitions of these techniques speaks to a need for a comparative investigation.

3.2.1. Rubric 1: Request Checklist

Fidel (1994) surveys a number of techniques in indexing. Indexing in her article is not subject analysis as it is discussed here, but her discussion is important. Fidel's concern is with making adequate representations for a user searching a database. One example she posits as promising is request-oriented indexing that uses the checklist method of indexing (Soergel, 1975; Fidel 1994). In this case, all the requests that are made of the database are compiled into a list, and if a document would satisfy that request, the document would be indexed under that request. Here analysis is user-centered because it is focused on a user's request of the system. Subject analysis is limited beforehand by

requests. Limiting the options for analysis beforehand is not unlike early work on library classifications (Richardson, 1901/1912/1930; Ranganathan, 1937, 1967). Yet the difference between these methods is fundamental—request checklists do not start with macro-social ideas of requests (i.e., disciplines), but instead focus on individual user requests of a particular database.

3.2.2. *Rubric 2: Kinds of Knowledge*

Langridge (1989), Brown (1982), and Ranganathan (1967)⁷ all discuss categories of subject analysis. These categories serve to separate out kinds of concepts that can be interpreted in the content of documents. Various members of the Classification Research Group also worked with categories as well. We will focus on the Langridge/Brown categories. Like the Classification Research Group's categories, the Langridge and Brown categories serve as guides to the subject analyst. Brown's work in 1982 is a programmed textbook that introduces its reader to his technique of subject analysis. This technique is much like Langridge's subsequent work (1989). In fact, Langridge serves as a collaborator for Brown thus making distinguishing their individual contributions difficult. Brown's work discusses *kinds* of concepts a subject analyst might find in an analysis of a document. These kinds of knowledge are: Discipline, Phenomena Studied, Forms of Presentation (including language, whether or not the document is an encyclopedia or dictionary, whether it is a document for beginners or not, among others), and Physical Form. The Langridge/Brown categories are used on top of Ranganathan's

⁷ Kaiser, (1911) and Coates (1960) also worked with categories for subject analysis.

Personality, Matter, Energy, Space, and Time (PMEST)—the fundamental categories (Ranganathan, 1967). The purpose of the Langridge/Brown categories is to hone the interpretation of the subject analyst, thereby making it more clear and faithful to the kinds of concepts in the universe of knowledge. Thus, and *Encyclopedia of the History of Chemistry* contains three kinds of knowledge according to the Langridge/Brown approach to subject analysis. Encyclopedia is a FORM CONCEPT, History is a DISCIPLINE, and Chemistry is the PHENOMENON. Chemistry is what this document is *about*. Encyclopedia and History tell the subject analyst what the document is, a reference work and a work of historical research. These latter two kinds do not tell the subject analyst what the document is about. It is possible that this general interpretation is not faithful to a domain-analytic view of subject analysis (Mai, 2005). To that end, Brown acknowledges that particular domains will refine these categories to fit their needs (Brown, 1982 n. 116). However, this begs a further investigation. From what evidence do these categories derive? Are they tested? How would LIS test these categories?

Both rubrics discussed above are based on attributes and assumptions that must be better understood before we can answer these questions – again, reinforcing the rationale for this metatheoretical study. The next section outlines methods as a process of subject analysis.

3.2.3. *Method 1: Wilson's Four Methods*

In his foundational work on bibliographic control, Wilson identifies four methods that can be used to say what a particular writing is about. They are: (1) Purpose Way, (2)

Figure-Ground Way, (3) Objective Way, and (4) the Appeal to Unity (or the Appeal to Rules of Selection and Rejection). These four methods are what Langridge would call content analysis. We are concerned (mostly) with the document.

The first way, the Purposive Way (Wilson, 1968 p. 78-81), seeks the author's intention. If the analyst finds the author's intention, he or she knows what the document is about. The Figure-Ground Way (Wilson, 1968 p. 81-83) uses a picture metaphor to place one *Cast member* (a topic discussed in the document) at the foreground. It occupies the most space in the picture. This foregrounded cast member is what the document is about. The Objective Way counts references to items addressed in the document (Wilson, 1968 p. 83-86) and is reminiscent of Hulme's statistical bibliography (Hulme, 1923), the foundations of literary warrant and bibliometrics (Pritchard, 1969). The item that gets the most counts is what the document is about. Wilson's final method is the Appeal to Unity (or the Appeal to Rules of Selection and Rejection) (Wilson, 1968 p. 86-88). In this case the analyst, like the writer of the document selects and rejects what is to be included in the text. The analyst then makes some unifying statement given the items left over from the analysis of selection and rejection.

Each of these methods has its problems. It is often hard to discern the author's intent. It is also quite different to say what the author intended to do as opposed to what he or she actually did. If it is possible to identify both, which of them is the document about? Likewise, the cast members and references to items each vie for the analyst's attention and upon interpretation are placed in the foreground, counted, or selected and made into a unifying statement. However, as Wilson points out: "[W]e cannot expect to

find one absolutely precise description of one thing which is *the* description of *the* subject, all others being mere approximations to that one description, or being descriptions of what is not the subject. The uniqueness implied in our constant talk of *the* subject is non-existent," (Wilson, 1968 p. 90).

Hjørland takes issue with this statement by Wilson. He feels it is irresponsible for LIS to claim that the subject of a document is indeterminate, and claims there is a way to determine the subject (Hjørland, 1997). He provides examples in his 1997 book. Ultimately, he uses a combination of Wilson's methods to construct his own activity-theoretic subject analysis of two books (Hjørland, 1997). In doing so, Hjørland fails to prove Wilson wrong. This points to the need for a deeper understanding of conceptions of subject analysis—specifically conceptions of *indetermination*. Does Hjørland's method differ enough from Wilson's that Hjørland can overcome Wilson's logical argument for the indeterminate nature of subject analysis? If so, then Hjørland has found a way to verify the subject in his *method* of subject analysis, and therefore Hjørland has found *the* chief source of evidence for a valid interpretation of a document's subject matter. This claim should be explored in depth, analyzed, and compared to Wilson's argument.

3.2.4. Method 2: Grammatical Model

Svenonius (1994) offers a grammatical model of the definition of subject. This is, as she claims, a positivistic approach to the definition of subject. In this model, the subject is a proposition, e.g., snow is white. The more that is said about snow, in a document, the

more the document is about snow. As writers produce more documents that contain statements about snow, snow becomes a subject of study, and hence is analyzed as such (Svenonius, 2001 p. 47). However, the act of subject analysis is not clarified by Svenonius. It seems she believes that the subject analyst need only read sentences to identify what is being proposed and that is the subject (Svenonius, 2001 p. 47-48). This is in direct opposition to Wilson's idea that we do not know what we need to know to understand a sentence (Wilson, 1968 p. 77). So this method, compounded with Wilson's arguments, serves as a point needing clarification via comparison with other methods in a metatheoretical investigation.

3.2.5. *Processes and Conceptions*

Theories that recommend different processes of subject analysis approach the process from different conceptions of subject analysis. Even if it is often not explicit to the recommender, various processes are based on various assumptions about the object of study, the act of interpretation, the purpose of interpretation, and the goal of interpretation.⁸ One conception of subject analysis may prioritize the purpose of the interpretation over the goal of interpretation. That is, one conception of subject analysis may prioritize matching user requests to terms in the system over creating well-formed and concise index entries. However, the processes of subject analysis, as addressed in the theoretical literature may define the *process* in exactly the same way. The expressed

⁸ Here again, Langridge's conception is helpful. We see at work in the sentence above the five attributes of his conception of subject analysis: (1) analysis, (2) documents, (3) significant characteristics, and (4) representation 5) information system. In this particular case, the purpose of the interpretation is linked to representation and to the information system, and also influences what are considered significant characteristics.

varieties of the subject analysis process require further analysis. A metatheoretical analysis can investigate varieties of processes discussed in the theoretical literature.

3.3. Tension 3: Critique of Philosophy or a Critique of Research Agenda?

In his 1990 article, Frohmann makes a valuable argument for increasing the diversity of subject analysis research. Frohmann's focus is on encouraging subject analysis researchers to engage in a research agenda based on constructs of meaning, discursive studies of information retrieval, and a philosophical approach to subject analysis research informed by the later philosophy of Ludwig Wittgenstein (Wittgenstein, 1953).

According to Frohmann, an agenda shaped by these things will serve subject analysis research much better than studying the human mind.

Frohmann (1990) makes the claim that, by Wittgenstein's lights, subject analysis research should not be concerned with processes of the mind. Rather, the more social and discursive aspects of subject analysis should be studied. He makes a compelling case for his position. However, Frohmann makes a significant leap—a leap that calls into question the nature of his critique. Frohmann's leap is from an exposition of the goals, assumptions, purposes, and products of the mentalists' research agenda to a list of the benefits of a Wittgensteinian research agenda of subject analysis. This move is a leap because there is no compelling argument to refute foundational aspects of mentalism, its definitions, assumptions, purposes, and products, nor does the Wittgenstein agenda completely supplant the mentalist interests in subject analysis in definitions, assumptions, purposes, and products. In short, it seems that Frohmann is comparing apples to oranges.

He is comparing a research agenda of the mind against a research agenda of discursive activity. His contribution to the broader scope of subject analysis research agendas is valuable. It is an example of the diversity of conceptions of subject analysis. However, he does not successfully supplant mentalism because he does not explicate all of its flaws, nor does he take it for what it claims to be.

Thus Frohmann's reader can ask, is Frohmann's critique a critique of the foundational philosophy of mentalism? If it were such a critique, we would expect to see a logical argument for why it fails as a philosophical foundation.⁹ Or, is Frohmann's critique a critique of someone else's research agenda? Is Frohmann critiquing definitions, assumptions, purposes, and products? At what point is Frohmann making a claim about valid knowledge of subject analysis, and at what point is he saying *I do not believe in this perspective, therefore subject analysis, as a whole, should not engage in this research?* We believe that Frohmann has not adequately critiqued definitions and assumptions of mentalism, and we further believe that Frohmann is offering a rationale for studying subject analysis in another way without substantially refuting mentalism. What then is the evidence for these beliefs?

Evidence that Frohmann has not considered definitions and assumptions of mentalism can be found in his opening paragraphs. First, Frohmann defines subject analysis (his term is indexing) as having two distinct operations. "The first involves either the implicit or explicit representation of a document by an indexing phrase. The second involves the translation in the terms of the indexing phrase into the lexicon of a

⁹ Wittgenstein's later work(1953) may serve this purpose for Frohmann; but, it should be acknowledged that Wittgenstein's work is not sacrosanct. Wittgenstein's linguistic anxiety is a symptom of Modernism, according to Latour (1993), and if we follow Latour we are no longer in a condition of Modernity with its symptoms. In fact, to Latour we have never been modern.

controlled indexing vocabulary," (Frohmann, 1990 p. 82). Here his assumptions come to the fore and illustrate his misunderstanding of the mentalist's work. The second is his excerpt from Beghtol (1986). Beghtol states explicitly in her work what she is studying; and, it is not what Frohmann suggests subject analysis should study. We will discuss Frohmann's definition first, and then take up his excerpt from Beghtol (1986).

In the definition of subject analysis, Frohmann has ignored a number of factors considered by Mai (2001 p. 593-595). He ignores the initial interpretation process of the document and all the factors that go into interpretation before a subject analyst is able to represent the document by an indexing phrase. Mai (2001) calls this act—neglected in Frohmann's definition—*document analysis*. It is this act of document analysis that is crucial to the subsequent steps that Frohmann uses as his definition of subject analysis. And though Frohmann is not using document analysis as part of his definition of subject analysis, it is precisely this act (and subsequent acts in subject analysis) that Beghtol (1986) studies. And this is evident from Frohmann's excerpt of her work.

Frohmann illustrates his misunderstanding of Beghtol's study by excerpting from her work a block of text that tells the reader what she is studying. Frohmann does not acknowledge all of the levels she mentions, some of which would belong in Frohmann's more social and discursive research agenda. Beghtol says, and Frohmann excerpts:

"During the act of reading a text the reader notices the presentation of each sentence, automatically transforms its surface verbal structures into its deep conceptual propositions and establishes an understanding of the logical relationships between the words and the sentences of the

text. ... At the same time, the reader engages in a global, textual or macro-level analysis of the text in order to arrive at the overall understanding of the aboutness and meaning of the complete text as a whole. ...These cognitive actions of compressing text in order to generate a semantically accurate statement of discourse aboutness are, according to Van Dijk, governed by macro-rules. ...One may say that the subject of a document is the highest specific macroproposition that is produced and can be expressed by a reader during cognitive reduction of a text by microanalysis. ... Van Dijk has formally described and analysed a cognitive process that can be assumed to operate during the aboutness analysis of a text for the purpose of classifying it by means of a particular classification system," (Beghtol, 1986 p. 90, 92 quoted in Frohmann, 1990 p. 83-84).

From this excerpt, it seems that the reader of a text, when transforming surface verbal structures into deep conceptual propositions or engaging in global, textual or macro-level analysis of the text is engaged in a social or discursive action, at least to some degree. Even if macro-level analysis is only a small part of what Beghtol is studying, there is no evidence to support the claim that Beghtol would not welcome studies of macro-level analysis, or, by extension, discursive analysis.

The problem becomes clear that they are talking about different processes given Frohmann's definition of subject analysis, and given Beghtol's focus, as excerpted in Frohmann. Frohmann is trying to make a point that, by his definition of subject analysis,

researchers of subject analysis should adopt a Wittgenstein-influenced approach. However, Beghtol is not working on exactly the same problem as Frohmann. She is concerned with summarization and text condensation, as mentioned above. She is concerned with the "cognitive process of classifying documents" (Beghtol, 1986 p. 84). She is not concerned solely with the implicit or explicit representation of a document by an indexing phrase (Frohmann, 1990 p. 82). Her project is broader and deeper than that. It is deeper because of its focus on a theory for an experimental design, and it is broader because it includes social and discursive practices (Beghtol, 1986 p. 85, 98). Beghtol's 1986 article is a particular type of research that must be taken on its own merits. It is just as valuable to the diversity of conceptions of subject analysis as Frohmann's. Therefore it is valuable for our deeper understanding of the conceptions of subject analysis. Perhaps, Frohmann feels the same way, even with his critique.

The point of Frohmann's critique comes at the end of this article. "[Mentalism's] danger lies not in building systems on flawed foundations, but in its power to deflect attention from theoretical problems central to the development of effective information retrieval systems. I suggest that mentalism conceals fruitful directions of enquiry..." (Frohmann, 1990 p. 94). Frohmann's critique is not a critique of a philosophy of the particulars of Beghtol's and others' research; it is not a critique of mentalism. Frohmann's critique is on general research focus. Frohmann disagrees with how researchers in subject analysis theory do not study subject analysis from a more social and discursive vantage point.

Making sense of Frohmann's point and his arguments is not easy. Layers of rhetoric, implicit as well as explicit, hidden as well as overt, shape his argument. The same can be said of Beghtol's work, at least to some degree. But it is precisely this complexity that needs to be studied. Are indeed Frohmann and Beghtol researching at cross-purposes? Is Frohmann's critique compelling to the point that all researchers in subject analysis will abandon mentalist paradigms? What components of Frohmann's critique are similar to Beghtol's conceptions of subject analysis, what are different? A thorough metatheoretical investigation can elucidate the crossover between the two, as well as the disparities.

Frohmann's article critiques subject analysis research in LIS. Critiques like these champion one perspective. It seems some researchers do not prize diversity of approaches to subject analysis. A more thorough understanding of the differences and diversities in subject analysis theory is needed to understand what is at work in critiques of philosophical foundations. Such an understanding can be garnered from a metatheoretical investigation of conceptions of subject analysis.

3.4. Need for a Study of Conceptions of Subject Analysis

In summary, three key contentions in subject analysis literature make a compelling case for a comparative reexamination of conceptions of subject analysis, or, in other words, a metatheoretical investigation. First there is disagreement about the chief source of evidence for the subject analyst. Is the chief source of evidence the document, the user, the domain, the request, all of these? The literature is not unified on this issue.

Secondly, what constitutes the valid process of subject analysis is contested. When the subject analyst conducts a subject analysis, what processes does she go through? When is she done with the process? This is a complex issue and requires a closer examination. Finally, there is a debate about the propriety of one philosophical tradition over another in subject analysis research. In this third point of contention there is no clear comparison between the unity and diversity of the approaches that each philosophical perspective takes. Furthermore, there appears to be hostility toward particular approaches to subject analysis research (e.g., Frohmann's attack on mentalism). The politics and substance of these perspectives can and should be further explored. These three points of contention point to the need for a comparative study of conceptions of subject analysis.

A metatheoretical investigation can provide such a comparative study of the conceptions of subject analysis. Opinions range concerning the chief sources of evidence for valid interpretation of documents for their subject matter. They can be compared and contrasted. There are a host of processes that can be considered valid, well beyond what was addressed here, each with its accompanying philosophical bent. Each conception of the process can be analyzed in order to flesh out what assumptions, definitions, and objects of study are at work in their particular conception of subject analysis. It has also been shown that critiques can be seen as offering an alternative research agenda, and, by extension, adding more diverse accounts of conceptions of subject analysis. Such diversity begs analysis and synthesis. A metatheoretical investigation offers the mechanisms for a comparative analysis of conceptions of subject analysis. We turn now to the mechanics, logistics, and process of this metatheoretical investigation.

4. Process of this Study

As mentioned previously, the results of metatheoretical work in subject analysis theory are fourfold: (1) a greater understanding of the concept; (2) an overarching perspective; (3) evaluative mechanisms; and, (4) a prelude to future theory development. These four results serve the dual purposes of this study. First, in order to construct from the theoretical literature a lens for future fieldwork, we must have a greater understanding of subject analysis theory, an overarching perspective on that theory, and be able to evaluate it. Furthermore, since fieldwork is empirical work that fuels further theoretical research on subject analysis, a lens built specifically for fieldwork serves future theory development. So, in the case of this dissertation, all four results of a metatheoretical investigation serve the first stated purpose of this study. The second reason for this study—to allow researchers and practitioners alike to gain a deeper understanding and overarching perspective on subject analysis theory—is a direct outcome of conducting a metatheoretical investigation.

Hermeneutics, as the study of interpretation, is metatheoretical work. (Alevsson and Sköldberg, 2000). The epistemological stance of this dissertation is a hermeneutic one in that meaning—the result of interpretation—is constructed by this researcher through reading extant subject analysis texts. This perspective is an appropriate stance because of the objects of study and the intended goal of the research. First, the hermeneutic stance of interpreting meaning from texts is a valid approach to the study of conceptions of subject analysis because these conceptions are discussed in texts through theoretical (often abstract) work. As researcher, we are not observing behavior. Rather

we are constructing meaning by comparing attributes of conceptions of subject analysis in theoretical texts. Second, the intended goal of this dissertation—the creation of a metatheory of subject analysis—is a hermeneutic act. It is an act of interpreting and writing a reinterpretation of subject analysis theory. Because this dissertation studies and creates interpretations, the most appropriate approach is hermeneutic. The logistics and the philosophy to this hermeneutic approach are discussed below.

There are three steps or parts to the process of this metatheoretical investigation: collection, analysis, and synthesis. We collected texts, analyzed them, and created a metatheory. As an abstract notion, a metatheory is an overarching perspective and a deeper understanding of theory. The concrete manifestation of that notion in this dissertation is an aggregation of products: (1) a codebook, (2) a prototype, and (3) a critique of conceptions of subject analysis. Therefore, when we use the term metatheory in describing the outcome of this dissertation, our intended meaning encompasses all three products.

The method used for this analysis is borrowed from Grounded Theory Methodology where the investigator reads looking for items of interest and codes them. The following sections discuss the details of this approach and its process. We first address how the texts used in the research were collected and then how they were analyzed using codes and memos. Finally, we introduce the epistemological, hermeneutic position this dissertation takes.

4.1. Texts and Theorists in Subject Analysis

In order to compare conceptions of subject analysis, this dissertation pulls together a range of extant theoretical literature on the topic. In order to arrive at the final list of literature, we examined review articles, research monographs, articles, book reviews, and brief communications. Analysis focused on core theorists and their oeuvre—ranging from a single monograph to a number of articles. The initial list of core theorists is listed in Appendix A. The final list of theorists examined in this dissertation is provided in Appendix B. To establish a core list of theorists, we considered six criteria. The first three criteria are documentary: (1) citation count, (2) appearance in web-accessible reading lists, and (3) appearance in encyclopedias of LIS. To balance these documentary criteria, three others were used in order gain a different, more balanced view of core literature: (4) diversity, (5) unity of purpose, and (6) this researcher’s own discretion. This final criterion served as a powerful device for limiting the scope of texts considered. We will introduce each of these six criteria in the following paragraphs.

The first three criteria are relatively straightforward and garnered the operational list of core theorist for the purposes of this dissertation:

1. high citation counts in LIS journals;
2. appearance on web accessible reading lists (including syllabi); and
3. appearance as the author of articles or heavily used ideas in the encyclopedias of LIS.

However, while the remaining three criteria are not as straightforward as the first three, they are more hermeneutic. First, in order to assure that citation did not skew the

landscape of texts considered, an appeal to diversity was necessary. Did one person write a foundational work, perhaps a dissertation, on this topic and never continued with the work? Is an early twentieth century thinker only cited by a few contemporary scholars? To address these questions, we had to make room for a diverse group of thinkers.

Even though we needed to make room for diversity, each of the thinkers added under this criterion had to address the core concept under study. For example, though reading comprehension studies may be relevant to the larger picture of subject analysis, they do not have the same focus as the theorists of subject analysis. Finally, all five of these criteria were subject to the sixth criterion—the researcher’s discretion. This final criterion was meant to keep citation counts in check, appealed to diversity in scope, and served as a limiting mechanism for the texts collected. This proved to be a powerful tool that allowed us to establish a more focused collection of texts in a rather small published area of research in knowledge organization. This sixth and final criterion also served an explicit role in the hermeneutic approach taken in this dissertation.

Because we wanted to ensure flexibility in theorists chosen, our proposed core list as seen in Appendix A could have grown, for example, because of citation count or a paradigm shift in the literature. Appendix C is a list of references that serve as a seed list of literature and theorists in subject analysis.

A theorist’s oeuvre is his or her collected work. For our purposes, a complete subject analysis theory oeuvre is one that deals substantively with subject analysis theory. It can be a single work or multiple works. Because this was the central source of data for this study, the definition of oeuvre heavily influenced the sixth criterion for inclusion.

We were only concerned with oeuvres that were explicitly addressing subject analysis—the interpretation of documents for their subject matter—from a theoretical perspective.

Throughout the oeuvre selection process, we were encouraged to use discretion in decreasing the list to a manageable size. The resulting list of texts considered in this dissertation is presented in Appendix B.

4.2. Coding and Memo-ing Texts

Once collected, the theoretical texts were analyzed by means of coding and memo-ing using methods drawn from Grounded Theory. Through this process of coding and memo-ing, we were able to compare and contrast attributes of conceptions of the concept of subject analysis.

Coding is a complex process of marking interpretations. It happens by reading at various levels, during various rounds of coding. Table 4.1 illustrates the various components of the coding process including the rounds of coding as they progressed over time (horizontal axis) and the coding levels pursued with each round of coding (vertical axis).

ROUNDS OF CODING
(proceeds over time)

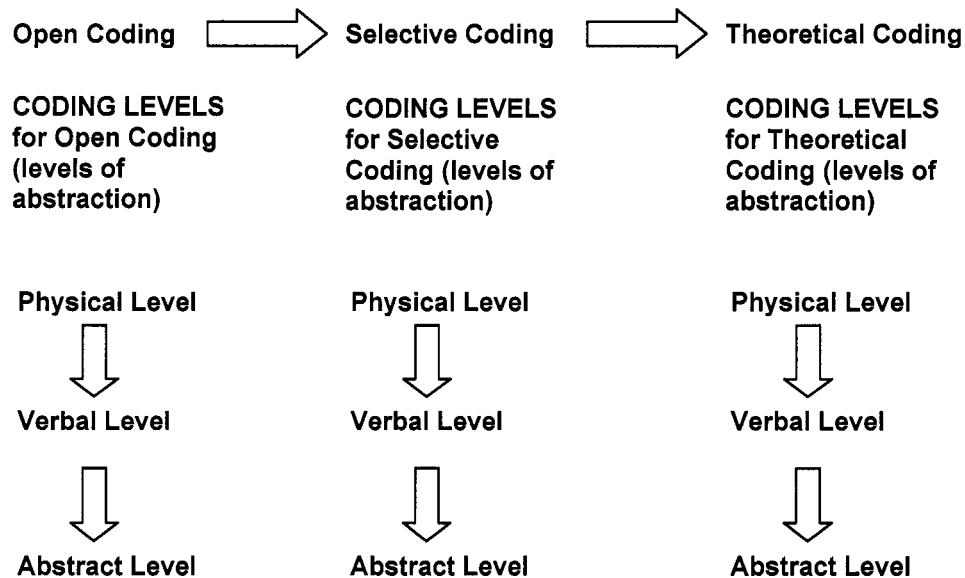


Figure 4.1. Rounds and Levels of Coding

In the following sections, we outline the components and processes of coding set out in Figure 4.1 and detail how we approached this most important step of the dissertation.

4.2.1. Levels of Coding and the Vocabulary of Coding

The coding of the texts happened on three interrelated and mutually dependent levels: physical, verbal, and the abstract. The physical level deals with the texts and the codes embedded in those texts during the process of coding. The verbal level deals with the words and phrases in the texts. The abstract level deals with attributes and conceptions of subject analysis that are the substance of this dissertation. Each level has its own vocabulary. Those vocabularies are introduced below.

On the physical level, coding happens by hand, line-by-line, and sometimes word-by-word. The results of the physical act of coding are *codes*, *code names*, and *code families*. Codes and code names are marked in the following manner:

{analysis>centeredness}words of the text in here{/analysis>centeredness}

A code contains a code name. Code names are the words inside the brackets-- {analysis>centeredness} in the above example. It is important to distinguish between the code and the code names because the code names may change, whereas once a part of the text is coded, it remains coded. Thus, in the example, {analysis>centeredness} may change to {analysis>orientation}; but, the code will remain in the analysis serving as a marker for a particular piece of text.

Code families are groups of codes given a more general name, extending to all its constituent codes names. They are marked at a couple of levels. In this example, {analysis>centeredness} is part of the code family {analysis} simply because of its first term. Code families informed the products of this research, helping us identify relationships between attributes among conceptions of subject analysis. Code families served as seed groups for the Prototype and the Codebook discussed later in this dissertation.

On the verbal level, words and phrases served as markers for coding. These verbal unit markers, whether they be words or phrases are called *incidents* in the context of this methodology. Incidents coded in this dissertation are the attributes of the

conceptions of subject analysis as evidenced in the texts. Thus, there is a tight coupling between the coded incidents and the dissertation's objects of study.

Incidents are coded verbal units. For example, a word like "meaning" when used in the oeuvre of subject analysis theorists is an incident. It is a verbal marker of *at least* one attribute. However, "meaning" as a term may mean a number of things depending on how and in what context it is used in the texts. Depending on how we coded the incident of the word "meaning", we may interpret multiple attributes for one incident. Multiple interpretations of "meaning" lead to multiple *incident names*. A single interpretation of "meaning" leads to a single *incident name*. Incident names follow a parallel structure to code names. The variations of the incident "meaning" are variations of core variables. Core variables are the same *kind* of incident. While it was possible to have a single incident that was significant in this study, once an incident repeats a significant number of times, it became a *core variable*. Core variables (and rarely individual incidents) changed from potential to actual attributes in the metatheory products (i.e., codebook, prototype, and critique) over the rounds of coding. Thus, core variables are incidents that became attributes on the abstract level and then appear in the Codebook, Prototype, and Critique.

Finally, the third level—the abstract level of coding—pushed our analysis toward synthesis. Here the incidents and core variables of the verbal level are interpreted as attributes of conceptions of subject analysis. Again, the word "meaning" on the verbal level may signify different attributes on the abstract level. For the sake of example, we

can propose that these meanings of *meaning* can be evidenced in our core list of texts as the:

1. meaning of scientific literature to scientists conducting research
2. meaning of a work of literature to undergraduates in an English class
3. meaning of subject descriptors to a user of an online public access catalog

Each of these three meanings, if they are core variables on the verbal level, can become attributes on the abstract level. It was our process of analysis and synthesis, including all three rounds of coding that allowed us to determine whether any or all of these variations were significant for the Codebook, Prototype, and Critique under development.

Table 4.1 illustrates the levels and vocabulary of coding in this dissertation.

Table 4.1. Code vocabulary and units in this dissertation

	Physical Level	Verbal Level	Abstract Level
Round 1 (Open)	Code	Incidents	
Round 2 (Selective)	Code Names	Incident Names	Potential Attributes
Round 3 (Theoretical)		Core Variables	Attributes

4.2.2. Rules for Coding

For the dissertation, we used six rules of coding outlined in Grounded Theory

Methodology : (1) ask questions of your data from the start of analysis; (2) analyze data line by line; (3) analyst must analyze his or her own data; (4) interrupt coding to memo

an idea; (5) stay within the confines of the substantive area while coding; and (6) do not assume analytic relevance for any face sheet variable (e.g., age, sex, race, etc.) (Glaser, 1978). Rules two through four and rule six are self-evident. Rules one and five require elaboration.

In the context of this dissertation, the analyst asks three types of questions of the data—rule one of coding: (a) what is the object of study; (b) what core variable and/or attribute does this incident indicate; and (c) what is happening in the data—that is, what relationships between attributes are present in this conception? These questions compel the analyst to reconcile vague and conflicting notions about incidents, core variables, and hence about attributes. For instance, in this research, we asked of the data: what is this author's conception of subject analysis? More concretely: what attributes are present in Mai's oeuvre that are similar to Langridge's? We were not able to code for everything in the data. For example, we did not code for macro-social or cultural bias that may be present in some author's oeuvre. We did not acknowledge cultural differences in subject matter expert librarians (say between the expertise of Danish subject matter librarians and their counterparts in the United States) that exist in different organizational structures of libraries in different nations. We also did not code from a feminist perspective or hone in on gender and power relations in the data. While these are very important questions that help shape subject analysis as we know it, they were beyond the scope of this dissertation.

4.2.3. Rounds of Coding

Once the texts were assembled, they were coded in three rounds: (1) Open Coding, (2) Selective Coding, and (3) Theoretical Coding. This coding method is drawn from Grounded Theory Methodology (Glaser and Strauss, 1967) and tied closely with textual analysis (e.g., Barthes, 1970/1974). However, we do not assert that this dissertation's methodology is completely framed in terms of Grounded Theory. Only the coding process with its mechanisms supporting the integrity of the data derived has been borrowed from Grounded Theory—and, only borrowed in part.

As illustrated in Figure 4.1, Open Coding is the first step in the process. In Open Coding, we looked for all incidents of the object of study in this investigation. In this round of coding, the analyst reads line-by-line and codes for any *possible* incidents relevant to the investigation. This allows the analyst to see a broad landscape of incidents in the data as a result of the variety of potential incidents. There are two rules for Open Coding. First, while coding an incident, the analyst compares it with previous incidents. The second rule asks the analyst to interrupt coding in order to write a memo whenever appropriate.

Selective Coding began after sufficient incidents of the *same kind* were derived from the Open Coding. At this point in the coding rounds, core variables surfaced. These core variables served as the beginning attributes of the Prototype, Codebook, and Critique developed subsequently.

Theoretical Coding—the third round in the coding process—identified relationships between codes developed during Open Coding and those developed during

Selective Coding. Thus, we identified connections and relationships between the codes already generated and synthesized those codes into a coherent metatheory, which is manifest in the Codebook, Prototype, and Critique. This means that we moved from describing the texts with Open Codes, toward describing attributes in the conceptions of subject analysis. Theoretical Coding began to make sense of core variables and their contexts in the oeuvre of the core theorists. The TAMS Software (see Section 4.2.5. below) aided in Selective and Theoretical Coding.

4.2.4. Codes and Reading Texts

Codes are the marks left by us in our dual role as the reader and interpreter of texts. Thus, codes are servants to the analysis of the text. The work of analyzing texts was done by reading along three axes of hermeneutic interpretation (Alvesson and Sköldbberg, 2000). Each axis illustrated in Figure 4.2. guided how we read the texts, and, as a consequence, how they were coded. While the hermeneutic approach is discussed more fully below in section 4.3, we will describe the logistics of the approach here.

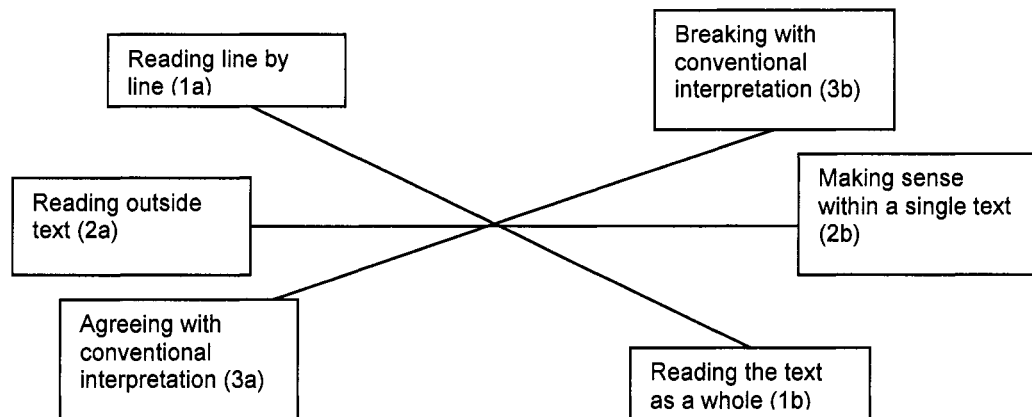


Figure 4.2. Three axes of the hermeneutic interpretation

The poles of the first of these three axes of reading are anchored by: (1a) reading line-by-line; and (1b) reading the text as one whole work. The second axis has different poles: (2a) when deemed necessary, reading outside the text (related or not-so-related texts); and (2b) constructing meaning from the complex and often-contradictory meanings provided within a single text. The third and final axis has yet different poles: (3a) reading and agreeing with conventional interpretations of the concepts discussed; and (3b) breaking with convention when a novel interpretation can be advanced.

To illustrate these axes of the hermeneutic interpretation, assume that in one text the word "meaning" is described in a number of ways. We know this by reading line-by-line. These multiple meanings of the word "meaning" are contested by the overall sentiment of the article where a uniform meaning of the term is allegedly advanced. These disparities of interpretation form the poles of axis one. Assume further that the article cites other interpretations of the word "meaning"—e.g., citations to literary studies—and, we understand the meaning of "meaning" in literary studies as being different from the meaning of "meaning" in LIS. Our individual interpretation here is

complicated by the fact that the author of this article advances yet a different meaning of "meaning" that is not literary in nature. This second interpretation is an interpretation along axis two. Finally, all of these senses of "meaning" on a general level rely on some conventional definitions of the word "meaning." However, as the interpreter of these texts, we may break with any and all conventions in our reading of the word "meaning". We could *revise* the meaning of the text and its interpretation by coding and analyzing the word "meaning" in a particular and idiosyncratic way. For example, we might feel it necessary to do this because of technological changes in subject analysis. This act would constitute a reading along axis three.

Thus, the process of reading and interpreting for this dissertation may be characterized as follows: (1) reading line-by-line, distilling large sections or whole oeuvres (axis one); (2) reading secondary texts if they are relevant to, and aid in, analysis (axis two); and (3) constructing meanings from texts that agree with or break with other interpretations (axis three).

4.2.5. Manual Coding in Coding Software

Each round of coding was completed using TAMS Software, a text analysis markup system. TAMS allows the researcher to upload texts for coding. The application served as a simple data management and data exploration tool. Using TAMS, we were able to code by hand and then use the same software to analyze the data, conduct searches, prepare reports, and explore the data through visualization techniques. Below is a screenshot from the TAMS Software illustrating a coded passage of text

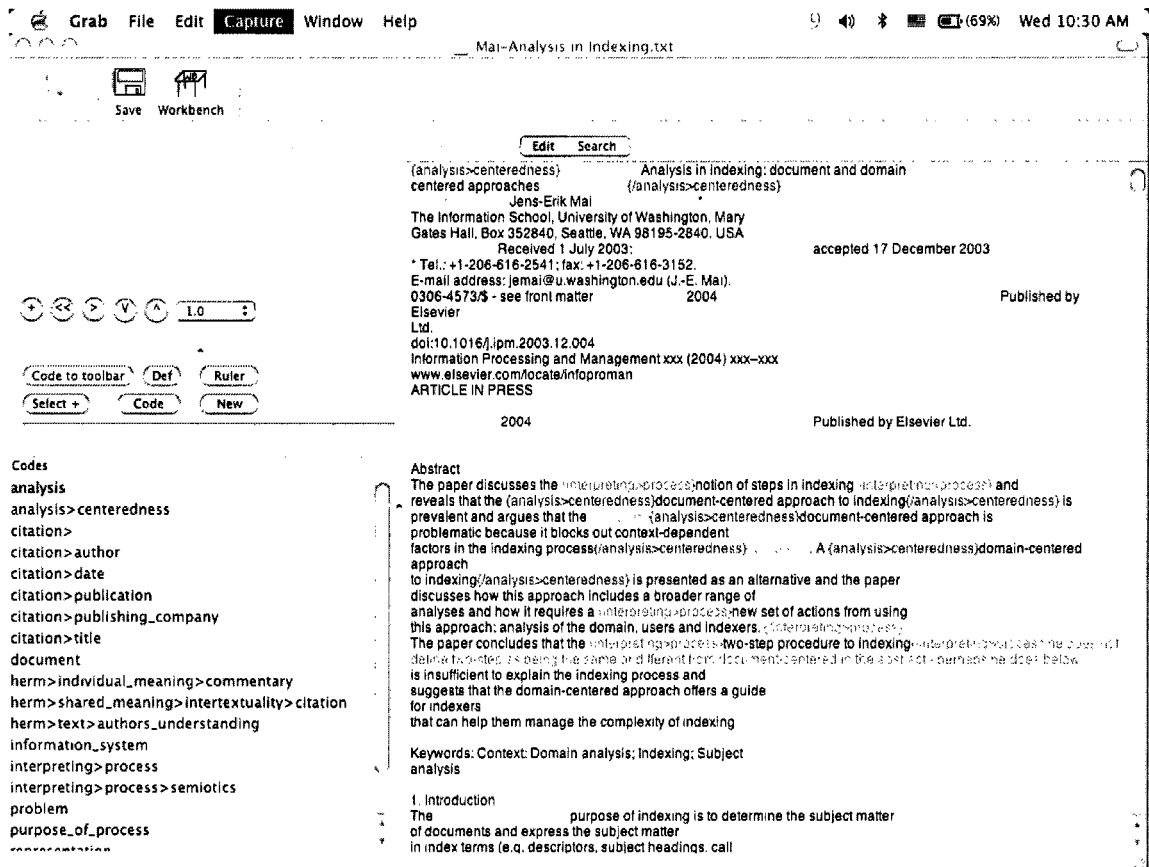


Figure 4.3. Screenshot from TAMS Software illustrating coding process

The TAMS software was a substantial aid in the process of isolating nascent attributes in the form of incidents that were systematized into a metatheory of subject analysis.

The TAMS Software came with a visualization package that allowed us to explore the relationships between texts and codes. This feature made it possible for us to see what codes appeared across various theories and in what contexts. The TAMS visualization package aided us in creating the lists of attributes.

4.2.6. Memos

We generated memos at all stages of coding. Memos are the researcher's notes to him or herself. Memos perform a range of functions including serving as building blocks of the nascent theory and serve as a form of connective tissue by pulling ideas together.

"Memos are the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding," (Glaser, 1978 p. 83). Thus, memos are the process by which codes become nascent theory. Memos ask questions of the researcher, opening a hermeneutic interpretive dialogue between the researcher and the text (Alevsson and Sköldberg, 2000). Memos are used to systematize codes and to integrate them into a theory. For example, in analyzing Sauperl (2004), it became apparent that there were a number of texts important to the subject analysis process, e.g., encyclopedias, dictionaries, subject heading lists, and other bibliographic records. These codes for texts moved into a memo about textuality in the subject analysis process.

The TAMS Software also allowed us to make memos as comments attached to codes. These memos could be searched and collocated independently of the codes. Below is an example of a memo attached to a code in TAMS Software. The bold section is the code. The italic section is our memo. The normal font face and style is the text from the article.

{herm>individual_meaning>commentary}The basic idea is that the indexer should establish the subject matter solely based on an analysis of the document itself; the goal is to represent the document as truthfully as possible and ensure the subject representation is valid for a long time.

{/herm>individual_meaning>commentary here Mai distills one of the many purposes of subject analysis - here we are concerned with authorial intension, and the duration of the representation of the document's subject matter. There are here, two parts of a multi-part schema of subject analysis. The two parts we

see here are a) analysis of authorial intension and b) long-term/or 'permanent' representation of the document's subject matter}

4.2.7. Data from the Process of Reading, Coding, and Memo-ing

The resulting *data*—the sum of collecting and analyzing the core subject analysts collective oeuvre—are texts coded and memo-ed, representing attributes of conceptions of subject analysis. This collection of codes, memos, and texts is the audit trail for the dissertation. This data was then synthesized into a metatheory made up of a prototype, critique, and codebook. Chapter 5 describes these products in detail. The codes appear in Appendix D as the Archaeology of the dissertation.

4.2.8. A Note about Attributes – The Object of Study

As we have noted, conceptions of subject analysis evidenced in the oeuvre of subject analysis theorists have attributes. Taken together, those attributes present any reader with matter for interpretation. As an interpreter taking a hermeneutic perspective, we take such matter and add to our perspective. For example, Hjørland discusses his conception of subject analysis as having explicit and implicit epistemological attributes (Hjørland, 1992 p. 172). We coded for attributes such as these in order to see where else in the core theorists' work they appeared. We also interpreted how these various occurrences relate to one another and to the whole subject analysis concept as seen through its various conceptions.

4.3. Hermeneutic Neopragmatic Metatheorizing

This dissertation approached subject analysis theories from a reflective hermeneutic perspective (Alevsson and Sköldberg, 2000; Bontekoe, 1996; Cornelius, 1996), which is committed to a neopragmatic understanding of epistemology and ontology. In this instance, the reflective hermeneutic perspective approaches interpretation as constructed in a particular place and time when the reader interacts with texts with no commitment to the objectivity of understanding social activities. For the purpose of this dissertation, the researcher is the hermeneutic reader of the texts. The texts interpreted are the ten oeuvres—the collected works—of select individual subject analysis theorists. As the reader of the texts, the researcher created a metatheoretical interpretation of the object of study—the attributes of ten conceptions of subject analysis.

Our claim on what kind of knowledge (epistemology and ontology) the researcher is creating in this dissertation is a neopragmatic one. We are following Richard Rorty's interpretation of John Dewey and Michel Foucault (Rorty, 1982; Dewey, 1930; and Foucault, 1972, 1973, 1980). In a discussion comparing two methods available to social scientists, Rorty dismisses both the Galilean (scientific and experimental design) approach and the hermeneutical (interpretive) approach of twentieth century social science. In his discussion, Rorty seeks to move knowledge creation beyond metaphors of representation—i.e., beyond *objectively representing an explanation* or an *understanding*—as final products of Galilean social science and hermeneutic social science (Rorty, 1982 p.195-198). Instead of claiming to represent knowledge of the

social world objectively, this dissertation follows Rorty and creates a *vocabulary to cope* with the social world.

Addressing social scientists, Rorty states:

The burden of my arguments so far has been that if we get rid of traditional notions of "objectivity" and "scientific method" we shall be able to see the social sciences as continuous with literature—as interpreting other people to us, and thus enlarging and deepening our sense of community. We shall see the anthropologists and historians as having made it possible for us—educated, leisured policy-makers of the West—to see any exotic specimen of humanity as also ‘one of us.’ ... When the notion of knowledge as representation goes, then the notion of inquiry as split into discrete sectors with discrete subject matters goes. The lines between novels, newspaper articles, and sociological research get blurred. The lines between subject matters are drawn by reference to current practical concerns, rather than putative ontological status. (Rorty, 1982 p. 203).

Rorty then moves on to caution social scientists about the hermeneutic approach:

The current vogue of 'hermeneutics' is going to end soon, and badly, if we advertise these new notions [of Foucaudian discourse, textuality, and speech acts] as more than they are—namely, one more jargon which tries to get out from under some of the mistakes of the past. ... This attempt to free mankind from Nietzsche's 'longest lie,' the notion that outside the haphazard and perilous experiments we perform there lies something (God, Science, Knowledge,

Rationality, or Truth) which will, if only we perform the correct rituals, step in to save us. (Rorty, 1982 p. 208).

Ultimately, Rorty thinks:

[I]t is a mistake to think that there is a principled distinction between explanation and understanding, or between two methods, one appropriate for nature and the other for man, we have been arguing ... that the notion that we know *a priori* that nature and man are distinct sorts of objects is a mistake. It is a confusion between ontology and morals. There are lots of useful vocabularies which ignore the non-human/human or thing/person distinctions. ... Human beings are no more 'really' described in the latter sort of vocabulary than in the former. Objects are not 'more objectively' described in any vocabulary in any other. Vocabularies are useful or useless, good or bad, helpful or misleading, sensitive or coarse, and so on; but they are not 'more objective' or 'less objective' nor more or less 'scientific'. (Rorty, 1982 p. 202-203).

Thus, the epistemological position of this dissertation fits within Rorty's outline of neopragmatism—one that states:

[I]t is the doctrine that there are no constraints in inquiry save conversational ones—no wholesale constraints derived from the nature of the objects, or the mind, or of language, but only those retail constraints provided by the remarks of our fellow-inquirers. ... The pragmatist tells us that it is useless to hope that objects will constrain us to believe the truth about them, if only they are approached with an unclouded mental eye, or a rigorous method, or a perspicuous

language. ... But objections—conversational constraints—cannot be anticipated. There is no method for knowing *when* one has reached the truth, or when one is closer to it than before. ... In the end, the pragmatists tell us, what matters is our loyalty to other human beings clinging together against the dark, not our hope of getting things right. James, in arguing against realists and idealists that 'the trail of the human serpent is over all,' was reminding us that our glory is in our participation in fallible and transitory human projects, not in our obedience to permanent nonhuman constraints. (Rorty, 1982, p. 165-166).

We follow Rorty in this dissertation in terms of his neopragmatic approach. The outcome of this dissertation is a vocabulary of subject analysis in the Codebook, Prototype, and Critique drawn from an existing conversation (i.e., conceptions of subject analysis) and used to further that conversation—i.e., to move the conversation closer to fieldwork research.

The texts analyzed in this dissertation were read and interpreted in a simple six-part hermeneutic circle as illustrated in Figure 4.2.¹⁰ Hermeneutic circles account for various aspects of interpretation. The six-part hermeneutic circle used in this dissertation and illustrated in Figure 4.2. accounts for three axes: (1) part-whole, (2) self-text, (3) individual-shared meaning. These axes inform the logistics discussed above in 4.2.4. Each of the codes generated in this study had to fit into this simple hermeneutic circle. Thus, each code was subject to a critical question: where does it fit? For example, a code is part of the shared meaning of subject analysis when it is used by a number of

¹⁰ Hermeneutic circles can become quite complex. Alevsson and Sköldberg (2000) construct a circle that has upwards of twelve axes (making in our terminology a twenty-four-part hermeneutic circle).

individuals in the same way. Or a code will be interpreted as this researcher's individual interpretation when it is not used elsewhere in the same way. Likewise, a code is either a part of a conception of subject analysis or an interpretation of the whole of any one or all conceptions of subject analysis. Finally, each code is citable as part of the text or as part of this researcher's interpretation of the text—reflecting the self-text part of the hermeneutic circle.

The extent to which the interpretation in this dissertation is shared is a test of the applicability of its findings. Sharing an interpretation means, not an appeal to validity or truth of our findings, like the Galilean or traditional hermeneutic concepts of explanation and understanding, but an appeal to extending the conversation among both theorists' and practitioners' interpretation of subject analysis practice. This idea follows both Rorty (1982) and Cornelius (1996) in their attempt to extend knowledge of social activities through conversation—in this case, to shared interpretation of conceptions of subject analysis. Here we want to enable two things: reflection and a lens for fieldwork. First, this metatheoretical investigation seeks a greater understanding of subject analysis by investigating its conceptions in extant theoretical literature. This provides all interested in subject analysis (in particular subject analysis theorists) an opportunity to reflect on what it is they study and teach—i.e., the provision of an overarching perspective and a deeper understanding of subject analysis theory. Second, we craft a Prototype of the subject analysis process, a Codebook of attributes, and a Critique of the parameters of subject analysis theory as the three and only three components of our metatheory. By

means of these three components, we provide lens—a way for future fieldwork to view the work of subject analysis.

4.4. Evaluating the Method and the Resultant Metatheory

Coding texts requires the interpreter to be reflective of his or her practice. How and why are we creating these codes? What kind of relationships are we creating between code and texts? Nine criteria for evaluating the codes generated through the processes discussed here have been articulated by Glaser and Strauss (1967/1999), Strauss and Corbin (1990 p. 254-256), Glaser (1978 p. 4-6), and influenced by Cornelius (1996). These nine criteria address the relationship between the codes, the texts, and the wider social environment studied. Framed as questions, the criteria are as follows:

1. Are the codes in this study generated from data? (show that they are)
2. Do the core variables and attributes fit the data? (show how they do)
3. Are all the core variables systematically related? (show how they are)
4. Are the core variables relevant to the data? (show how)
5. Is the metatheory modifiable? (show how)
6. Is the metatheory dense, i.e., account for anomalies for example? (show how)
7. Does the metatheory account for broader social conditions and applications?
(show how)
8. Are the findings from the hermeneutic approach significant? (how)
9. Is the process auditable and transparent? (show that)

The codes for this dissertation, and hence the attributes of interest, were drawn from the text and the authors' terms which form our data in the context of the nine criteria. The

first criterion is satisfied because the fundamental building blocks of the analysis result from a series of derivations from the data: (1) the codes were derived from the data; and (2) the core variables were derived from codes.

Each of the core variables is an attribute of the conceptions of subject analysis under study (see Section 4.2.1 above). Since the core variables were derived from the data, they fit that data and satisfy the second criterion. The metatheory (prototype, codebook and critique) discussed below places the core variables (attributes) into meaningful systematic relationships thus satisfying the third criterion. At first blush, the top-level core variables described subsequently in Chapter 5 seem like common-sense attributes of subject analysis theory. As can be seen in Chapter 6 there is a high level of relevance beyond this naïve, common-sense approach. These more refined attributes in the Prototype provide us with insights into conceptions of subject analysis and are hence relevant to the data and to this investigation thus satisfying the fourth criterion.

The metatheory developed here is modifiable since any recoding or rereading would result in modification. Any additions or deletions from the text chosen could also modify the metatheory as it is developed here. As future theorists create more theory, this metatheory will need to be modified. The fifth criterion is satisfied because as more fieldwork is done, this metatheory will and can to be modified to reflect new findings.

The metatheory developed here is dense and provides for anomalies. The level of coding represents the idiosyncrasies found in the theoretical texts read and coded. Since not every theorist builds on the same theoretical or philosophical foundation, the

metatheory is dense because this variety is captured in the codes thus satisfying the sixth criterion.

One drawback to the work of the dissertation is its limited focus. The method used in this investigation does not necessarily address wider social issues required by the seventh criterion. For example, this metatheory does not fully acknowledge work going on with the Semantic Web because there was no theoretical literature available for analysis in this context. However, that is not to say that this metatheory is not applicable in that context. We would argue that it is applicable even though the exact manner of that application is an open question. Yet, the metatheory created here does not explicitly account for the broader social context beyond the texts examined and so does not explicitly take into account contexts like the Semantic Web.

The findings from the hermeneutic approach taken in this dissertation are significant. By interpreting conceptions of subject analysis in this way, we have provided researchers with a perspective on the attributes of extant subject analysis theory. Upon reflection, the findings from this hermeneutic approach illustrate a lack of development in critical areas of subject analysis theory. Without taking this approach to extant subject analysis literature, LIS would not see as clearly where theory needs to develop. That is a very significant contribution—thus meeting the eighth criterion. The process used in this dissertation is auditable thus meeting the ninth criterion. All of codes generated and used in this investigation are available in the appendices of this dissertation. Because of copyright restrictions, we cannot reproduce all of the coded texts.

4.5. Summary of the Process

This dissertation develops from codes and memos into a metatheory (an overarching perspective and a deeper understanding) of attributes of subject analysis through a hermeneutic process of text collection, analysis, and synthesis. First the oeuvres of subject analysis authors were collected (text collection), they were then read and coded for attributes of subject analysis (analyzed), and finally the codes generated in this analysis were put into a metatheory comprised of a Prototype, Codebook, and Critique (synthesized)—discussed in detail in the next Chapter. While codes are useful as a comparative raw material, memos glue that material together. To that end, we memo-ed and made notes about connections between codes and, by extension between conceptions of subject analysis theories. In the final step of this dissertation, we shaped the metatheory of conceptions of subject analysis from the codes and memos.

5. Results of the Process

This metatheoretical investigation followed three basic steps—collection of texts, their analysis and the synthesis of findings. The first step, collecting texts, resulted in the selection of nine theorists, ten oeuvres and twelve texts. The second step, coding and memo-ing of the texts, resulted in a list of 546 codes and 2,747 instances of codes in the literature examined. These codes and the 305 attributes that derive from them are the initial results stemming from the process of metatheoretical analysis.

Synthesis, the final step in our metatheoretical investigation, is the focus of this Chapter. This final step involved two processes: (1) *grouping* the subset of codes that were identified as attributes in the second step of the investigation into meaningful relationships; and (2) *reflecting* on the conceptions of subject analysis.

Grouping, the first of the synthesis processes, resulted in the following outcomes:

- thirty-seven Top-Level Attributes
- thirteen Components of Subject Analysis (a type of attribute),
- three Attribute Families,
- a Prototype of subject analysis work, and
- a Codebook.

Each of these outcomes will be discussed in subsequent sections of this Chapter.

Reflecting, the second of the synthesis processes, resulted in a Critique of subject analysis theory. While discussed in part later in this Chapter, the Critique is discussed in depth in Chapter 6.

Of the 546 codes developed in this study (initial results), fourteen were hermeneutic codes—codes used to comment on our hermeneutic perspective of the data. We used hermeneutic codes to identify *examples* of incidents and *problems* with incidents in the texts. These two hermeneutic codes are "contextual codes." Neither of these hermeneutic codes are incidents; so, they cannot be core variables or attributes. This left 530 candidate incidents. Three hundred and five of those incidents became core variables on the verbal level and attributes on the abstract level. The remainder of this Chapter deals with the grouping of these 305 attributes into meaningful relationships—that is, the synthesis of these 305 initial results (attributes) into intermediate and final results.

The following sections of this Chapter describe the intermediate and final results of collection, analysis, and synthesis. We provide brief summaries of the oeuvres studied and present three intermediate groupings of attributes: (1) top-level attributes, (2) Components of Subject Analysis, and (3) Attribute Families. We then introduce the final results of this study: the Prototype, the Codebook, and the Critique. We then describe a hypothetical context of subject analysis work, providing the reader with a frame of reference for the Critique, Prototype and Codebook. The Chapter closes with a summary of actions taken in the process of this metatheoretical investigation.

5.1. Summaries of Oeuvres

This metatheoretical study examined ten oeuvres. This section provides a brief overview of each of the oeuvres studied.

Beghtol

Beghtol, C. (1986). "Bibliographic classification theory and text linguistics: aboutness analysis, intertextuality, and the cognitive act of classifying documents." *Journal of documentation*. 42(2):84-113.

Beghtol analyzes the process of reading and classifying a text from a text linguistics point of view, melding a cognitive perspective on the act of classifying with theories of the intertextual nature of documents and classification schemes.

Blair

Blair, D. C. (1986). "Indeterminacy in the subject access to documents." *Information Processing and Management*. 22:229-241.

Blair, D. C. (1990). *Language and representation in information retrieval*. (New York: Elsevier). Chapter 4.

Blair builds on a Zipfian theory of economy and tools in order to illuminate the role of language in information retrieval and in the indeterminacy of subject access to documents. According to Blair, the object of improving information retrieval then relies on the alignment of user and system vocabulary in the most economic way possible.

Fugmann

Fugmann, R. (1979). "Toward a theory of information supply and indexing: Treatise VI on Retrieval System Theory." *International Classification*. 6(1): 3-15.

Fugmann provides a theory of information supply that then influences his theory of indexing. Though this work focuses more on thesauri and his enhancement to thesauri via a relation path, his work is important as a conception of subject analysis because of its formal and system-centric nature.

Hjørland

Hjørland, B. (1992). "The concept of 'subject' in Information Science." *Journal of Documentation*. 48(2):172-200.

Hjørland, B. (1997) *Information seeking and subject representation: An activity-theoretical approach to information science*. (London: Greenwood Press). Chapters 3-4.

Hjørland outlines a philosophical approach to subject analysis. His theory calls for an argument for or against particular subject representations and interpretations of texts based on philosophical positions and a macro-social understanding of the context (domain, discipline) of the document.

Kaiser

Kaiser, J. (1911). *Systematic Indexing*. (London: Pitman). §§1-348.

Kaiser's work is an example of a domain analysis—complete with indexing and interpretation guidelines. His pragmatic approach, though bound by the technologies of his time, highlights the variety of analysis procedures and illustrates an early example of category analysis that will later dominate subject analysis theory.

Langridge

Langridge, D. W. (1989). *Subject analysis: principles and procedures*. (London: Bowker-Saur). Chapters 1-4.

Langridge provides a thorough discussion of subject analysis based on general conceptions of the universe of knowledge from the vantage point of a humanist. His work builds on Ranganathan's and the Classification Research Group.

Mai – Domain Analysis

Mai, J-E. (in press-a). "Analysis in indexing: Document and domain centered approaches." *Information Processing and Management*.

In this work, Mai provides a polemic for domain-centered analysis in indexing. Moving away from his previous semiotic work, Mai's approach here takes analysis into a context where indexing serves particular tasks.

Mai – Semiotic Analysis

Mai, J-E. (2001). "Semiotics and indexing: An analysis of the subject indexing process." *Journal of Documentation*. 57(5):591-622.

Here Mai provides a Peircean semiotic analysis of the process of indexing—analyzing the steps and elements involved in the subject analysis process and equating each step with a particular step in semiosis.

Svenonius

Svenonius, E. (1994). "Access to non-book materials: The limits of subject indexing for visual and aural languages." *Journal of the American Society for Information Science*. 45(8):600-606.

Svenonius provides a denotational approach to subject analysis. In this oeuvre, Svenonius takes a commonsense approach to subject matter—e.g., if snow is mentioned in text, then snow is a subject of the text.

Wilson

Wilson, P. (1968). *Two kinds of power: Essay in bibliographic control*. (Berkeley, CA: University of California Press). Chapter 5.

Wilson provides a rigorous discussion of four methods of subject analysis. He first argues that there is not one subject that can be found or discovered in a text. Before any one method can be employed in subject analysis, a list of candidate concepts must first be identified.

The next section discusses how we arrived at thirteen Components of Subject Analysis, three Attribute Families, and the metatheory—i.e., the Prototype, Codebook, and the Critique.

5.2. Synthesis Process One: Grouping Attributes into Meaningful Relationships

Chapter 4 described the process of the study. In that process, we collected, analyzed and synthesized texts. This section, and those that follow it, describe the results of results of the study's analysis and synthesis processes. The intermediate results outlined here serve as the raw material for the final results or products of the dissertation: Prototype, Codebook, and Critique.

5.2.1. *Top-Level Attributes*

The intermediate results of the study are various groupings of attributes of conceptions of subject analysis: top-level attributes, Components of Subject Analysis, and Attributes Families. During the first grouping, similar incidents were brought together under one incident name—e.g., "aboutness". That incident name—if it was not moved underneath another more general incident name—became a top-level attribute at the end of analysis when our work turned to synthesis. As a result, the process of identifying incidents had a hierarchical aspect. For example, there are different ways our core authors discussed "aboutness."

Because we nested some attributes under others, we generated thirty-seven top-level attributes of conceptions of subject analysis. These attributes are top-level because they do not fit neatly within the extension of another attribute. They stand outside our

interpretation of all other attributes across these conceptions of subject analysis. These thirty-seven top-level attributes contain all the remaining 268 (for a total of 305 attributes) nested beneath them. The top-level attributes are presented in Table 5.1.

Table 5.1. Top-level attributes

1	Aboutness	20	Language
2	Analysis	21	LIS
3	Author	22	Meaning
4	Axioms on Information Supply	23	Memory
5	Classifier	24	Order
6	Collection	25	Philosophical Schools
7	Collective	26	Purpose of the Process
8	Control	27	Reader
9	Delegation	28	Reading
10	Document	29	Representation
11	Domain Analysis	30	Semiotics
12	Epistemic Categories	31	Significant Characteristics
13	Evaluation	32	Text
14	Indexer	33	Text Linguistics
15	Information Supply	34	Tool
16	Information System	35	Use
17	Interpreting (process and framework)	36	User
18	Intertextuality	37	Writing
19	Knowledge Organization		

The list of top-level attributes may appear confusing at first blush. Why, for example, is "Classifier" not nested under "Indexer"? Why is "Text Linguistics" on the top-level? These top-level attributes were closely wedded to our interpretation of how the authors of the texts were making distinctions. We were actively trying to represent textual distinctions—say between classifier and indexer—when the theorist in his or her oeuvre made such distinctions. Likewise, as the accretion of codes during the coding

process occurred, attributes like Text Linguistics did not fit so easily with other attributes of conceptions of subject analysis. In such a case, and others like it, these attributes, either remained in the top-level (the residue of analysis); or, where possible, they were inserted under a broader attribute later in the synthesis process.

From 542 codes generated in three rounds of coding, we created thirty-seven top-level codes that became the top-level attributes used in the remaining phases of our investigation. We left out of the analysis sixteen codes used for contextual and interpretation purposes that were not *attributes*. These were hermeneutic codes (such as "hermeneutic>individual meaning>commentary") that signified where we would memo our interpretation or comments on what the author had written. These codes do not qualify as incidents of the object of study (attributes); and, as a result, they are not included in any of the results (intermediate or final) of the dissertation.

These top-level attributes exhibit some similarities. For example, Philosophical Schools and Epistemic Categories are more similar in this context than Information System and Philosophical Schools. Because many do exhibit similarities, they can be further grouped in order to provide us with a solid anatomy of the conception of subject analysis. It is to that grouping that we now turn.

5.2.2. Subject Analysis Components

In the synthesis process, we grouped the top-level attributes into thirteen Subject Analysis Theory Components based on similarities. Here, for example, we grouped the

attribute Classifier with the attribute Indexer. Together they constitute one component of subject analysis theory—the person doing the analysis.

The Subject Analysis Components constitute the first meaningful level of synthesis and the metatheoretical anatomy of subject analysis as framed in this dissertation. These Components provide a useful abstraction of the attributes of subject analysis as discussed in the ten oeuvres analyzed. As can be seen in the Table 5.2, we have grouped Classifier, Memory, and Reading together under Indexer thus consolidating attributes and discussions of analysts.

Table 5.2. Thirteen Components of Subject Analysis

1	Purpose of the Process (Order, Control, Delegation)
2	Document (Writing, Author)
3	Indexer (Classifier, Memory, Reading)
4	Collective (Collection, Domain Analysis)
5	Interpreting [Process and Framework] (Reading)
6	Information System
7	Tool
8	Representation
9	Means of Knowing Subject Analysis (Epistemic Categories, Philosophical Tools, Knowledge Organization, Semiotics, Intertextuality, LIS, Text Linguistics, Axioms of Information Supply, Information Supply, Meaning, Language)
10	Use (User, Reader)
11	Significant Characteristics
12	Analysis (Evaluation)
13	Aboutness

We have added the category "Means of Knowing Subject Analysis" to describe the similarity across attributes such as Epistemic Categories and Semiotics. The building of the Components demonstrates the process of weaving together attributes of

conceptions of subject analysis—constructing an understanding of how the pieces fit together.

These Components are the attribute parameters of the conceptions of subject analysis studied in this dissertation. That is, these Components outline the landscape and the limits of attributes discussed by the oeuvres analyzed. These thirteen Components served as a starting point for a Critique of subject analysis theory in Chapter 6. They also point to the key areas that must be addressed in contemporary subject analysis theory.

5.2.3. Attribute Families

We further combined these thirteen Components into three Attribute Families. Our purpose for doing so was to shift the conception and their attributes closer to the research design with an eye to studying practice. To that end, we created "Process of Subject Analysis (Elements and Steps)," "Perspective Taken in the Subject Analysis Process (Purpose and Means of Knowing Subject Analysis)," and "Environment in Which the Process of Subject Analysis is Conducted" with the intension of focusing attention on three areas essential to understanding the practice of subject analysis work.

1. *Process of Subject Analysis (Elements and Steps)*: Document, Interpreting, Significant Characteristics, Representation
2. *Perspective Taken on the Subject Analysis Process(Purpose and Means of Knowing Subject Analysis)*: Purpose of the Process, Means of Knowing Subject Analysis
3. *Environment in Which Subject Analysis Process is Conducted*: Collective, Use, Indexer, Information System, Tool, [Analysis, Aboutness]¹¹

¹¹ It is difficult to place Analysis and Aboutness in one place. They permeate the work of subject analysis. We have placed them in the Environment Attribute Family to highlight their influence on the rest of the work, i.e., Process and Purpose.

These three Attribute Families contain up to 305 codes. The purpose of this grouping was to highlight meaningful clusters of subject analysis attributes as discussed in the conceptions studied. For the purpose of fieldwork, we can then take these Attribute Families and their constituent attributes and present them as a Prototype of subject analysis work and as a Codebook that can be used by researchers to shape observations and interviews with subject analysts.

5.2.4. Prototype

The Prototype is an *ideal type* or a model construction of the subject analysis process, derived from 142 attributes of subject analysis conceptions studied in this dissertation. The Prototype is set out in full in Appendix E. It is a model that accounts for all thirteen Components of Subject Analysis Theory, but was rearranged into six major pieces: (1) Process of Subject Analysis, (2) Actors and Influences, (3) Products of Analysis, (4) Purpose and Philosophies of Analysis, (5) Epistemic Categories, and (6) Context of Analysis. These areas reflect the work process of subject analysis, and hence serve as faithful representations of the model construction or *ideal type* of the work of subject analysis.

We used only 142 attributes in the Prototype because many attributes gleaned from the oeuvres did not translate usefully into an *ideal type* of the subject analysis process. Even with a reduced number of total attributes, all thirteen of the Components

of Subject Analysis are represented in the Prototype. The Prototype, created from the Attribute Families and their constituent Components has three major sections with subsections: (1) Perspective on Subject Analysis (including Purposes, Philosophies, and Epistemic Categories), (2) Process of Subject Analysis (including the Elements and Steps), and (3) Environment of Subject Analysis (including Actors and Influences, Context of Analysis, and Products of Analysis). See Figure 5.1 below.

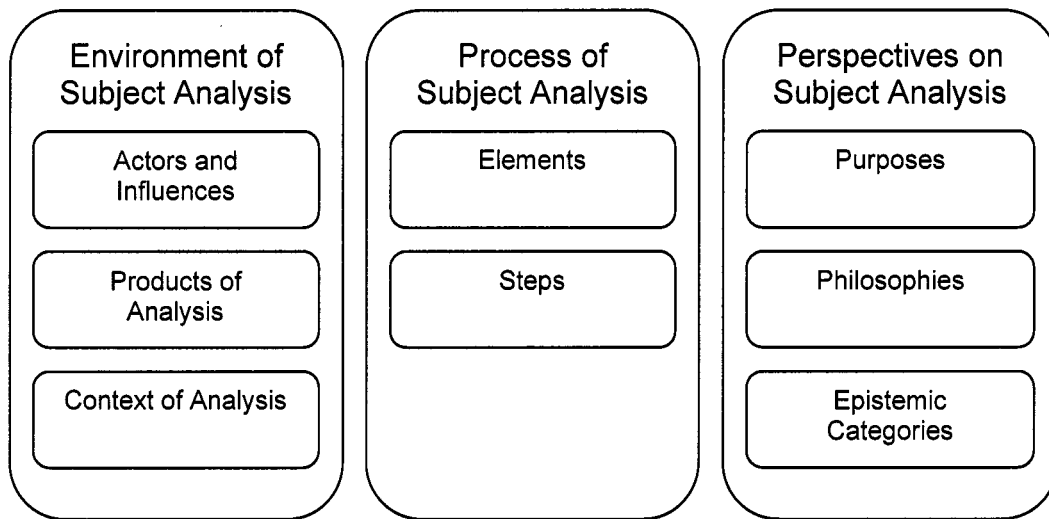


Figure 5.1. Parts of the Prototype

Because the focus in the Prototype is on prototypical action, many particulars like types of controlled vocabularies are left out. The complete listing of Prototype attributes follows in Appendix E. The Prototype provides an *ideal typical* conception of the subject analysis process. In its major three areas, it outlines all of the decisions an analyst makes and all of the elements an analyst uses according to the ten oeuvres studied. A researcher can lay empirical data (or other theoretical conceptions) of subject analysis along side

this *ideal type* and see where practice (or another theory) differs. For example, fieldwork that results in a step-by-step description of a cataloger's subject analysis process can be laid against the second section of the Prototype (Elements and Steps of Subject Analysis) and, in so doing, a comparison can be made between the observed steps taken from the fieldwork results and the prototypical steps. This results in: (1) a richer understanding of the process of subject analysis; (2) a clearer understanding of the relationship between theory and practice; and (3) a potential set of further questions about the process and the *ideal type* of the process.

We imagine this Prototype serving as a cadre around which observations are compared. For example, the theoretical literature posits a suite of purposes for subject analysis process. An *ideal* conceptualization of the process provides layers of purposes: purposes for information systems, interpreting process, and representation. The observed process may see only one purpose—say the purpose of representation. How does that affect our understanding of the overall *ideal* or *model* of the subject analysis? Does it point to a limitation in tools for analysts? Does it point to holes in theory? Again, the point of the Prototype is comparison and a discussion.

5.2.5. Codebook

The Codebook's purpose is to provide a theory-informed filter for fieldwork on subject analysis practice. We organized the Codebook with a site visit in mind. It has four sections: Elements at the Site, Process of Subject Analysis, Effects on the Analysis

Process (e.g., user, collective), and Purposes of Subject Analysis. Table 5.3 contains the table of contents of the Codebook.

Table 5.3. Table of contents of the Codebook

1. Elements at the Site

- 1.1. Document
- 1.2. Indexer
- 1.3. Tool
- 1.4. Information System

2. Process of Subject Analysis

- 2.1. Analysis (general orientation and perspective on the subject analysis process)
- 2.2. Interpreting Process (the process of interpreting a document for its subject matter)
 - 2.2.1. Initial Steps
 - 2.2.2. Methods
 - 2.2.3. Concluding Steps (including Representation)
 - 2.2.4. Qualities of the Interpreting Process
- 2.3. Significant Characteristics (characteristics identified as significant when interpreting)
 - 2.3.1. Nature of Characteristics
 - 2.3.2. Units of Analysis
 - 2.3.3. Considerations to Finding and Attributing Characteristics to Documents

3. Effects on the Analysis Process

- 3.1. User, Reader, and Searching (user of a system, reader of a text, and searcher of a system)
- 3.2. Collective (context, collection, domain, discourse, and so on)

4. Perspective on the Work of Subject Analysis (Purpose, Objectives, Goals)

- 4.1. Purposes in Subject Analysis
 - 4.1.1. Purpose of Representation
 - 4.1.2. Purpose of Interpreting
 - 4.1.3. Purpose of Information System
 - 4.1.4. Purpose of Analysis

The Codebook presents 229 attributes of subject analysis in tabular form. The Codebook is set out in full in Appendix F. As constructed in the dissertation, the purpose of the Codebook is to identify if, where, and when these attributes play a role or shape the subject analysis process as observed during fieldwork. For example, were we to observe a subject cataloger at work interpreting a document for its subject matter, we would have to see and make sense of the actions and decisions made in that process. The Codebook provides a way of dividing up various observations on actions and decisions and aligning these observations with theory. Thus, a cataloger's justification for interpreting a document may illustrate a distinction between genre, document's subject matter, and potential use. The codebook tunes fieldwork researchers to these distinctions as well as others and aids them in making these distinctions during observations, interviews, document collection and other methods of fieldwork. The Codebook and the Prototype are discussed later in this Chapter in a hypothetical context.

5.3. Synthesis Process Two: Reflection on Conceptions of Subject Analysis

The second and final process in the synthesis step was to reflect on the findings from the metatheoretical investigation as they relate to the whole set of conceptions of subject analysis studied. The Critique flowed from the general findings of the dissertation and from the three Attribute Families that shaped the Prototype and Codebook. It was an effort to frame the questions asked in the field as informed by the theoretical literature studied here. As such, it provides a discussion of the three Attribute Families: (1) Process of Subject Analysis (document, document analysis, naming, and the representation), (2)

Perspective of Subject Analysis (purpose of subject analysis, and philosophical schools observed in the act of subject analysis), and (3) Environment (context and users). The Critique also frames how results from fieldwork might be presented, thereby advancing our knowledge of the Attribute Families of Subject Analysis.

The Critique uses the Attribute Families as a starting point for describing a Component Subject Analysis Theory—a kind of checklist of attributes that must be accounted for in the study of subject analysis. This type of theory grows out of the Prototype, Components, and Attribute Families generated from this metatheoretical investigation. In order for subject analysis theory to add to our understanding of the Components of subject analysis work, it must address those components both theoretically and empirically. If we are to better understand practice, we must study practice. The Critique is discussed in context in the following sections and developed fully in Chapter 6.

5.4. Context of Results

In order to illustrate the findings of this metatheoretical investigation, we will provide a hypothetical subject analysis environment. In this made up environment, we can illustrate how the products that make up our metatheory (i.e., Prototype, Codebook, and Critique) can be used to understand subject analysis work and further subject analysis theory. We understand the limitations and implications of using a hypothetical situation for purposes of illustration. However, since the focus of the dissertation is on the development of a metatheory by means of the analysis of theoretical literature, an

illustration of the findings through application to a real-world subject analysis environment was beyond the scope of the dissertation. As noted throughout, one of the dissertation goals is to inform subsequent fieldwork. Thus, we will have every opportunity for such direct application in our subsequent research grounded in this dissertation. We briefly outline such work in the closing pages of this dissertation.

For the sake of our example, let us call our subject analyst Jerome Prospero. Jerome works for a large research library. His work involves a range of subjects, but mostly he does subject analysis for documents used in the humanities. He is often providing subject analysis for late classical and early medieval works as well as commentaries on such works.

With this context in mind, we can look at how Jerome does his work while introducing the various components of subject analysis theory as they relate to that work. Finally, we can see how theories about Jerome's work can be advanced with the results of this metatheoretical investigation. While the sketch of Jerome's environment is hypothetical, aspects of the sketch are drawn from Saurperl's empirical work (1999).

5.5. Jerome Prospero's Work

When cataloging, Jerome's work follows a pattern. For example, assume that the library recently acquired a Judaica collection. Some of these texts require original cataloging. The acquisition of books to the collection signals the start of Jerome's work. First he looks for descriptions that already exist in OCLC or some other bibliographic utility. If

he does not find any to use by such means, he begins the process of describing these books. Part of that description process is determining the subject matter of the work.

At this point in Jerome's work, the results of this metatheoretical study can be used to understand how subject analysis work is done. The Codebook, Prototype, and Critique produced in this metatheoretical investigation make up a lens through which we can observe Jerome's work—or the work of any other subject analyst. We use the word “lens” to denote a tool made up of the three products of the metatheory (i.e., the Codebook, Prototype, and Critique) that when used provide the researcher with a theoretical view of subject analysis work. The Prototype is a comparative model of Jerome's work, the Codebook enumerates the attributes derived from theory that can be observed in practice, and the Critique establishes a checklist of components (and their attributes) that theory wants taken into account. In so doing, the lens shapes the kind of resulting theoretical observations of Jerome's work that we might make.

5.6. The Lens and Jerome's Work

It is important to keep in mind that Jerome is a hypothetical subject analyst. Any fieldwork done using the lens formed by the products of the metatheory would have to establish a complete statement about the research design, philosophical stance between the studying subject and the objects of study. We also expect that fieldwork would modify the lens by expanding it, refining it, or by eliminating attributes deemed unnecessary in a particular case. The next section first outlines how the Codebook and

Prototypes can be used in our hypothetical fieldwork example. It then addresses the Critique in context.

5.6.1. Codebook in Studying Jerome's Work

When a researcher enters the field to study subject analysis work, she or he can rely on the theoretical literature to shape his or her thoughts, or he or she can disregard the theoretical literature and start with a "clean slate." The Codebook generated from this metatheoretical investigation aids the first option and builds on the theoretical literature. It provides a mechanism to see if the work done by Jerome exhibits attributes discussed in the theoretical literature.

The Codebook is designed to inform interview, observation, and focus group designs as well as document collection (i.e., collecting documents from the site such as manuals, guides, policies, notes made by the analyst)—all typical routines for fieldwork. For an outline of the Codebook, see Table 5.3 above. In the Codebook, we grouped the attributes of this metatheoretical investigation into four major groups in order to focus the fieldwork researcher's attention on four work-centered factors: (1) what elements are found at the site of work (Elements at the Site); (2) what is the process of work (Process of Subject Analysis); (3) contextual factors that influence work (Effects on the Analysis Process); and (4) the purpose of the work (Purpose of the Work of Subject Analysis). We drew these four work-centered factors from the literature studied with a focus on understanding work practices of subject analysts. We will now walk through an observation session using the Codebook to look for particular work practices.

5.6.1.1. Observing Jerome Work

Researchers might want to use a variety of methods to observe Jerome at work. They might use procedures that get Jerome to talk about what he is doing, or they may observe in silence. They may interweave the interview questions with the observation, or they may keep them separate. It is not the place of this dissertation to mandate the methods or the philosophy behind the methods any individual field researcher may take. However, for the sake of clarity, we will offer one particular way in which the field researchers can use this Codebook. In our hypothetical example, Claudia Tolomi is employing an ethnomethodological approach to observation.¹² Claudia has decided to observe Jerome's work following the Codebook's four main areas, making notes about both the actions and the meaning of those actions. Thus Claudia will observe: (1) what elements are at Jerome's work, (2) Jerome's process(es) of subject analysis, (3) any effects on the analysis process(es), and (4) Jerome's purpose in doing this work. While these high level groups may at first sound vague, they become clear when we look at the attributes nested under them in the Codebook table of contents as set out in Table 5.3.

5.6.1.2. Observing Elements at Jerome's Work

The first major group in the Codebook is the Elements group. This group contains: document, indexer, tool (used in subject analysis), and information system. And these attributes can be further subdivided. For example, Claudia may observe that Jerome

¹² Ethnomethodology is a perspective on fieldwork and qualitative inquiry that examines how people make sense of their everyday activities. There is an effort made to see the everyday aspect of work, and what meaning it has if and when disrupted. See Patton (2002) p. 110-112; Garfinkel (1967); Gubrium and Holstein (2000) p. 490.

finds particular parts of the document more helpful to his work; or, he may look for clues that help with the interpretation of particular words in the document. Because Claudia is using a Codebook drawn from theoretical literature on subject analysis, she can use this Codebook to identify behaviors and interpret meanings in a theoretical context. She can also extend our theoretical understanding by adding observed behaviors and interpreted meanings that the Codebook does not address. So where the Codebook asks Claudia to look for seven different ways theory has discussed the document, she may find other ways that Jerome deals with the document in his hand. In doing so, Claudia extends our knowledge of the role of the document in Jerome's work. Her observation also asks us to reflect on contemporary theory of the role of documents in the theory of subject analysis.

5.6.1.3. Using the Three Other Groups in the Codebook

From the above example, we can see how Claudia might observe in the other three groups of the Codebook—looking at processes, effects on processes, and purposes, as well as elements at Jerome's site. These are artificial groups, and furthermore, these groups may overlap, buttress each other, and may even appear contradictory to Claudia. However, without this Codebook, Claudia would not be able to see Jerome's work through as complete a theory-informed filter; and, therefore, might not advance our theoretical knowledge of subject analysis practice.

It is possible to take a single theorist discussed in the dissertation and develop empirical research designs—including fieldwork (cf. Beghtol, 1986 and Mai, 2000). However, the Codebook derived from a comparative approach holds advantages over

single-theory empirical work. First, because we have just the beginnings of contemporary fieldwork (Sauperl, 2004), we are in a state of discovery and description in subject analysis. The broader the theoretical net, the richer the description we gain from the field. Furthermore, technological innovations and work environment constraints inform priorities and purposes of subject analysis work. A more ecumenical view of the subject analysis process as provided in the Codebook may be able to discern among various contributing factors in these environments—factors that may significantly influence work, and, as a consequence, influence our theories of that work. A purely focused (perhaps myopic) and deductive approach may not tell us anything new when used to describe and analyze fieldwork data on subject analysis work. To answer these concerns, this Codebook aims at rich description—as seen through a comparative approach to theory—and assumes a mixed deductive-inductive approach to fieldwork, allowing flexibility in observation and analysis.

In sum, the Codebook provided here is a comparative one, accumulating robust theoretical discussions of the subject analysis process. By weaving together the attributes of these ten oeuvres, we have provided the fieldwork researcher with a multifaceted view of the process accreted from diverse and intense theoretical propositions and discussions. Now that we have provided an example of the Codebook's use in fieldwork, we will move on to the use of Prototypes in that context.

5.6.2. Prototype in Studying Jerome's Work

This dissertation advances one summative Prototype of subject analysis work synthesized from the ten oeuvres studied. This summative Prototype is a prototypical description of the work of subject analysis derived from the theoretical literature. Prototypes can be used as tools for comparison. Claudia, our researcher, can lay the Prototype against observations of Jerome's work in subject analysis in order to compare observed practice with prototypical practice derived from theory. From her observations, Claudia can produce a chart of Jerome's work (not just his behavior, but its meaning as well). She can then compare Jerome's chart with the Prototype provided in this dissertation to see where theory and practice overlap, contradict one another, and where there are gaps—again, extending our knowledge by comparison of the ideal with the observed.

For example, Jerome's decision to represent the subject matter of a text-in-hand may be influenced by genre and what he perceives as similar materials in the collection in his library. From an interview with Jerome, Claudia may find that Jerome may have a number of purposes for thinking this way that map discretely onto, and reinforce, the Prototype.

5.6.3. Types of Data Collection and the Subject Analysis Lens Created in this Dissertation

Though the discussion above is focused on the Prototype and Codebook as parts of a lens for observing subject analysis work, we see the Prototype and the Codebook serving multiple purposes in fieldwork research design. Because observations, interviews, focus groups, and documents may serve as evidence for Jerome's work, it is possible to see how

the Prototype and Codebook can be used to create various data collection instruments. Though we used observation here as an example, it should not be assumed that observation, and particularly, this style of observation, is the only method to which the lens can be put to use.

5.6.4. Critique and Jerome's Work

The Critique provides a frame for the presentation of fieldwork. In Claudia's research of Jerome's work, the Critique can inform how she may present her findings. For example, she can present her findings in alignment with the three Attribute Families discussed in the Critique or she can focus on only one Attribute Family. In Claudia's case, she might want to present her observations of Jerome's work as a Process in a particular Environment without regard for the third Attribute Family, Purpose. Our preference would be to see fieldwork build on, and results framed in, all three Attribute Families: Process, Perspective, and Environment.

In Chapter 6, this dissertation provides a Critique of subject analysis theory. To reiterate and expand on our brief introduction of that product, we note that the Critique serves two purposes. First, it plays a role in the lens for viewing fieldwork as we have seen in our example above of Jerome's work. Second, it is a prelude to future theory development. As such, it provides a discussion of the three Attribute Families: (1) Process of Subject Analysis (document, document analysis, naming, and the representation), (2) Perspective of Subject Analysis (purpose of subject analysis, and

philosophical schools observed in the act of subject analysis), and (3) Environment (context and users).

The Critique is a tool that allows the researcher to reflect on the future of subject analysis theory as it relates directly to fieldwork. It frames the manner in which Claudia's study of Jerome's work can advance subject analysis theory.

5.7. Summary of Actions Taken

As a summary, Table 5.4 outlines the process and results of this dissertation. It is a schematic of the metatheoretical investigation—an explicit statement of the actions we took in the process of analyzing and synthesizing.

Table 5.4. Levels of analysis and synthesis

Action Sequence	Analysis or Synthesis Steps in the Process	Physical	Verbal	Abstract	Hermeneutic Actions	Results of the Process	Numbers of Entities
1	Analysis (Open Coding)	Code	Incidents	(Instances)	Breaking into Parts		546 Codes
2	Analysis (Open Coding)	Code		Interpretive and Contextual Codes	Hermeneutic Codes		16 Codes
3	Analysis (Selective Coding)	Code Names	Incident Names	Potential Attributes	Naming Parts		530 Codes
4	Analysis (Theoretical Coding)		Core Variables	Attributes	Establishing Useful Parts (leaving behind parts that aren't useful)	Attributes	305 Attributes
5	Synthesis (Grouping)		Core Variables	Attributes	Establishing Useful Parts (leaving behind parts that aren't useful)	Attributes	142 Attributes (from Prototype)

6	Synthesis (Grouping)		Core Variables	Attributes	Establishing Useful Parts (leaving behind parts that aren't useful)	Attributes	229 Attributes (from Codebook)
7	Analysis (Theoretical Coding)	Top-Level Codes		Top-Level Attributes	Synthesizing Parts	Top-Level Attributes / Intermediate Results	37 Attributes
8	Synthesis (Grouping)			Subject Analysis Components	Synthesizing Parts	Subject Analysis Components / Intermediate Results	13 Components
9	Synthesis (Grouping)	Code Families		Attribute Families	Synthesizing Parts	Attribute Families / Intermediate Results	3 Attribute Families
10	Synthesis (Grouping)				Presenting parts in a meaningful order	Prototype / Final Results	1 Prototype
11	Synthesis (Grouping)				Presenting parts in a meaningful order	Codebook / Final Results	1 Codebook
12	Synthesis (Reflecting)				Looking at the whole	Critique / Final Results	1 Critique

The Table shows all of the levels of analysis, steps in synthesis, and numbers of artifacts created in the analysis and synthesis processes. The hermeneutic perspective—the fourth column from the left in the Table—provides the explanation of the process. Rows one through three represent steps in the analysis process. The remaining rows represent the two stages of the synthesis process: rows seven through eleven are the steps in the first process of synthesis discussed in section 5.2; and row

twelve represents the steps involved in the second stage discussed briefly in section 5.3 in depth in Chapter 6.

Rows five and six show two re-constellations of selected attributes. These selected attributes are a subset of the 305 attributes, and are used to construct the Prototype and Codebook. These rows highlight particular attributes useful to understanding the decisions and elements made at the subject analysis site (Codebook), or, useful to constructing an *ideal type* of subject analysis process to which empirical data can be compared.

It is worth noting here that the "Results of the Process" column in Table 5.4 illustrates all of the material needed to make the analysis and synthesis of these texts possible and valuable. The metatheory of this dissertation is expressed through the Codebook, Prototypes, and Critique.

As can be seen from Table 5.4, the hermeneutic perspective guides the analysis and synthesis of the codes and attributes. As we created the Prototype, Codebook, and Critique, we moved away from the codes and looked more at the whole of the oeuvres taken together. In other words, we attempted to represent a view of the sum of the conceptions studied.

5.8. Conclusion

An analysis and synthesis of the ten oeuvres studied in this dissertation provides us with thirteen Components of Subject Analysis Theory. These Components—and the attributes that comprise them—can be arranged and used to help us better understand the practice

of subject analysis work. From these components, we have woven a summative Prototype and a Codebook, reflected on these components in extant theory, and provided a Critique where we wed theory to the study of practice. The Chapter closed with a hypothetical context in which the Critique, Codebook, and Prototype might be used. The next Chapter details the Critique, starting first with a discussion of the general findings of the dissertation.

6. Discussion

In the Chapter 5, we group 305 Core Variables into Subject Analysis Components, Attribute Families, a Prototype, and a Codebook. In this Chapter, we discuss the ramifications of that grouping, and outline how this influences the study of subject analysis work and the creation of subject analysis theory. By comparing and contrasting attributes across conceptions of subject analysis, this study constructed a list of 305 Core Variables involved in the subject analysis process. Therefore, from a theoretical point of view, we can say that there are up to 305 considerations that theorists want the subject analyst to take into account when the subject analyst does her work. As Mai outlines (2000 p. 66-71), experts may condense these considerations thus simplifying the process.

From our analysis of the literature, there are thirteen distinct areas that substantively shape subject analysis work, and, therefore, constitute the Components of Subject Analysis Theory. We introduced these Components in Chapter 5. In this Chapter, first we use these Components to identify a lack of theoretical integration of contemporary subject analysis theory. Second, we argue for a Component Theory of subject analysis that accounts for these thirteen areas. Not only does a Component Theory of subject analysis produce a checklist that is useful to the theorists making claims about the whole of subject analysis work, but it also moves subject analysis theory away from document-centered and user-centered rhetoric and more toward a site-based rhetoric that is grounded in work practices and in integrated theoretical statements we can make about those work practices. So, this discussion flows out of Chapter 3 and our

discussion of the subject analysis literature and its creative tensions as much as it flows out of Chapter 5, the results of the process.

Likewise, as discussed in Chapter 3, subject analysis theorists split the focus of their work between an orientation toward users and an orientation toward documents. It is argued here that we need theoretical considerations of both to fully understand the whole subject analysis process.

Even though some subject analysis theorists advocate a change in perspective from the document to the user or even to the domain, there is often little substantive theory of the user or the domain presented by such theorists. In our study, we found thirteen distinct attributes of users present in subject analysis theory. For example, within these thirteen there are four attributes of "use" mentioned by our authors. There is a general statement about use of documents and representations (Hjørland, 1997; Kaiser, 1911; Langridge, 1989; Mai, 2001; 2005). More specific attributes related to "use" are discussed by some theorists. Beghtol (1989) discusses the "temporary usage" in relation to a more permanent aboutness. Both Hjørland (1997) and Mai (2001; 2004) discuss "potential use" of documents, and Hjørland (1997) and Langridge (1989) both talk about "long term use" which relates to Beghtol's (1989) concept of a more permanent aboutness of documents. However, "use" here is not fully contextualized. It is not grounded in data about use, and that data is not incorporated into the theories proposed by these thinkers—at least not to the degree that they discuss the interpretation process and framework of subject analysis or what constitutes a significant characteristic of a

document for representation. These areas—interpretation process and framework and significant characteristics—contain a large and refined set of attributes. By contrast, there are 51 attributes in the category of significant characteristics, and there are 74 attributes in the category of interpretation process. Even with this diversity of attributes in the categories of significant characteristics and interpretation process and framework, there is no call to draw any conclusions from this fact other than to note the diversity of attributes in the latter two categories and the paucity of attributes from the "user" or "use" category. Users and use are more related than the coding process allowed us to illustrate. Yet, if subject analysis theory is going to move toward a robust discussion of each of its components, then a more refined theoretical discussion of user and use is needed.

The same level of refined discussion is needed concerning the purposes of subject analysis. Why do subject analysts do their work? And what is needed to help them do their work? What is not working now in the representations they create? All nine authors identified an explicit purpose for doing subject analysis work or an explicit purpose for the information systems that used subject analysis work. However, there is very little agreement about the nature of those purposes. Langridge (1989) sees subject analysis of whole documents as a *speciation of writings*, placed in a context of other writings. Beghtol, on the other hand, claims "the purpose of subject retrieval systems is to retrieve documents whose aboutness suggests that a user may find in them meaning(s) expedient to a certain need of the moment," (Beghtol, 1989 p. 85). So we are not speciating writings (at least not directly) when we do subject analysis. We are identifying aboutness.

When reflecting on subject analysis theory, the final process in the synthesis step of this dissertation, we have reflected on the diversity and lack of diversity present, as represented by the proliferation or lack of proliferation of attributes. Where there was a lack of attributes we took note, and where there was an abundance of attributes we took note. These observations resulted in five areas of future focus. These areas point to where subject analysis theory can refine its focus through increased attention.

6.1. Focus Areas for Subject Analysis Theory

Upon reflection, the conceptions of subject analysis studied in this dissertation exhibit five focus areas that inform future theoretical development and fieldwork. In brief, the conceptions studied showed: (1) a lack of theory of users of the results of subject analysis; (2) a lack of theory related to indexers' actual work; (3) a diversity of purposes for subject analysis; (4) diversity in interpreting processes and significant characteristics interpreted; and, (5) no clear delineation of mission-critical problems with current information systems or subject analysis practices. We address each of these characteristics in the following sections.

6.1.1. Lack of Theory of Users of Subject Analysis

One could say that there is a starkly underdeveloped or a lack of theory of users in the conceptions of subject analysis studied in this dissertation. As shown in Appendix D., there are only ten different attributes for Reader, Use, and User; whereas, there are 191 different attributes for Interpreting Process, Reading (for analysis purposes), and

Significant Characteristics (of a document). If we put stock in the belief that the difference between, and variety among, attributes signifies a more developed (or at least more diverse) conversation, then the conversation about Readers, Use, and Users seems underdeveloped and not as diverse as discussions about Interpreting Process, Reading for Analysis Purposes, and Significant Characteristics. From our understanding of these texts, we have a sadly underdeveloped idea of the user and use in subject analysis theory.

Diversity in conceptions of users is crucial to refining and expanding our theory of subject analysis and how users fit into that theory. Hope Olson and Rose Schlegl identify this issue from their meta-analysis of subject access literature. They conclude that the "user must not be regarded as homogeneous. The danger of speaking of 'the user' is that that phrase suggests a particular user, a 'majority reader,' rather than the heterogeneous groups of users that vary from one context to another," (Olson and Shlegl, 2001 p. 78). So the task remains for subject analysis theory to create a discourse about the user in its subject analysis theory—focusing on the diversity and contexts of users (cf. Fidel, 2000; Mai, 2004).

6.1.2. Lack of Theory Related to Indexers' Actual Work

Another observation that can be made from reading and coding the texts in this study is a significant lack of theory derived from indexers' actual work. All of the indexing processes presented in the texts examined constructed the process of analysis without data on how analysts actually work. For example, do subject catalogers go through the same process as indexers for ABC-CLIO's America History and Life database? They do

not have the same background. They are not preparing the same kinds of representations. They may not even conceptualize their users in the same way. How can we be certain they go through the same processes? The mostly idiographic and theoretically underdeveloped empirical work done on subject analysis is not used to construct the idealized subject analysis processes in these theories (Endres-Niggemeyer et al., 1998; Sauperl, 2004). Because of the diversity of purposes present in the theories and practice of subject analysis, a more empirically grounded sketch of the analysis process is needed to advance our understanding of the work, and therefore improve it.

There are some theories examined in this dissertation where this concern for indexer's work is more nuanced. For example, in Beghtol's (1986) paper, we see that she wants to examine how the mind reaches a subject description. The nuance here lies in whether different purposes change the cognitive aspect of subject analysis, or not. We believe our concern for understanding the context of subject analysis work obtains in this circumstance—even though the object of study as identified by Beghtol is not the context, but the mental operations of subject analysis. It is for the reason that context is an integral part of theory, that a diversity of contexts must be acknowledge by subject analysis theory.

6.1.3. Diversity of Purposes

As we alluded to above, the texts examined here expressed a diversity of purposes for most aspects of the subject analysis process. In information system design, representation of subject matter, interpreting process, and analysis in general, theorists

expressed a diversity of opinion about *why* subject analysts do this work or *why* they contribute subject representations to information systems.

It is possible that there may be a more complicated taxonomy of purposes at work in the practice of subject analysis that should be studied. A single theory of the subject analysis process—independent of context—may not be enough if the actual work of subject analysis is so diverse. For example, information systems have purposes, the work of subject analysis has purposes, but they may not be the same purpose. Likewise, tools used by subject analysts to do their work (e.g., search log data) may be constructed for a different purpose. This suggestion is akin to Fidel's interest in what she calls the user-centered approach: "[I]nformation systems are designed according to what users need, not only according to universal rules. It also means that different groups of users may require different types of information systems," (Fidel, 2000 p. 79). What is most interesting for our point here is the bridge between acknowledging various user needs as a design commitment and representing those purposes as informing subject analysis theory. That is, given a potential diversity in purposes for representing the subject matter of documents, how do those purposes explicitly inform subject analysis theory? In the oeuvres analyzed in this dissertation, purposes most often served as a general starting point for discussion rather than a point of comparison between various theoretical discussions about subject analysis. It is our feeling that subject analysis theory can benefit from exploring and making explicit these different purposes—thereby advancing our theoretical understanding for the impetus and variety of our work.

6.1.4. Diversity in Interpreting Processes and Characteristics Interpreted as Significant

One observation that can be made from these attributes is the diversity of interpreting processes and significant characteristics of documents. It stands to reason that there would be a high level of diversity in these two types of codes. Interpreting process and significant characteristics are the main objects of study for subject analysis theory, as represented in the texts studied here. It will be interesting to see, from field studies, whether this diversity is warranted. It could be that our understanding of subject analysis process does not require such a robust vocabulary for interpreting significant characteristics.

Empirical work to date has found complexity in observing subject analysis and summarization. Both Endres-Niggemeyer et al. and Sauper have explicated the complexity of interpreting a document for the purposes of information representation. In her study of six abstractors, Endres-Niggemeyer et al. found 552 summarization strategies—a testament to the complexity of the process (Endres-Niggemeyer et al., 1998).

6.1.5. There is No Clear Delineation of Mission-Critical Problems with Current Information Systems

The main focus on problem solving in subject analysis theory seems to be definitional. There are no mission-critical problems with practice or information systems outlined in *any* of the texts examined in this dissertation. The only clear problems are problems of definition and ontology. Though important, these ontological discussions do not identify

mission-critical problems with current practice or systems. They do not provide an impetus for the further development of subject analysis theory. Would empirical data on the subject analysis process outline some mission-critical problems with the work?

Though contemporary user studies of information systems present examples of problems for subject representations (cf. Graham, 2004), these problems are not linked to the interpretation process. Langridge (1989) does provide examples of what are, in his view, *misinterpretations* of a book's subject matter. However, these examples seem to be a mere nuisance rather than an obstruction to system use. They are not failures, but rather curiosities of the system. Subject analysis theory must provide a rhetorical and empirical justification for ontological discussions. If subject analysis theory is critical to improving information systems, what are their mission critical problems?

6.2. Component Subject Analysis Theory

In order to alleviate some of the problems outlined above, we suggest a more focused approach to subject theory development. This approach posits that in order to wed theory closer to users, indexer practice, and mission critical problems of information systems and contexts, more empirical data must theoretically be incorporated into our subject analysis theories. That is, for subject analysis theory to positively move beyond the problems outlined above, a fuller account of the *components* of subject analysis theory must be provided in our theories. We posit further that a Component Subject Analysis Theory can accomplish this goal.

The next section outlines Component Subject Analysis Theory and its relatives. The existence of Component Subject Analysis Theory is in service to both purposes of this dissertation: to create a lens for fieldwork and to gain a deeper understanding of subject analysis theory. Component Subject Analysis Theory aids the first purpose by providing a framework to think about research design and presentation of results. It fulfills the second purpose by working with extant components of subject analysis theory to reflect on and improve it.

Component Subject Analysis Theory requires the presence of the three Attribute Families already defined in this dissertation: Process (Elements and Steps), Perspective (Purpose and Means of Knowing Subject Analysis), and Environment (Ethopœia). Without *one* of these Attribute Families, the theorist would not be talking about all of the components of the work of subject analysis; and, as a result, the theorist's readers would not be able to evaluate how well the theory relates to, informs, or improves subject analysis practice. These three Attribute Families come from our analysis in each oeuvre studied in this dissertation. Thus, the components for a Component Subject Analysis Theory, are drawn from the literature studied in this dissertation; and, therefore, are based on analyzing, and synthesizing attributes of conceptions of subject analysis. It is assumed that with different collections of evidence (e.g., empirical work, or other theories), that different components could be added. From the literature studied in this dissertation, we constructed a three-part Component Subject Analysis Theory. The three components are: the Process of Subject Analysis, the Perspective Taken in the Subject

Analysis Process, and the Environment in Which the Process of Subject Analysis is Conducted. We shall elaborate on each of these below.

6.2.1. Process of Subject Analysis (Elements and Steps)

The first component necessary for a subject analysis theory is an overt discussion of the process including steps and elements of subject analysis. No matter whether there are two or 200 steps and elements discussed, a discussion of them must be present in a theory of subject analysis. The specific *steps* that must be addressed are document analysis and naming. The specific *elements* that must be addressed are document and representation.¹³

6.2.2. Perspective Taken in the Subject Analysis Process (Purpose and Means of Knowing Subject Analysis)

The second component necessary for a subject analysis theory is an overt discussion of the perspective taken of the process of subject analysis. A component perspective on the process of subject analysis contains: (1) an explicit statement of purpose of subject analysis; and (2) an explicit statement about the philosophical schools (assumptions and means of knowing subject analysis) that inform the particular subject analysis theory. It is only when the theorist discusses the purpose of the process of subject analysis and the philosophical schools or assumptions at work that he or she is addressing the perspective taken in the subject analysis process—thus crafting a theoretical discussion of subject analysis. This particular component is a challenge to assess. It is not always easy to

¹³ Mai (2000) provides a laudable example and framework for discussion of steps and elements in the subject analysis process.

determine when a theorist is discussing her or his philosophical position (and the theorist's philosophical school) when she or he is theorizing about subject analysis. Nor is the theorist always consistent and true to any one particular philosophical stance. Hence, it falls to the theorist to be explicit. However, it is often up to the reader to ferret out the philosophical school. Sometimes the theorist does provide an explanation of her or his philosophical position. Then, it is the reader's prerogative to interpret the position taken as faithful to the author's stated position or not.

6.2.3. Environment in Which the Process of Subject Analysis is Conducted

The third, and final, component necessary for subject analysis theory is an overt discussion of the environment in which the process takes place—i.e., the *context* (information system, collective, tool, aboutness, analysis)¹⁴ in which the process is done and the *users* for whom it is done. Without a discussion of the environment in which the process and purposes of subject analysis takes place, we, the readers, do not understand where processes and purposes of subject analysis are context specific and where (and how) processes and purposes are universal. It is important to know where context plays a role because there is not one single context for subject analysis.

Thus, a Component Subject Analysis Theory will discuss users and context as part of its Environment component *and* document analysis in its Process component. This is a conscious move away from categories like document-oriented and user-oriented subject analysis theories. Both of these approaches, when published without one or more

¹⁴ Again, Aboutness and Analysis pose a problem. They influence all three Attribute Families. We have put them here to illustrate their sway over the environment and character of the work.

of the three Attribute Families, are Contingent Subject Analysis Theories. They are Contingent because they rely on other theories to speak to the entire work processes, perspectives or environments of subject analysis work. Thus, much of the published literature on orientedness in subject analysis is not Component Subject Analysis Theory in positing one approach over the other without discussing either the process or the environment.¹⁵ We will elaborate on Contingent Subject Analysis Theories in section 6.3.

6.2.4. Summary of Three Attribute Families in Component Subject Analysis Theories

This metatheoretical investigation resulted in thirteen Subject Analysis Components and three Attribute Families. In order to move subject analysis theory closer to the study of subject analysis practice, we have posited a Component Subject Analysis Theory built on those Components and Attribute Families. This approach highlights the importance of the field in subject analysis theory and advances subject analysis theory toward a theoretical understanding of subject analysis practice.

6.3. Types of Subject Analysis Theory

With the attribute families outlined above, we can now describe types of subject analysis theories that are composed of more or fewer components than our Component Subject Analysis Theory. Each of these types of subject analysis theory is derived from the reading and coding done in the course of this investigation.

¹⁵ See Chapter 3 above for discussions of evidence/orientedness subject analysis.

6.3.1. Component Subject Analysis Theory

As noted above, a Component Subject Analysis Theory is a theory that addresses the three attribute families of subject analysis theories. Therefore, Component Subject Analysis Theories are those that have theoretical discussions on the process, the perspective, and the environment in which subject analysis takes place. This requires a Component Subject Analysis Theory to discuss: documents, document analysis, naming subjects, representing subjects, purpose (or purposes) of analysis, philosophy (or philosophies) of analysis, the context of analysis, and the users of analysis. Any theoretical discussion made up of fewer than these three attribute families results is a Contingent Subject Analysis Theory.

6.3.2. Contingent Subject Analysis Theory

A Contingent Subject Analysis Theory is a theory comprised of fewer than the three attribute families of the Component Subject Analysis Theory. However, Contingent Subject Analysis Theories *rely* on other theories to address components they do not explicitly address. Moreover, because they do not address the three attribute families of Component Subject Analysis Theory in an explicit theoretical discussion, there is no systematic way to evaluate how well the theory influences subject analysis work.

6.3.3. Adding Components

It is conceivable, and in fact, beneficial, to add to Component Subject Analysis Theories. The three components necessary for Component Subject Analysis Theory are not the

ultimate components of subject analysis. There are other components that if theorized and studied, could improve practice. For example, we can add theories about analysis aids and evaluation and assurance mechanisms to subject analysis. The following subsections describe additional possible components.

6.3.3.1. Helpful Theories

A fourth component can extend Component Subject Analysis Theories by adding theories on how to incorporate *Analysis Aids* into the subject analysis process. User information may be a part of these aids to analysts. System, environment, and evaluation aspects may be addressed as part of these helpful theories.

6.3.3.2. Trustworthy Theories

It is also possible to add two additional components that deal with Evaluation and Assurance. By Assurance we mean that based on some data the analyst is *assured* that he or she is working toward an effective analysis of a document's subject matter. By Evaluation we mean that the theory makes possible the analysis of the effective collection of analyses in the system for the Environment in which the subject analysis takes place.

6.3.3.3. Robust Theories

Robust Subject Analysis Theories would combine with the three Component Subject Analysis Theories identified herein with the components of Helpful and Trustworthy

Theories. These theories would make sense of six components: Analyst Aids, Evaluation of Analysis, Assurance of Analysis, Process, Perspective, and Environment. Table 6.1 illustrates the types of theories denoted above and their associated components.

Table 6.1. Components of Component Subject Analysis Theory and its Types

Types	Component	Helpful	Trustworthy	Robust
Components				
Process	X	X	X	X
Perspective	X	X	X	X
Environment	X	X	X	X
Analyst Aids		X		X
Evaluation			X	X
Assurance			X	X

6.4. Use of Component Subject Analysis Theory

Component Subject Analysis Theory can frame both research in the field and the presentation and dissemination of both theoretical and empirical work. As mentioned in Chapter 5, entering the field with these Attribute Families in mind informs the gaze of the researcher theoretically. Coupled with the Codebook and Prototype, component Subject Analysis Theory shapes the researchers interaction with the field by focusing on attributes of extant subject analysis theory and theoretical development of field research.

Likewise, Component Subject Analysis Theory serves as a potential frame for discussing theoretical or empirical findings. For example, the more we learn about how indexers think of users, the fuller our picture of subject analysis practice in the field; and, thus, the more we can incorporate those findings into the other aspects of Component Subject Analysis Theory. This example of Contingent Subject Analysis Theory (i.e.,

research on how indexers think of users) becomes research on one component of many that must be addressed in order to speak to the whole practice of subject analysis work.

6.5. Conclusion

This Chapter discussed the attributes and components constructed in this study, and, based on them, introduced five focuses of subject analysis theory. Using those focuses as a rationale, it then introduced a component approach to subject analysis theory.

Component Subject Analysis Theory moves theoretical development close to field research, accounting for processes, purposes, and environment in which subject analysis work is done. Chapter 7 outlines future work in subject analysis theory and concludes the dissertation.

7. Limitations of the Study, Conclusion, Future Work

This Chapter closes the dissertation by addressing the limitations to the study, providing concluding remarks about the metatheoretical investigation, and proposing future work.

7.1. Summary of the Study

This dissertation presented a metatheoretical investigation of ten oeuvres across nine thinkers in subject analysis theory. We collected these texts, analyzed them using codes and memos, and then synthesized those codes and memos into a metatheory of conceptions of subject analysis. From this study, we generated thirteen Components of Subject Analysis and three Attribute Families. These Components and Attribute families were then put to work to serve the purpose of this dissertation—to create a lens for future fieldwork on subject analysis practice. To that end, we created a Codebook, a Prototype and a Critique of extant subject analysis theory.

7.2. Limitations of the Study

This metatheoretical investigation has a number of limitations. First, the theoretical articles chosen were limited in a number of ways. Only English language articles were included. There are a number of theoretical works that could have been included, had we the language ability to read and understand them.

Further, only articles that discussed the interpretation process as their main thrust were analyzed. There exists a body of literature whose focus is on controlled vocabularies. The inclusion of this literature could have instructed this metatheoretical

investigation. They were excluded for two reasons: (1) they did not focus on the interpretation process in and of itself; and (2) the list of theoretical contributions to subject analysis writ large is of considerable size. It was necessary to limit the number of authors and oeuvres examined to create a coherent picture. However, having crafted the picture we present, it would be possible now to add different conceptions to the existing metatheoretical investigation in order to see how the results of the metatheory might change.

The methods used in this dissertation proved complicated and multi-layered. The discipline required to maintain a coherent interpretive stance along every axis of the hermeneutic circle proved challenging and often evasive. The stance of our interpretation is one of many. Consequently, we make no claim to validity of the Codebook presented in this dissertation. As a tool, it stands as the first sentence in a new conversation about subject analysis work. It is not a final statement.

In the end, the dissertation provides insights and not conclusions. Since our insights in this context come from our blindness, we are comfortable that the dissertation provides new insights into subject analysis theory and not a conclusive statement. Since we are interested in extending the conversation on subject analysis, this so called limitation follows from the neopragmatic view of the dissertation.

7.3. Conclusion

The purpose of this dissertation was to (1) create a lens for future fieldwork and (2) to provide a deeper understanding and overarching perspective on subject analysis theory.

The first purpose was achieved in the form of the Codebook, Prototype, and Critique. In this section, we provide concluding statements about our deeper understanding and overarching perspective on subject analysis theory. We will do so with the aid of the Critique with its five focuses of subject analysis theory and the Component Theory of Subject Analysis.

Once analyzed and synthesized, the conceptions of subject analysis studied in this dissertation provide us with a roadmap which can inform future theoretical development. Subject analysis theory can fill out its analytical and empirical profile by incorporating richer discussions of elements and steps in the subject analysis process along with explicit discussion of both the purpose of the process and the environment in which it is done. The purpose of the process includes explicit discussions of philosophical stance, and the environment includes explicit discussion of users, information systems, and collections. Without explicit theoretical or empirical discussions of each of these components, the resulting subject analysis theory is contingent—it is dependent on the assumed presence of components, and hence constitute a less than full profile.

Likewise, as seen through the oeuvres studied in this dissertation, a full profile of subject analysis theory addresses the empirical data required to discuss: (1) users, (2) indexers actual work, (3) diversity of purposes in subject analysis, (4) the diversity in the interpreting process and characteristics deemed significant in that process, and (5) mission-critical problems in information systems that use subject analysis work. In sum, this moves subject analysis theory beyond anecdote and definitional issues toward an empirically informed model of this complex interpretive work.

Thus, the primary contribution made from this metatheoretical study is the faceting of subject analysis theory into components and pointing to where further dialogue and empirical work can productively extend our theoretical understanding.

7.4. Future Work

This metatheoretical investigation has been very productive. Through this investigation, we have developed a deeper understanding and gained a broader perspective of subject analysis theory and created a lens through which researchers can begin fieldwork guided by extant theoretical literature. We have shown both how subject analysis theory has been conceptualized and how we can make improvements on the theoretical tools of subject analysis research. These accomplishments tie the theoretical researcher closer to field research. What remains is to outline potential future work. There are two major parts to this section. The first discusses future theoretical work that builds on the dissertation and the second discusses future empirical work in general.

7.4.1. Future Theoretical Work

Future theoretical work must explore the landscape of subject analysis theory as sketched in Chapter 6. That is, the parameters of Contingent, Component, and Robust theories must be further tested by theoretical discussion. Do these categories enhance our understanding of *good* subject analysis theory and less-than-component theorizing about subject analysis work?

Related to Contingent, Component, and Robust theories of subject analysis, and the evaluation of subject analysis work, is the implication that subject analysis work is an intertextual act, dependant on texts of all sorts. There are user and use texts, representation texts, information system texts, and domain (collective) texts. Theory must also scrutinize this claim. Does it matter if this is true? Does it affect indexers' work or users' interactions with systems? Does it improve both types of work?

A thought experiment that would test both the categories of theories and the importance of their intertextual nature would be a full theoretical description of the *ideal* subject analysis workshop, an ideal cataloging office, where an indexer could make all of the informed decisions needed for the best subject analysis work. This *ideal* workshop should be complete with user information, search information, and the like. The workshop could even include expert information systems for subject analysts. This theoretical exercise could also generate a prototype experimental system that could be tested in various ways.

7.4.1.1. Expanding Horizons of Subject Analysis Theory

There are other ways—so far hypothetical, but practicable—in which this metatheoretical investigation can expand the boundaries of subject analysis theory. The two major avenues that are hypothesized here are: the Life-Cycle Model of Subject Analysis and Tools for the Indexer.

7.4.1.2. Life-Cycle Model of Subject Analysis

In order to accommodate needs over time, subject analysis must make sense of a life-cycle of the interpretation of a document's subject matter. That means a representation made of a document's subject may change while that representation of the document is still in the information system. It should change if it fits with user needs. The problem then becomes: How does the analyst do that representation and what does that mean for other aspects of interpretation of a document's subject matter? This is one wily frontier for subject analysis theory. And though some work has been done in controlled vocabulary editorial work and in subject ontogeny (Tennis, 2001), there is more work to be done on the interpretation of the life-cycle aspect of subject analysis as well as on tools available to help subject analysts with a document's interpretive life-cycle.

7.4.1.3. Tools for the Indexer

Another frontier for subject analysis theory lies in crafting tools for indexers and analysts. These tools must be crafted on solid use-based theories; and, they should serve the needs of users by way of serving the needs of indexers and analysts. What then do tools for indexers and analysts look like? That is a question for the next stage of subject analysis theory.

7.4.1.4. Texts in the Subject Analysis Process and In Subject Analysis Theories

If it were fruitful to expand the horizons of subject analysis theory into life-cycle models of subject analysis and tools for the indexer, then subject analysis theories need to

understand how texts play a role in both of these expansions. Texts play an important role in Robust Theories and in both of its expansions: life cycle models and tools for the indexer. They play important roles because texts hold the evidence for the six components of Robust Theories. Texts also hold the evidence for the information provided by the life-cycle model and the tools for the indexer additions. If we are to advance Robust Theories of subject analysis, those advances must be based on evidence found in texts created from a variety of types of evidence (cf. Hjørland, 2002). Thus, a Robust understanding of subject analysis work is one based on texts. It is intertextual. Future theoretical work in Robust Theories of subject analysis should examine ramifications of subject analysis as an intertextual process.

7.4.2. Future Empirical Work

Future empirical work grows organically out of this dissertation. Three types of empirical studies may be drawn directly from the work of this dissertation. The first type of empirical study is fieldwork. Now that a codebook has been created from the theoretical literature of subject analysis, we can go into the field and look through this lens to see the norm and the anomalies of subject analysis work in the field. Fieldwork of this kind must be designed so that it is less idiographic (only addressing one situation) than previous work (Sauperl, 1999, 2002, 2004; Sauperl and Saye, 1998; and Jeng, 1996). It would benefit subject analysis theory if the subsequent sets of fieldwork projects allowed more nomothetic (addressing more than one situation) theory creation. While fieldwork can provide us with a well-rounded picture of particular sites, we also want to

survey the field of indexing, abstracting, subject cataloging, information architecture, ontology, and taxonomy work.

Surveys—the second kind of empirical work that naturally grows from this dissertation—would take the pulse of current work practice. Data for the survey instrument can come from a combination of attributes from this dissertation, past survey work (Korotkin et al., 1965) and some preliminary results from fieldwork.

The final type of empirical work is perhaps more theoretical than empirical, but relies more on empirical data than on theoretical argumentation. We want to begin to model the subject analysis process from empirical data and thus construct ideal types of subject analysis work. From these ideal types, further fieldwork can explore how the process changes in various situations. Such models can serve as points of comparison with other models (cf. Endres-Niggemeyer, 1998). With models of subject analysis work in place, more tools and systems can be built to empower indexers and support their work.

7.4.3. Summary of Future Work

Future work on conceptions of subject analysis splits into two mutually supportive strands: future theoretical work and future empirical work. Both require an expansion on the work done in this dissertation and both require a closer acquaintance with the work of subject analysts. Future work will tie past work closer to improving current and future subject analysis practice.

7.5. Closing

In closing, this metatheoretical investigation pays homage to extant subject analysis theory. In an effort to craft a lens for fieldwork and provide an overarching perspective and a deeper understanding of subject analysis theory, we have looked to this literature to guide our understanding of the issues and components of the subject analysis process. With diversity of thought as a core ethic to this dissertation, we were able to synthesize the variety of conceptions evidenced in ten separate oeuvres. The result—a Prototype, a Codebook, and a Critique—serves as a viable lens to view subject analysis practice empirically and theoretically. May this small reflection on past work, lead to a greater understanding of current work and serve as a stepping-stone for future work.

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Appendix A.

Appendix A. contains the list of theorists studied in this dissertation, from which the core 10 thinkers were chosen. Those core 10 used in this dissertation are listed in appendix C.

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26) Wilson

- i) Wilson, P. (1968). *Two kinds of power: essay in bibliographic control*. (Berkeley, CA: University of California Press).

Appendix B. Authors and their Oeuvres

Below is a list of the authors and their works coded in this dissertation. They are listed in alphabetical order, and then chronological order by year.

1. Begthol

Beghtol, C. (1986). "Bibliographic classification theory and text linguistics: aboutness analysis, intertextuality, and the cognitive act of classifying documents." In *Journal of documentation* 42(2):84-113.

2. Blair

Blair, D. C. (1986). "Indeterminacy in the subject access to documents." In *Information Processing and Management* 22:229-241.

Blair, D. C. (1990). *Language and representation in information retrieval*. (New York: Elsevier). Chapter 4.

3. Fugmann

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4. Hjørland

Hjørland, B. (1992). "The concept of 'subject' in Information Science." In *Journal of Documentation* 48(2):172-200.

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5. Kaiser

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6. Langridge

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7. Mai

Mai, J-E. (in press-a). "Analysis in Indexing: Document and Domain Centered Approaches." In *Information Processing and Management*.

Mai, J-E. (2001). "Semiotics and Indexing: an Analysis of the Subject Indexing Process." In *Journal of Documentation* 57(5):591-622.

8. Svenonius

Svenonius, E. (1994). "Access to Non-Book Materials: the Limits of Subject Indexing for Visual and Aural Languages." In *Journal of the American Society for Information Science* 45(8):600-606.

9. Wilson

Wilson, P. (1968). *Two kinds of power: essay in bibliographic control*. (Berkeley, CA: University of California Press). Chapter 5.

Appendix C.

This appendix is a list of references that will serve as a seed list of literature and theorists for this dissertation. These authors can serve as secondary core theorists.

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Chu and O'Brien

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Wellisch, H. H. (1989). "The literature of indexing." In Weinberg, B.H. (ed.) *Indexing – state of our knowledge and the state of our ignorance*. Proceedings of the 20th annual meeting of the american society of indexers, 1988 (Medford, NJ: Learned Information).

Appendix D. Attributes

Core Variables (organized by Components) that were then transformed into attributes of conceptions of subject analysis

1. Purpose of the Process

2. Purpose of Analysis – Control
3. Purpose of Analysis – Control – Descriptive
4. Purpose of Analysis – Control – Exploitative
5. Purpose of Analysis – Control – Control Over Naming Function of Terms
6. Purpose of Analysis – Delegation
7. Purpose of Analysis – Order
8. Purpose of Analysis – Order – Loss-Avoiding
9. Purpose of Analysis – Order – Noise-Avoiding

10. Document

11. Objective and Subjective Properties
12. Messages in the text in medium
13. Types in general
14. Genre
15. Superstructure
16. Model Document
17. Prototext
18. Parts of Documents
19. Writing
20. Author

21. Indexer

22. Knowledge (author, subject, domain, author's other works)
23. Training
24. Bias
25. Collaboration
26. Imaginative
27. Descriptive Role
28. Exploitative Role
29. Accurate with Analysis
30. Classifier
31. Memory
32. Reader

33. Collective

34. Collective – Activities of the Collective
35. Collective – Community as Collective
36. Collective – Context as Collective

37. Collective – Context as Collective – Information Institution
38. Collective – Context as Collective – Information Institution – National Library
39. Collective – Context as Collective – Information Institution – Special Library
40. Collective – Context as Collective – Information Institution – Academic Library
41. Collective – Context as Collective – Information Institution – Public Library
42. Collective – Context as Collective – National Bibliography
43. Collective – Context as Collective – Written Bibliography
44. Collective – Context as Collective – Socio-Philosophical Contexts
45. Collective – Context as Collective – Socio-Philosophical Contexts – Economic
46. Collective – Context as Collective – Socio-Philosophical Contexts – Interpretive
47. Collective – Context as Collective – Socio-Philosophical Contexts – Pragmatic
48. Collective – Context as Collective – Socio-Philosophical Contexts – Objectified
49. Collective – Context as Collective – Socio-Philosophical Contexts – Social Practice
50. Collective – Context as Collective – Socio-Philosophical Contexts – Peircean Convention
51. Collective – Context as Collective – Socio-Philosophical Contexts – Conventional/Frame Knowledge of the World
52. Collective – Context as Collective – Socio-Philosophical Contexts – Social Dimensions
53. Collective – de Grolier's Deep Structure
54. Collective – Disciplines
55. Collective – Disciplines – Specialties
56. Collective – Disciplines – Specialties – Interdisciplinary Work
57. Collective – Discourse – Inside and Outside Discourse
58. Collective – Division of Labor in Society
59. Collective – Domain
60. Collective – Domain – Formal Structures
61. Collective – Domain – Group Sharing Common Goals
62. Collective – Domain – Work Level
63. Collective – Institutions
64. Collective – Journals
65. Collective – Political Collectives
66. Collective – Products of the Collective
67. Collective – Products of the Collective – Authors of these Products
68. Collective – Products of the Collective – Citations of these Products
69. Collective – Professions
70. Collective – Set of Propositions
71. Collective – User Group
72. Collection
73. Domain Analysis
- 74. Interpreting**
75. Process

76. Listing Concepts
77. Listing Cast of Characters
78. Listing Concretes
79. Listing Collage of Impressions
80. Scanning
81. Reading
82. Judging Utility of the Document
83. Judging Essential Components Taken Impartially for Professional Knowledge
Interests
84. Judging – Speciation of the Writing
85. Judging – Likeness
86. Argumentation Methods – Properties to be Left Out
87. Argumentations Methods – Description
88. Argumentation Methods – Hypothesis
89. Argumentation Methods – Prognosis
90. Argumentation Methods – Evaluation of Prognosis
91. Appeal to Unity
92. Counting References
93. Counting References – Grouping Membership
94. Counting References – Omnipresence
95. Figure-Ground
96. Figure-Ground – Dominance
97. Figure-Ground – Omnipresence
98. Purposive
99. Purposive – Immediate
100. Purposive – Remote
101. Purposive – Ultimate
102. Purposive – Overt
103. Purposive – Ulterior
104. Purposive – History (as aid to purpose)
105. Purposive – Context (as aid to purpose)
106. Checklist
107. Citation Analysis
108. Naïve Concept
109. Langridge Forms of Knowledge
110. Langridge Topics
111. Langridge Specializations
112. Langridge Forms of Writing
113. Category Analysis
114. Kaiser Reduction
115. Kaiser Reduction by Analysis
116. Kaiser Reduction by Concentration
117. Kaiser Reduction by Recapitulation
118. Kaiser Reduction by Selction

- 119. Naming
- 120. Translation
- 121. Translation – Anticipation
- 122. Translation – Epistemological Potential
- 123. Translation – Objective
- 124. Quality
- 125. Quality – Question of Accuracy
- 126. Quality – Question of Difficulty
- 127. Quality – Definite Results?
- 128. Quality- Limits of Interpretation?
- 129. Quality – Logic of the Process
- 130. Quality – Permanent Interpretation
- 131. Framework
- 132. Nature of the Process – Reading
- 133. Nature of the Process – Reading – Top Down Processing
- 134. Nature of the Process – Reading – Bottom Up Processing
- 135. Nature of the Process – Zipfian Economy of Words and Tools
- 136. Nature of the Process – User's Knowledge of the Process
- 137. Purpose of Interpreting
- 138. Purpose of Interpreting – Independent Analysis of Essentials
- 139. Purpose of Interpreting – Independent Analysis for Impartiality
- 140. Purpose of Interpreting – Independent Analysis for Professional Knowledge Interests
- 141. Purpose of Interpreting – Separating Unlike Things
- 142. Purpose of Interpreting – Translating Essence
- 143. Purpose of Interpreting – Judging Two Documents to be on the Same Subject
- 144. Purpose of Interpreting – Speciation of Writings
- 145. Purpose of Interpreting – Collocation or Grouping of Documents
- 146. Purpose of Interpreting – Represent Consensus of Common Opinion
- 147. Purpose of Interpreting – Judge a Document's Utility
- 148. Information System**
- 149. Type of Information System
- 150. Purpose of Information System
- 151. Purpose of the Information System – Best Textual Means to an End
- 152. Purpose of the Information System – Retrieval (the technical variant of delegation)
- 153. Purpose of the Information System – Satisfy Information Need
- 154. Purpose of the Information Systems – Point to Types of Documents
- 155. Purpose of the Information Systems – Help Users Answer Questions and Satisfy Information Needs

- 156. Purpose of the Information Systems – To Retrieve Documents Whose Aboutness Suggests that a User may Find in them Meaning(s) Expedient to a Certain Need at the Moment
- 157. Purpose of the Information Systems – Provide Information as Requested by an Expert in the Field
- 158. Purpose of the Information Systems – Serve Human Purposes
- 159. Function of the Information System

- 160. Tool**
- 161. Type of Tool
- 162. Tool Construction
- 163. Continually Updating
- 164. Effect of Tool on Analysis – Indexer Influenced by Tool
- 165. Effect of Tool on Analysis – Limitations of the Tool
- 166. Positive Effects
- 167. Negative Effects
- 168. Precision of the Tool
- 169. Purpose of the Tool
- 170. Relationship between documents and the tool
- 171. User education of the tool

- 172. Representation**
- 173. Construction of Index Entry
- 174. Construction of Index Entry – Representation in Single Place
- 175. Construction of Index Entry – Multiple a Problem?
- 176. Construction of Index Entry – Degree of Predictability a Concern?
- 177. Construction of Index Entry – Rounds and Levels?
- 178. Evaluation of Representation
- 179. Evaluation of Representation – User Interpretation of
- 180. Evaluation of Representation – Indexer Interpretation of
- 181. Evaluation of Representation – Relation to Collection
- 182. Evaluation of Representation – Relation to other Documents in the Collection
- 183. Evaluation of Representation – Historicism/Materialism Evidence for Predicting the Informative Potential
- 184. Purpose of the Representation – For User to Make Similarity Judgment
- 185. Purpose of the Representation – Express in Shortest Form Possible the Contents of Information In a Document
- 186. Purpose of the Representation – Facilitate Arrangement of Information on Filing Cards
- 187. Purpose of the Representation – Provides a Means for a System of Guides which Assures Quick Access to the Indexed Material

- 188. Purpose of the Representation – Enables us to Take a Quick Glance at the Information in the Index
- 189. Purpose of the Representation – Servant to Ideas
- 190. Statement and Amplification

- 191. Means of Knowing Subject Analysis**
- 192. Epistemic Categories
- 193. Epistemology
- 194. Essence
- 195. Etymology
- 196. Metaphysics
- 197. Objectivity
- 198. Objectivity – As Agreement with Reality
- 199. Objectivity – As Independent of Individual Who Apprehends
- 200. Objectivity – As Judged by History
- 201. Reality
- 202. Truth
- 203. Philosophical Tools
- 204. Knowledge Organization
- 205. Semiotics
- 206. Intertextuality
- 207. LIS
- 208. Text Linguistics
- 209. Axioms of Information Supply
- 210. Information Supply
- 211. Meaning
- 212. Language

- 213. User**
- 214. User – Expert
- 215. User – Specific Information Need of Users
- 216. Use
- 217. Use – Potential Use
- 218. Use – Temporary
- 219. Use – Long-Term
- 220. Searching – Formal Textual Inquiry – Case 1 [no match between indexer terms and search terms]
- 221. Searching – Formal Textual Inquiry – Case 2 [match between indexer terms and search terms]
- 222. Searching – Formal Textual Inquiry – Futility Point Criterion [retrieved set small enough to browse through]
- 223. Searching – Formal Textual Inquiry – Prediction Criterion [descriptors used to represented documents can be predicted]

- 224. Reader(s)
- 225. Reader(s) – Reading About Something in a Text
- 226. Reader(s) – Reason a Reader is Drawn to a Text

- 227. Significant Characteristics**
- 228. Nature of Significant Characteristics
- 229. Nature of Significant Characteristics – Ontology of Characteristic – As Indeterminate
- 230. Nature of Significant Characteristics – Ontology of the Characteristic – First Order Predicates
- 231. Nature of Significant Characteristics – Ontology of the Characteristic – Requiring Precise Description
- 232. Nature of Significant Characteristics – Ontology of the Characteristic – Requiring Accurate Description
- 233. Nature of Significant Characteristics – Ontology of the Characteristic – Requiring Unique Description
- 234. Nature of Significant Characteristics – In Relation to the Text Itself
- 235. Nature of Significant Characteristics – In Relation to the Text Itself – Epistemological Potentials of Documents
- 236. Nature of Significant Characteristics – In Relation to the Text Itself – Dominating Idea (Central Thesis or Claim)
- 237. Nature of Significant Characteristics – In Relation to the Text Itself – Intrinsic Subject of the Document
- 238. Nature of Significant Characteristics – In Relation to the Text Itself – Essentials of the Document
- 239. Nature of Significant Characteristics – In Relation to the Text Itself – Logical Proposition that Summarizes a Body of Information
- 240. Nature of Significant Characteristics – In Relation to the Text Itself – Manipulated Contents of Documents
- 241. Nature of Significant Characteristics – In Relation to Other Texts
- 242. Nature of Significant Characteristics – In Relation to Other Texts – Organized Pattern of Ideas
- 243. Nature of Significant Characteristics – In Relation to Other Texts – Information Potentials in Documents
- 244. Nature of Significant Characteristics – In Relation to Other Texts – Contribution to Thought
- 245. Nature of Significant Characteristics – In Relation to Other Texts – As Definite with Second Order Predicate
- 246. Nature of Significant Characteristics – In Relation to Other Texts – Multiple Depending on Who, Why, and for What
- 247. Nature of Significant Characteristics – In Relation to Other Texts – Neglected Issue in an Academic Discipline (or other Collective)
- 248. Nature of Significant Characteristics – In Relation to Other Texts – Novelty Compared to Extant Thought on the Subject

- 249. Units of Analysis
- 250. Units of Analysis – All Ideas and Meanings
- 251. Units of Analysis – Cast of Characters
- 252. Units of Analysis – Concept Instances
- 253. Units of Analysis – Subjects (as opposed to concept instances)
- 254. Units of Analysis – Themes
- 255. Units of Analysis – Concretes
- 256. Units of Analysis – Processes
- 257. Units of Analysis – Countries (Locales)
- 258. Units of Analysis – Topics
- 259. Units of Analysis – Specializations
- 260. Units of Analysis – Forms of Knowledge
- 261. Units of Analysis – Academic Disciplines
- 262. Units of Analysis – Methodology
- 263. Considerations in Finding and Attributing Characteristics to Documents
- 264. Considerations in Finding and Attributing Characteristics to Documents –
Naïve Point of View
- 265. Considerations in Finding and Attributing Characteristics to Documents –
Particular Point of View
- 266. Considerations in Finding and Attributing Characteristics to Documents –
Parts of a Writing
- 267. Considerations in Finding and Attributing Characteristics to Documents –
Whole of a Writing
- 268. Considerations in Finding and Attributing Characteristics to Documents –
Associations with Documents
- 269. Considerations in Finding and Attributing Characteristics to Documents –
Associations with Documents – Discussions with Friends
- 270. Considerations in Finding and Attributing Characteristics to Documents –
Associations with Documents – How Personal Relations Use the Document
- 271. Considerations in Finding and Attributing Characteristics to Documents –
Associations with Documents – Other Documents
- 272. Considerations in Finding and Attributing Characteristics to Documents –
Audience for the Document
- 273. Considerations in Finding and Attributing Characteristics to Documents –
Citations in the Document – Potential and Actual Instrumental Relationships
- 274. Considerations in Finding and Attributing Characteristics to Documents –
Social Practice of a Document – How an Infinite Number of Subjects is Limited
- 275. Considerations in Finding and Attributing Characteristics to Documents –
Overlap between Social and Cultural Contexts
- 276. Considerations in Finding and Attributing Characteristics to Documents –
Named Characteristics and Naming Characteristics as Subjects
- 277. Considerations in Finding and Attributing Characteristics to Documents –
Shared Characteristics Across or Between Documents

- 278. Analysis**
279. Level of Indexing
280. Automatic, human, or Hybrid Approach
281. Tool Provision
282. Nature of Analysis – characterize the whole for a collection
283. Nature of Analysis – exhaustively analyze the document to be able to retrieve information in the document
284. Nature of Analysis – represent a few subjects in a central index
285. Nature of Analysis – subject cataloging
286. Nature of Analysis – as study of documents
287. Nature of Analysis – as study of documents as they are used
288. Nature of Analysis – based on rules
289. Centeredness in Analysis – Content
290. Centeredness in Analysis – Request
291. Centeredness in Analysis – Need
292. Centeredness in Analysis – User
293. Purpose of Analysis
294. Purpose of Analysis – Best Textual Means to an End
295. Purpose of Analysis – Determine the Epistemological Potentials of Documents for Future Users
296. Purpose of Analysis – Knowledge Organization for Effective Use (as opposed to Information Retrieval)
297. Purpose of Analysis – Retrieval of Documents
298. Purpose of Analysis – Reflect Essential Rather than Incidental Characteristics of a Document
299. Purpose of Analysis – Reject what is not Required and Select What is Usable
300. Purpose of Analysis – To Make Use of Recorded Knowledge And Wisdom
301. Evaluation
- 302. Aboutness**
303. Extensional Aboutness
304. Intensional Aboutness
305. Permanent Aboutness

Appendix E. Prototype

Prototype of Subject Analysis Work

Perspectives – Purposes, Philosophies, and Systems:

Purpose of the Process of Subject Analysis

- Provide Best Textual Means to an End
- Bring Together Knowledge of a Like Kind
- Epistemological Potential for Future Users
- Information Retrieval
- Knowledge Organization for Effective Use (against IR)
- Reflect Essential Rather than Incidental Characteristics of a Document
- Reject what is Not Required and Select What is Usable
- Retrieval of Documents
- Make Use of Recorded Knowledge and Wisdom

Purpose of Information Systems

- Provide Best Textual Means to An End
- Retrieval (the mechanical variant of delegated information supply)
- Satisfy Information Need
- To Point to Types of Documents

Philosophical Schools

Epistemic Categories

- Epistemology
- Essence
- Etymology
- Metaphysics
- Objectivity
 - As Agreement with Reality
 - As Independent of the Individual Who Apprehends
 - As Judged by History

Reality

Truth

Elements and Steps:

[Step 1] Pre-Analysis Process

- Level of Indexing
- Automatic, human, or hybrid approach
- Tool provision

[Element 1] Document [physical and conceptual element]

- Objective and Subject Properties [conceptual elements]
- Message in Text in a Medium [conceptual and physical elements]
- Superstructure
- Model Document
- Parts of the Document
- Genre
- Types of Documents
- [Step 2] Document Analysis
 - Scanning
 - Perceptual
 - Conceptual
 - Reading
 - Top-down
 - Bottom-up
 - Macrostructural Analysis
 - Microstructural Analysis
 - Listing
 - Concepts
 - Cast of Characters
 - Collage of Impressions
 - All Concretes
 - Evaluation I
 - Analysis by Indexer Independent of the Text's Self-Description
 - Essentials
 - Impartiality
 - Professional Knowledge Interests
 - Utility of Document
 - Speciation of Writing
 - Likeness (collocation or grouping)
- [Element 2] Subject [mental element]
 - Cast of Characters
 - Concretes, Countries, and Processes
- [Step 3] Subject Description Process
 - THE Subject (Indeterminate) Methods
 - Purposive Way
 - Immediate
 - Remote
 - Ultimate
 - Overt
 - Ulterior
 - History
 - Context
 - Figure-Ground Way
 - Omnipresence

- Dominance
- Counting References to Items Way
- Grouping Membership
- Omnipresence
- Appeal to Unity/Appeal to Rules of Selection and Rejection
- Form Methods
 - Form of Knowledge (12)
 - Topics
 - Specializations
 - Form of Writing
- Category Methods
 - Checklist
 - PMEST
 - Fundamental Categories (other than PMEST)
 - Integrative Levels
- Reading Methods
 - Hierarchical Compression and Summarization
 - Construction Rule
 - Deletion Rule
 - Generalization Rule
 - Zero Rule
- Reduction Method
 - By Analysis
 - By Concentration
 - By Recapitulation
 - By Selection
- [Element 3] Subject Description [mental element]
 - Reading Element
 - Macroproposition (lowest possible)
 - Argument for Description
 - Description
 - Hypothesis
 - Prognosis
 - Evaluation
- [Step 4] Subject Analysis Process
 - [Step 4.1] Naming
 - [Step 4.2] Translation into Index Language
 - As anticipation
 - As epistemological potential
 - As objective
 - Evaluation II
 - Zipfian Economy of Tools and Jobs
 - Purpose of the Process
 - [Step 4.3] Construction of Index Entry

Representation in a single place or not?
 Multiple a problem or not?
 Degree of predictability a concern or not?
 Using few words and symbols a concern or not?
 Precoordinated or Postcoordinated or neither?
 Rounds and Levels?

[Element 4] Subject Entry

As correct?
 Statement and Amplification

[Step 5] Evaluation of Subject Entry

User Interpretation of the Entry
 Indexer Interpretation of the Entry
 Relation to the Collection
 Relation to other Documents in the Collection
 Historicism/Materialism Evidence for Predicting the Informative Potential

Analysis Ethopœia:

Environment

Collective
 Collection
 Users

Analysis

Orientation and Centeredness
 Representation and Vocabulary Considerations
 Evaluation
 Indexer

Appendix F. Codebook

The top-level outline of the Codebook is as follows:

1. Elements at the Site

- 1.1. Document
- 1.2. Indexer
- 1.3. Tool
- 1.4. Information System

2. Process of Subject Analysis

- 2.1. Analysis
- 2.2. Interpreting Process
 - 2.2.1. Initial Steps
 - 2.2.2. Methods
 - 2.2.3. Concluding Steps (including Representation)
 - 2.2.4. Qualities of the Interpreting Process
- 2.3. Significant Characteristics
 - 2.3.1. Nature of Characteristics
 - 2.3.2. Units of Analysis
 - 2.3.3. Considerations to Finding and Attributing Characteristics to Documents

3. Effects on the Analysis Process

- 3.1. User, Reader, and Searching
- 3.2. Collective

4. Perspective on the Work of Subject Analysis (Purpose, Objectives, Goals)

- 4.1. Purposes in Subject Analysis
 - 4.1.1. Purpose of Representation
 - 4.1.2. Purpose of Interpreting
 - 4.1.3. Purpose of Information System
 - 4.1.4. Purpose of Analysis

1. Elements at the Site Codes

1.1. Document

Code	Observation	Notes	Coder
Ontology of the Document: Objective and Subject Properties			
Ontology of the Document: Messages in a text in a medium			
Types of Documents: Document Types in General			
Types of Documents: Genre			
Types of Documents: Superstructure			
Types of Documents: Model Document			
Parts of Documents			

1.2. Indexer

Code	Observation	Notes	Coder
Background: Knowledge (author, subject, domain, author's other works)			
Background: Training			
At work: Bias			
At work: Collaboration			
At work: Imaginative			
At work: Descriptive Role			
At work: Exploitative Role			
Done with analysis: Feel she or he was accurate?			
-- See Representation			

1.3. Tool

Code	Observation	Notes	Coder
Type of Tool			
Tool Structure: Construction			
Tool Structure: Continually Updating?			
Effects of Tool on Analysis: Indexer Influenced by Tool?			
Effects of Tool on Analysis: Limitations of the Tool?			
Effects of the Tool on Analysis: Positive Effects?			
Effects of the Tool on Analysis: Negative Effects?			
Effects of the Tool on Analysis: Precision of the Tool?			
Rationale for Tools in Analysis (in general)			
Purpose for this Tool			
Relationship between documents and tool?			
User education of the tool?			

1.4. Information System

Code	Observation	Notes	Coder
Type			
Purpose			
Purpose: Best Textual Means to an End			
Purpose: Retrieval (the mechanical variant of delegation)			
Purpose: Satisfy Information Need			
Purpose: Point to Types of Documents			
Function?			

2. Process of Subject Analysis

2.1. Analysis

Code	Observation	Notes	Coder
Aboutness Analysis: Extensional Aboutness			
Aboutness Analysis: Intensional Aboutness			
Aboutness Analysis: Permanent Aboutness			
Nature of Analysis: Characterize the Whole fro a collection			
Nature of Analysis: Exhaustively Analyze the Document to be able to retrieval information in the document			
Nature of Analysis: Represent a few subjects in a central index			
Nature of Analysis: Subject cataloging			
Nature of Analysis: As study of Documents			
Nature of Analysis: As study of documents as they are used			
Nature of Analysis: Based on rules			
Centeredness of Analysis: Content			
Centeredness of Analysis: Domain			
Centeredness of Analysis: Request			
Centeredness of Analysis: Need			
Centeredness of Analysis: User			

2.2.1. Interpretation Process: Initial Steps

Code	Observation	Notes	Coder
Listing Concepts			
Listing Cast of Characters			
Listing Concretes			
Listing Collage of Impressions			
Scanning			
Reading			
Judgments: Utility of the document			
Judgments: Essential Components taken impartially for professional knowledge interests			
Judgments: Speciation of the writing			
Judgments: Likeness			

2.2.2. Interpreting Process: Methods

Code	Observation	Notes	Coder
Methods: Argumentation Methods			
Properties to be left out			
Methods: Argumentation Methods			
Description			
Methods: Argumentation Methods			
Hypothesis			
Methods: Argumentation Methods			
Prognosis			
Methods: Argumentation Methods			
Evaluation of Prognosis			
Methods: Wilson			
Listing Cast of Characters [1/2]			
Methods: Wilson			
Appeal to Unity [2a/2]			
Methods: Wilson			
Counting References [2b/2] Grouping Membership OR Omnipresence			
Methods: Wilson			
Figure-Ground [2c/2] Dominance OR Omnipresence			
Methods: Wilson			

<p>Purposive [2d/2]</p> <p>Immediate Remote Ultimate Overt Ulterior History (as aid to purpose) Context (as aid to purpose)</p>			
<p>Methods:</p> <p>Checklist</p>			
<p>Methods:</p> <p>Citation Analysis</p>			
<p>Methods:</p> <p>Naïve Concept</p>			
<p>Methods:</p> <p>Langridge</p> <p>Forms of Knowledge</p>			
<p>Methods:</p> <p>Langridge</p> <p>Topics</p>			
<p>Methods:</p> <p>Langridge</p> <p>Specializations</p>			
<p>Methods:</p> <p>Langridge</p> <p>Forms of Writing</p>			
<p>Methods:</p> <p>Category Analysis</p> <p>Ranganathan OR CRG</p>			
<p>Methods:</p> <p>Kaiser</p> <p>Reduction</p>			

By Analysis			
By Concentration			
By Recapitulation			
By Selection			

2.2.3. Interpreting Process: Concluding Steps

Code	Observation	Notes	Coder
Naming			
Translation Anticipation OR Epistemological Potential OR Objective			
Construction of an Index Entry Represent in Single Place?			
Construction of an Index Entry Multiple a Problem?			
Construction of an Index Entry Degree of predictability a concern?			
Construction of an Index Entry Precoordinated or Postcoordinated a concern?			
Construction of an Index Entry Rounds and Levels?			
Evaluation of Representation User interpretation of			
Evaluation of Representation Indexer interpretation of			
Evaluation of Representation Relation to Collection			
Evaluation of Representation Relation to other Documents in the Collection			
Evaluation of Representation Historicism/Materialism Evidence for Predicting the Informative Potential			

2.2.4. Interpreting Process: Qualities of the Process

Code	Observation	Note	Coder
Question of accuracy			
Question of difficulty?			
Question of definite results?			
Limits to interpretation?			
Logic of the process?			
Permanent interpretation?			

2.2.5. Interpreting Process: Nature of the Process

Code	Observation	Note	Coder
As Reading Top Down Processing			
As Reading [superficial coverage of this code] Bottom Up Processing Hierarchical Compression and Summarization Macro Rules, Construction Rule, Deletion Rule, Generalisation Rule, Stopping at Lowest Macroproposition, Zero Rule			
Zipfian Economy of Words and Tools			
User's Knowledge of the Process			

2.3.1. Significant Characteristics of Documents Analyzed: Nature of Characteristics

Code	Observation	Notes	Coder
Ontology of the Characteristic(s): As Indeterminate			
Ontology of Characteristic(s): First Order Predicates			
Ontology of Characteristic(s): Requiring Precise Description			
Ontology of Characteristic(s): Requiring Accurate Description			
Ontology of Characteristic(s): Requiring a Unique Description			
In Relation to the Text Itself: Epistemological Potentials of Documents			
In Relation to the Text Itself: Dominating Idea (Central Thesis or Central Claim)			
Relation to the Text Itself: Intrinsic Subject of the Document			
In Relation to the Text Itself: Essentials of the Document			
In Relation to the Text Itself: Logical Proposition that Summarizes a Body of Information			
In Relation to the Text Itself: Manipulated Contents of Documents			
In Relation to Other Texts: Organized Pattern of Ideas			
In Relation to Other Texts: Informational Potentials of Documents			
In Relation to Other Texts:			

Contribution to Thought			
In Relation to Other Texts: As Definite when a Second Order Predicate [Hjørland, 1992]			
In Relation to Other Texts: Multiple Depending on Who, Why, and What For			
In Relation to Other Texts: Neglected Issues in an Academic Discipline (or other Collective)			
In Relation to Other Texts: Novelty Compared to Extant Thought on the Subject			

2.3.2. Significant Characteristics of Documents Analyzed: Units of Analysis of Characteristics

Code	Observation	Note	Coder
All Ideas and Meanings			
Cast of Characters			
Concept Instances			
Subjects (as opposed to Concept Instances)			
Themes			
Concretes			
Processes			
Countries (Locales?)			
Topics [Langridge]			
Specializations [Langridge]			
Forms of Knowledge			
Academic Disciplines			
Methodology			

2.3.3. Significant Characteristics of Documents Analyzed: Considerations in Finding and Attributing Characteristics to Documents

Code	Observation	Notes	Coder
Naïve Point of View			
Particular Point of View?			
Parts of a Writing			
Whole of a Writing			
Associations with Documents: Discussions with Friends			
Associations with Documents: How Personal Relations Use the Document			
Associations with Documents: Other Documents			
Audience of the Document			
Citations in the Document Potential and Actual Instrumental Relationships			
Social Practice of a Document How an infinite number of subjects is limited			
Overlap Between Social and Cultural Contexts			
Named Characteristics and Naming Characteristics as Subjects			
Shared Characteristics Across or Between Documents			

3. Effects on the Analysis Process

3.1. Users, Readers, and Searching

Code	Observation	Notes	Coder
Readers: Reading About Something in a Text			
Readers: Reason a Reader is Drawn to a Text			
Users: Expert			
Users: Specific Information Need of Users			
Use: Potential Use			
Use: Temporary Use			
Use: Long-Term Use			
Searching: Formal Textual Inquiry Case 1 [no match between indexer terms and search terms]			
Searching: Formal Textual Inquiry Case 2 [match between indexer terms and search terms]			
Searching: Formal Textual Inquiry Futility Point Criterion [retrieved set small enough to browse through]			
Searching: Formal Textual Inquiry Prediction Criterion			

[descriptors used to represent documents can be predicted]			
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3.2. Collective

Code	Observation	Notes	Coder
Activities as Collective			
Community as Collective			
Context as Collective Information Institution National Library Special Library Academic Library Public Library			
Context as Collective National OR Written Bibliographies			
Context as Collective Socio-Philosophical Contexts Economic Interpretive Pragmatic Objectified Social Practice (Mai) Peircean Convention (Mai) Conventional/Frame Knowledge of the World (Beghtol) Social Dimensions			
Collectives De Grolier's Deep Structure			
Collectives: Disciplines Specialties Interdisciplinary Work			
Collectives Discourse Inside and Outside the Discourse			
Collectives Division of Labor in Society			
Collectives Domain			

Formal Structures			
Group Sharing Common Goals			
Work Level			
Collectives			
Institutions			
Collectives			
Journals			
Collectives			
Political Collectives			
Collectives			
Products of the Collective			
Authors of these Products			
Citations of these Products			
Collectives			
Professions			
Collectives			
Set of Propositions			
Collectives			
User Group			

4. Perspective on the Work of Subject Analysis (Purpose, Objectives, Goals)

4.1. Purposes in Subject Analysis: Purpose of Representation

Code	Observation	Notes	Coder
For User to Make Similarity Judgment			
Express in Shortest Form Possible the Contents of Information in a Document			
Facilitate Arrangement of Information on Filing Cards			
Provides the Means for a System of Guides which Assures Quick Access to the Indexed Material			
Enables us to Take a Quick Glance at the Information in the Index			
As Servant to Ideas			

4.2. Purposes in Subject Analysis: Purpose of Interpreting

Code	Observation	Notes	Coder
Independent Analysis for Essentials			
Independent Analysis for Impartiality			
Independent Analysis for Professional Knowledge Interests			
Separating Unlike Things			
Translating Essence			
Judging Two Documents on Same Subject			
Speciation of Writings			
Collocation or Grouping of Documents			
Represent Consensus of Common Opinion			
Judge a Document's Utility			

4.3. Purposes in Subject Analysis: Purpose of Information System

Code	Observation	Notes	Coder
Best Textual Means to an End			
Retrieval, the Mechanical Variant of Delegated Information Supply			
Satisfy Information Need			
To Point to Types of Documents			
Help Users Answer Questions and Satisfy Information Needs			
To Retrieve Documents whose Aboutnesses Suggest that a User May Find in them Meaning(s) Expedient to a Certain Need of the Moment			
Provide Information as Requested by an Expert in the Field [Fugmann]			
Serve Human Purposes			

4.4. Purposes in Subject Analysis: Purpose of Analysis

Code	Observation	Notes	Coder
Control Descriptive Control			
Control Exploitative Control			
Control Control over naming function of terms			
Delegation			
Order Loss-Avoiding			
Order Noise-Avoiding			
Best Textual Means to an End			
Bring Together Knowledge of a Like Kind			
Determine the Epistemological Potential for Future Users			
Knowledge Organization for Effective Use (not Information Retrieval)			
Retrieval of Documents			
Reflect Essential Rather than Incidental Characteristics of a Document			
Reject What is not Required and Select what is Usable			
To Make Use of Recorded Information, Knowledge and Wisdom			

VITA

Joseph T. Tennis was born in Greencastle, Indiana. He currently calls Vancouver, British Columbia, CANADA, his home. At Lawrence University, he earned his Bachelor of Arts degree in Religious Studies. He earned both a Master of Library Science and a Specialist Degree in Library and Information Science at Indiana University. In 2005, he earned a PhD in Information Science, making him the first doctoral student to graduate from the University of Washington Information School.