
How We Construct Subjects: A Feminist Analysis

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ABSTRACT

To organize information, librarians create structures. These structures grow from a logic that goes back at least as far as Aristotle. It is the basis of classification as we practice it, and thesauri and subject headings have developed from it. Feminist critiques of logic suggest that logic is gendered in nature. This article will explore how these critiques play out in contemporary standards for the organization of information. Our widely used classification schemes embody principles such as hierarchical force that conform to traditional/Aristotelian logic. Our subject heading strings follow a linear path of subdivision. Our thesauri break down subjects into discrete concepts. In thesauri and subject heading lists we privilege hierarchical relationships, reflected in the syndetic structure of broader and narrower terms, over all other relationships. Are our classificatory and syndetic structures gendered? Are there other options? Carol Gilligan's *In a Different Voice* (1982), *Women's Ways of Knowing* (Belenky, Clinchy, Goldberger, & Tarule, 1986), and more recent related research suggest a different type of structure for women's knowledge grounded in "connected knowing." This article explores current and potential elements of connected knowing in subject access with a focus on the relationships, both paradigmatic and syntagmatic, between concepts.

INTRODUCTION

The organization of information as practiced in catalogs, indexing and abstracting databases, and other tools of bibliographic control is primarily based on traditional or Aristotelian logic. The result is a linear, hier-

archical structure made up of mutually exclusive categories. Feminists have critiqued logic, just as there has been criticism of the organization of information as gendered. This article examines traditional/Aristotelian logic and its feminist critiques together with principles and standards of the organization of information and its critiques. It is a first attempt at synthesis of these concepts. It takes threads from these various literatures and traditions and, although it may not weave a fabric, it may string the warp and suggest patterns for the weft.

TRADITIONAL/ARISTOTLIAN LOGIC

Logic has been called “the general science of inference” (Blackburn, 1994, p. 221), or as the Oxford English Dictionary elaborates, “the branch of philosophy that treats of the forms of thinking in general, and more especially of inference and of scientific method” (Simpson & Weiner, n.d.). Traditional or Aristotelian logic is a philosophical practice that uses the concept of the categorical syllogism as a foundation. A categorical syllogism defines the relationships between categories such as:

All human beings are mortal.
All Greeks are human beings.
 Therefore, all Greeks are mortal.

This syllogistic form implies a hierarchy: mortals make up a broad class containing the subclass of human beings, which in turn contains the subclass Greeks. Or it may be expressed as a Venn diagram (See Figure 1).

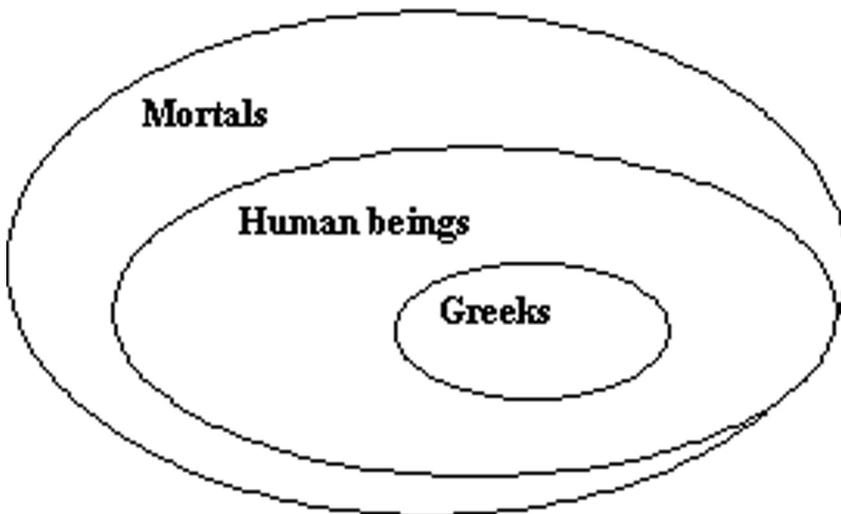


Figure 1. Venn Diagram of a Syllogism

Alternatively, a categorical syllogism may define the relationships between categories and an individual instance such as:

All human beings are mortal.
Socrates is a human being.
 Therefore, Socrates is mortal.

A class or subclass will, of course, normally contain more than one individual or subclass, as indicated by the *Oxford English Dictionary*: “class, n. . . 6. a. gen. A number of individuals (persons or things) possessing common attributes, and grouped together under a general or ‘class’ name; a kind, sort, division. (Now the leading sense.) b. in Logical classification” (Simpson & Weiner, n.d.). The class mortals contains the subclass human beings, which contains groups such as Greeks and individuals such as Socrates.

Each of the first two statements in the syllogism is a premise, “a statement of something about some subject” (Aristotle, *Prior Analytics*, I.1.24a):

This statement may be universal or particular or indefinite. By universal, I mean a statement which applies to all, or to none, of the subject; by particular a statement which applies to some, or does not apply to all; by indefinite, a statement which applies or does not apply without reference to universality or particularity. (Aristotle, *Prior Analytics*, I.1.24a)

The first statement in the categorical syllogism is a universal premise relating to “all” and the second is a particular premise relating to a particular group or individual. The third statement is the conclusion drawn from the two premises. This is the format of Aristotle’s first form, the only form of syllogism that he deemed able to produce true conclusions.¹ It is also the basis for the hierarchy found in a conventional classificatory structure.

Key to the functioning of logic are the three “laws of thought”:²

- Law of Non-Contradiction: Nothing can be both A and Not-A.
 e.g., *Nothing can be both mortal and Not-mortal.*
- Law of Identity: Whatever is A is A.
 e.g., *Whatever is mortal is mortal.*
- Law of the Excluded Middle: Everything is either A or Not-A.
 e.g., *Everything is either mortal or Not-mortal.*

These three laws taken together enforce the boundaries of classes so that classes are watertight and so that there is nothing left unaccounted for. Everything is either in or outside of any given class. This introduces further hierarchy in that everything is defined by being A or Not-A with A being privileged and Not-A being defined only by its relationship to A. The relationship between the two is, then, hierarchical in the sense that A is independent and dominant and Not-A is dependent and subordinate.

Traditional/Aristotelian logic focuses on deductive reasoning as epitomized by the syllogisms above. Deductive reasoning infers particular in-

stances from the general/universal such as inferring that the particular class of persons, Greeks, or the particular individual, Socrates, is mortal because they are human beings. A weaker form of logic derives from inductive reasoning in which general or universal premises are inferred from a selection of particular cases. Because it is typically impossible to examine all possible cases, inferences from induction are not absolute. It is always possible that some exception exists. For example, if we depend on inductive logic, the fact that no human being with whom we are acquainted is not mortal, does not mean that there is none. So, deductive reasoning, working from a universal truth to the specific instance, is certain. Inductive reasoning, working from the specific to the general, cannot incontrovertibly establish a universal truth. Thus, only deductive reasoning commands the full force of traditional/Aristotelian logic.

FEMINIST CRITIQUES OF LOGIC

Logic, in particular traditional logic, has been the object of feminist critique from various perspectives. As Susan Hekman (1990) summarizes it, "most contemporary feminists agree on the diagnosis of this problem: since Plato, and most particularly since the Enlightenment, reason and rationality have been defined in exclusively masculine terms; the 'Man of Reason' is gendered, not generic" (p. 34).³ Andrea Nye (1990), Luce Irigaray (1985) and Val Plumwood (1993), while voicing different views on what should be done, agree that "from Plato and Aristotle to Kant and beyond, the philosophical tradition of the west has delineated a concept of reason which is exclusive of women and other oppressed groups and is most fully represented by privileged social groups" (Plumwood, 1993, p. 436).

In logic, the knowing subject (the person who achieves knowledge) is traditionally masculine, or, as Plumwood denotes him, "the master" (1993, p. 454). Reason has been the province of men since at least Aristotle, through Descartes and the Enlightenment and beyond with emotion being the province of women (Lloyd, 1984/1991, p. 174; Plumwood, 1993, p. 437). Emotion is excluded from any role in reason or logic, resulting in a familiar set of dichotomies:

Male / female
Reason / emotion

in which the two elements have a hierarchical relation to each other. The three laws of thought enforce these dichotomies, even though, as Nancy Jay (1981) points out, they are not truly contradictory:

Although gender distinctions are regularly dichotomous, they do not always carry out the full implications of form A/Not-A phrasing. When they *are* so phrased, men and women are conceived of in ways that cannot be a consequence only of conceptualization and reinforcement of empirical distinctions between them. Concepts of femaleness and maleness come into being that have nothing whatever

to do with human sexual differences, but follow from the nature of contradictory dichotomy itself. . . .

To begin with, all dichotomous distinctions are not necessarily phrased as A/Not-A. Consider some differences between the phrasings A/B and A/Not-A. A and B are mere contraries, not logical contradictories, and continuity between them may be recognized without shattering the distinction. . . . Continuity between terms is a logical impossibility for distinctions phrased as contradictories, as A/Not-A. Thus, men and women may be conceived as men and not-men, or women and not-women, between which there is logically not continuity, or as two forms (A,B) of the class 'human' which may be supposed to have a good deal in common. Further, in A/B distinctions both terms have positive reality; Not-A is only the privation or absence of A. . . . The structure of A/Not-A is such that a third term is impossible: everything and anything must be either A or Not-A. Such distinctions are all-encompassing. They not only cover every possible case of the category (gender, propositions, and so forth) to which they are applied, but they can, and logically *do*, order "the entire universe, known and knowable. (p. 44)

The implication of traditional/Aristotelian logic, then, is that women are Not-men. They (we) are outside of the category. Whereas, if instead of the dichotomy of contradiction (A/Not-A) we accept that while women and men are different, they are not opposites (A/B), women need not be defined as having characteristics that are opposite to those of men (e.g., reason/emotion).

Excluded along with women is emotion in particular and women's experience in general. Traditional/Aristotelian logic denies the value of affect and of practical activities. Lorraine Code (1991) explains how the logical knowing subject, by being at an emotional distance from what is to be known, needs to be an autonomous individual, independent of all subjective factors (pp. 110–121). The process of gaining knowledge through logic has the aura of neutrality with the implication that if the process is followed, including maintaining the autonomy of the knowing subject, knowledge, or even truth, will result.⁴ Descartes reduced thought to an "orderly chain of deductions" that he believed reflected the understanding of the human mind (Lloyd, 1984/1991, pp. 169–170). Even though we have twentieth-century evidence that people's ordinary thinking does not follow syllogistic reasoning, the pattern persists (Oliver, 2002, pp. 210–211).

A major flaw with the system of logical syllogisms is with the construction of premises (Nye, 2002, p. 192; Oliver, 2002, p. 222). There is no mechanism for ensuring that premises themselves are not biased. The knowing subject's autonomy becomes a liability in establishing premises at a distance from the object to be known. A false premise does not necessarily cause the system to grind to a halt—it may simply produce a false conclusion.

So both the structure and the content of logic have been the objects of feminist criticism. There are two general reactions: to reject traditional/

Aristotelian logic or to adapt traditional/Aristotelian logic. Nye and Sandra Harding are among those suggesting the first option and Plumwood and Marjorie Hass the second. There is also the suggestion of simultaneous multiple approaches described below. However, regardless of the stream, emerging from a number of critiques is a search for richer, more situated logical models that rely on interdependence⁵ or connectedness. This article will seek such a model for application in the organization of information.

LOGIC AND TOOLS FOR THE ORGANIZATION OF INFORMATION

Classification schemes, thesauri, subject headings, and other tools used in cataloging, indexing, and even metadata are grounded, to a greater or lesser degree, in logic and the hierarchy that grows from logic. The strongest link is between traditional/Aristotelian logic and library classification. Library classification is connected to the classification of science that developed from Aristotle and blossomed particularly in the nineteenth century. W.C. Berwick Sayers asserts in his canonical *Manual of Classification* (1926), “of the value of the study of philosophical systems of classification there can be no doubt. Modern systems reflect earlier ones, modern terminologies are inherited, adapted, expanded or narrowed; and every system may be said in some way to help the interpretation of every other” (p. 115). Sayers further implies the link between classification and logic by building on a phrase from another seminal writer, Ernest Cushing Richardson: “. . . ‘classification made the ape a man’—a phrase which has puzzled some students. It means, of course, that when in the process of evolution the ape, or whatever form of animal was man’s ancestor, reached that stage of reasoning to enable him to distinguish the likenesses and differences existing between things, he became possessed of a power which is peculiar to man—the higher reasoning power” (Sayers, 1926, pp. 22–23). Logic affords a structure to classification that “is not only the general grouping of things; it is also their *arrangement* in some sort of logical order [underline added] so that the relationships of the things may become evident” (as cited in Sayers, 1926, p. 24).

As we look at classification, it does indeed go beyond likeness and difference to take on the hierarchy implied by logic.⁶ For example, in the Dewey Decimal Classification (DDC):

- 746 Textile arts
 - 746.4 Needlework and handwork
 - 746.44 Embroidery
 - 746.442 Canvas embroidery and needlepoint
 - 746.443 Cross-stitch
 - 746.445 Applique
 - 746.446 Crewelwork
 - 746.447 Silk ribbon embroidery

So, it becomes the syllogism:

All Embroidery is Needlework
All Crewelwork is Embroidery
 Therefore, all Crewelwork is Needlework

In this way a hierarchy is built illustrating the logic of hierarchical force defined in DDC as “the principle that the attributes of a class . . . apply to all the subdivisions of the class . . .” (Dewey, 2003, p. lxix). That is, the higher levels of the hierarchy define or have authority over the lower ones. Hierarchy, then, is the manifestation of logic in the instance of library classification as it is in philosophical classification.

Other tools used in the organization of information are similar, but less obviously so. For example thesauri are based, overtly or tacitly, on classification (Aitchison & Clarke, 2004, p. 10). An example from the UNESCO thesaurus demonstrates its classificatory underpinnings:

Handicrafts
 UF Arts and crafts, Basketry, Crafts
 NT1 Engraving
 NT1 Jewelry
 NT1 Mosaics
 NT1 Textile arts
 NT2 Carpets
 NT2 Tapestry
 RT Art glass
 RT Art metalwork
 RT Ceramic art
 RT Craft workers
 RT Handicrafts education
 RT Informal sector
 RT Small scale industry
 RT Stained glass
 RT Visual arts

Primacy is given to the hierarchical relationships in broader terms and narrower terms represented by the BTs (broader terms) and NTs (narrower terms) (See Figure 2).

The associative relationships represented by the RTs (related terms) encompass all types of relationships other than the hierarchical. For example, “Handicrafts RT Craft workers” is a relationship between a product and a producer, “Handicrafts RT Informal sector” a product and its economic arena, and “Handicrafts RT Small scale industry” a product and its place of production. These nonhierarchical relationships do not arise from the logic of Aristotle’s syllogisms or the sets in a Venn diagram and they are typically lumped together as undefined relationships in thesauri.

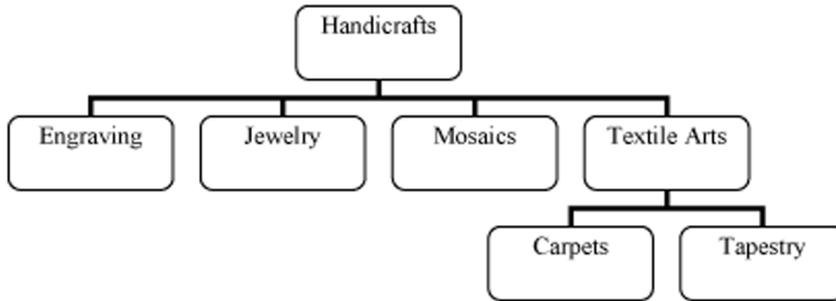


Figure 2. The Hierarchy of BTs and NTs for Handicrafts.

Implicit in the RTs is a recognition that hierarchy alone is insufficient. The current American standard is firm about the definition of a hierarchical relationship as a generic, an instance (or “isA”), or a whole-part relationship (ANSI/NISO Z39.19, 2005, section 8.3). However, for associative relationships (RTs), the standard leaves the options open:

This relationship covers associations between terms that are neither equivalent nor hierarchical, yet the terms are semantically or conceptually associated to such an extent that the link between them *should* be made explicit in the controlled vocabulary, on the grounds that it *may* suggest additional terms for use in indexing or retrieval. (Section 8.4)

This description is almost identical to that in the influential British standard (British Standards Institution, 1979) published twenty-six years earlier. In spite of radical developments, especially in technology, in the environment of information retrieval and its potential for sophisticated change, the associative relationship remains a catchall.

Subject heading lists have the same syndetic structure favoring hierarchical relationships that thesauri do. In the following example from the Library of Congress Subject Headings (LCSH), the presence of three broader terms is not a logical problem in the sense that in each instance the three laws of thought can enforce a categorical syllogism—“All Embroidery is Fancy work” does not interfere with “All Embroidery is Sewing” because they are based on separate universal premises:

Embroidery
 BT Decoration and ornament
 BT Fancy work
 BT Sewing
 NT Assisi embroidery
 NT Blackwork embroidery

- NT Candlewicking (Embroidery)
- NT Canvas embroidery
- NT Couching (Embroidery)
- NT Counted thread embroidery
- NT Crewelwork
- NT Cross-stitch
- ...
- RT Needlework

So three standard syllogisms exist—all with the same particular premise and conclusion. Only the universal premises vary (See Figure 3):

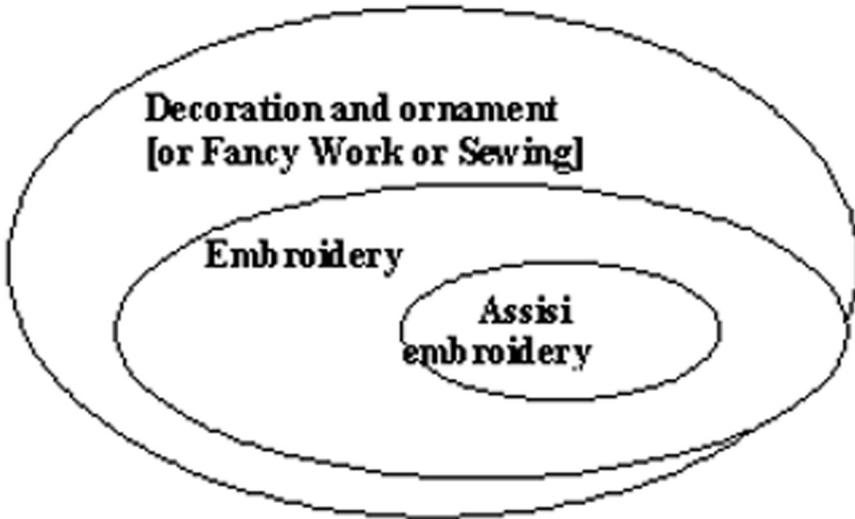


Figure 3. Venn diagram of Decoration organizational hierarchy.

In addition to the hierarchy built into the syndetic structure of the subject heading list, subject headings and subdivisions also create hierarchical structure in the catalog through precoordinate indexing (See Figure 4). For example, in LCSH with results such as the following appearing in library catalogs:

- Crewelwork
- Crewelwork—England
- Crewelwork—England—Patterns . . .

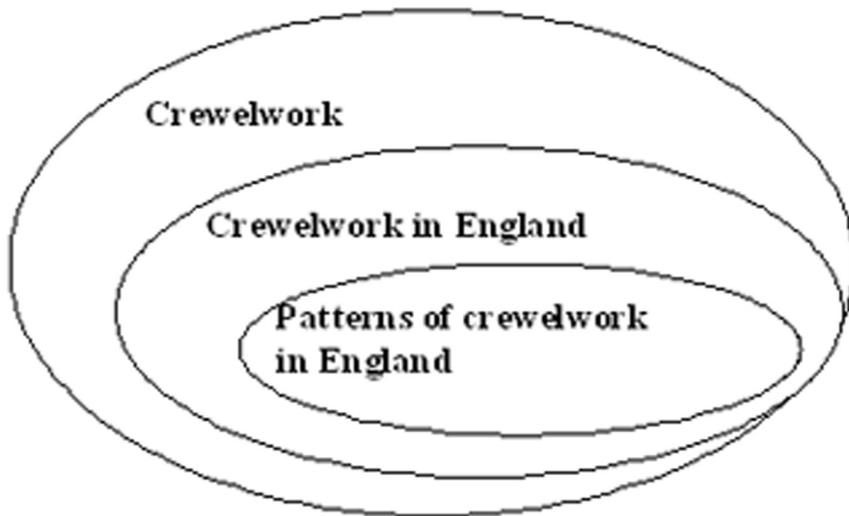


Figure 4. Venn diagram of Embroidery organizational hierarchy

With each subdivision the result is more specific, yet still governed by the preceding main heading and subdivisions in a relationship akin to the hierarchical force of DDC.⁷

Some of the access points derived from the *Anglo-American Cataloging Rules* (AACR2R) also reflect the ubiquitous hierarchy of Western culture and impose hierarchy to create order. For example, corporate bodies that are parts of administrative hierarchies need to be entered either subordinately or directly. That is, the entry may be independent of the higher body, such as the distinctive "Marin Needle People" rather than "Embroiderers Guild of America. Marin Needle People." However, distinguishing one corporate body from another often requires subordinate entry, such as "Victoria and Albert Museum. Dept. of Textiles" rather than the generic "Dept. of Textiles." In the case of corporate bodies, AACR2R approaches hierarchy somewhat differently than the standards discussed above, subverting hierarchy to "enter a subordinate body . . . or a related body directly under its own name . . . unless its name belongs to one or more of the types listed in 24.13" (Rule 24.12). Yet, there are six types of general corporate bodies that are entered subordinately, and eleven types for government bodies, so hierarchy is not entirely subverted.

In a different context, AACR2R not only reflects, but actually constructs hierarchy. In the case of uniform titles, it brings together all the editions of any particular work, and then subdivides them, often hierarchically:

[title]
[title. language]

[title. language. part]
 [title. language. part. date]
 etc.

Such subdivision results in browsable files something like :

Beowulf.
 Beowulf. English
 Beowulf. English. 1984
 Beowulf. English. Selections. 1983
 Beowulf. English. Selections. 2004
 Beowulf. German
 Beowulf. German. Selections . . .

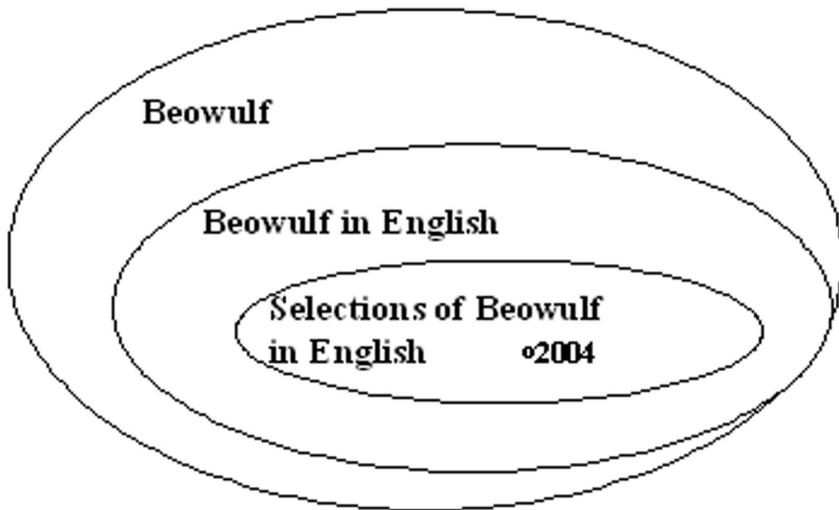


Figure 5. Venn Diagram of Beowulf Organizational Hierarchy

These few examples indicate the ubiquity of the hierarchy that has grown from the categorical syllogism of traditional/Aristotelian logic. Interestingly, this structure has been largely accepted, even by critics of these tools.

FEMINIST CRITIQUE OF TOOLS FOR THE ORGANIZATION OF INFORMATION

Subject headings, specifically LCSH, have received the most criticism from a feminist perspective, with some attention also paid to thesauri and classification schemes. In 1972, Joan K. Marshall wrote about exclusions in LCSH, describing it as having been designed for a straight, white, male,

Christian norm. In 1974, the Committee on Sexism in Subject Headings was formed under the sponsorship of the American Library Association's Social Responsibility Round Table Task Force on Women to address bias in LCSH. Some of the critiques implied structural problems such as topics relating to women and minorities being subsumed under mainstream topics, and the problem of omitted topics that could result from structural issues such as the lack of a hierarchy to contain the topics. For example, there are headings for "Mentally ill women," "Mentally ill children," and "Mentally ill older people," but not for "Mentally ill men." There are subject headings for "Sexual ethics for women," "Sexual ethics for teenagers," and "Sexual ethics for youth," but not "Sexual ethics for men." Omissions occur when a broad topic is slanted in a way that is gendered in our society. For example, there is no LC subject heading for unpaid work or labor. The likely headings under which unpaid work might logically be a narrower term are "Work" and "Labor." "Work" is defined as "physical or mental exertion of individuals to produce or accomplish something," which seems open enough, but most of its narrower terms imply paid labor (e.g., "Part-time employment," "Hours of labor," "Entry-level employment"). "Labor" is defined as "the collective human activities involved in the production and distribution of goods and services" and falls under the broader term "Manpower." "Manpower" (which has no references from gender-neutral terms) is defined as "the strength of a country in terms of available personnel, including military and industrial requirements and reserves from the non-working population." ". . . military and industrial" clearly implies paid labor. Anyone unpaid is not part of "manpower." They are part of the nation's reserve. Among these options there is no term that would logically have the narrower concept of unpaid work. The report also addressed biased terminology, the issue that has attracted the most criticism in regard to LCSH over the years. In response, Marshall (1977) published an alternative standard for subject access to materials for, by, and about women.

Other alternative standards, thesauri rather than subject headings, have followed, but none seems to have considered a change in structure—only in content (e.g., *A Women's Thesaurus* [Capek, 1987], *The Canadian Feminist Thesaurus* [Canadian Women's Indexing Group, 1990], and *European Women's Thesaurus* [Boere, 1998]). Sanford Berman has been raising concerns about omission of topics and choice of terminology in relation to women in LCSH since at least 1981. Several empirical studies have continued to focus on terminological omission and bias (Gerhard, Su, & Rubens, 1998; Olson, 1992; Rogers, 1993). While these studies addressed important issues, they did not probe the structural underpinnings of the standard. María López-Huertas, Isabel de Torres, and Mario Barité (2004) came closer to a structural critique when they examined the main subject areas or classes of four thesauri in the area of gender studies,

although they did not directly address the hierarchical structure. They found "severe conceptual dispersal" (p. 38) and recommended further study, including domain analysis, of gender studies and other interdisciplinary areas.

Gender-based critique of library classification dates back to at least 1971 when A. C. Foskett addressed issues of structure among other issues. A 1987 study by Mary Huston and Joe Williams revealed the conveniences and problems of separate ethnic and women's studies sections in classification schemes that are products of hierarchical structure. Sheila Intner and Elizabeth Futas (1996) examined the skewing of collection assessment that depends on classification due to the interdisciplinary nature of women's studies in a classification scheme organized by discipline. The remaining feminist work on library classification is primarily mine (Kublik, Clevette, Ward, & Olson, 2003; Olson, 1998, 2001a, 2001b, 2001c, 2002). While I have previously critiqued both content and structure and discussed theory for guiding change, this article is my first exploration of an alternative model not based on traditional/Aristotelian logic, but on feminist theory and research.

NEED FOR ALTERNATIVE MODELS

Feminist critiques of traditional/Aristotelian logic have called for three types of alternatives. The first two, as mentioned above, are: to include women in traditional logic; to reject traditional logic for an entirely "feminine" model; or, as Hekman (1990) defines the third option, to "abandon epistemology in its traditional sense and thereby displace the rational/irrational dichotomy . . . [losing] not only the gendered connotations of certain ways of knowing (the rational male, the irrational female) but also the search for the one, correct path to truth" (p. 39). She describes this third alternative as a postmodern one coming particularly from French feminist theory (1990, p. 42). The first two views are drawn from what Elizabeth Grosz (1994, pp. 83–92) describes as feminisms of equality and of difference. Feminisms of equality assert that women are the equals of men and seek an even playing field. Therefore, this perspective can see inclusion of women in logic as a viable solution. Trying to remove the bias from existing standards without changing their structure is an example. Feminisms of difference define women on our own terms according to our own specificities. Rejecting the existing structure and substituting an entirely new one in its place would be an example of this approach. Grosz (1994) characterizes each of these stances as striving for intellectual or theoretical purity. Feminisms of equality have been criticized for accepting patriarchal definitions of what is valued. Feminisms of difference have been criticized as essentialist, defining a female essence with certain shared characteristics. Grosz draws on Gayatri Spivak in recognizing that purity cannot be achieved and, instead, shifting the focus of difference to

include the situated differences of the moment (1994, pp. 94–95). Diana Fuss (1998, p. 118) adds a mandate for perpetual deconstruction of these essences so that they do not solidify.

My interpretation—drawing together the advice of Hekman, Grosz, Spivak, and Fuss—is that these approaches need not be mutually exclusive, especially if we begin with a poststructural rejection of universality. As long as we reject any notion that traditional/Aristotelian logic is *the* logical structure, instead viewing it as *a* logical structure, it is possible to include models that are radically different and to allow multiple models to coexist—separately or layered or even integrated with each other. Such an approach is necessary if we are to apply it to anything as concrete and ponderous as standards for the organization of information. It also acknowledges that while existing standards are biased and radical alternatives may be merited, existing tools do operate effectively for some contexts. Hekman’s postmodern multiple paths offer the possibility of concatenating the one model we have and any number of others.

A WEB INSTEAD OF A HIERARCHY

The body of feminist thought that identifies women as viewing the world as an interconnected web offers a model radically different from the hierarchical structure of traditional logic.⁸ Perhaps the two most influential works come from the field of psychology: Carol Gilligan’s *In a Different Voice* (1982) and Mary Field Belenky, Blythe McVicker Clinchy, Nancy Rule Goldberger, and Jill Mattuck Tarule’s *Women’s Ways of Knowing* (1986). Both books present theories derived from empirical research that define developmental stages. Gilligan is concerned with moral development and *Women’s Ways of Knowing* documents stages of coming to knowledge. While stage theories retain a linearity that does not entirely overcome traditional hierarchy, it is possible to select aspects of these models for transposition into a less constricting structure. In the case of these two works, the factor that I want to extract is connectedness.

Gilligan (1982) very specifically rejects the universality of the masculine model of moral development based on an ethic of justice as proposed by Lawrence Kohlberg and suggests that a model based on an ethic of care better fits the moral development of women. The ethic of care grows from a focus on connectedness:

Illuminating life as a web rather than a succession of relationships, women portray autonomy rather than attachment as the illusory and dangerous quest. In this way, women’s development points toward a different history of human attachment, stressing continuity and change in configuration, rather than replacement and separation. (p. 48)

Women replace “a hierarchy of rights with a web of relationships” (p. 57). Of particular interest in this discussion is the gendered difference

in structure. "The images of hierarchy and web, drawn from the texts of men's and women's fantasies and thoughts, convey different ways of structuring relationships and are associated with different views of morality and self" (p. 62).

The major criticism of *In a Different Voice* is the dichotomous nature of Gilligan's conclusions.⁹ In finding what is often read as a "women's" pattern of moral development to stand against Kohlberg's "men's" pattern, critics perceive Gilligan's work as essentialist—that she proposes the characteristic of care as part of a female essence. The most cogent criticisms focus on the fact that it does not account for differences of race and class in particular (Tronto, 1993). The question arises: why do "we need to limit our understanding to the recognition of only two modes" (Nicholson, 1993, p. 100). The answer, of course, is that, as discussed above, we need not choose between the risks of patriarchy and essentialism. We can adopt multiple models.

Belenky et al. (1986) acknowledge their debt to Gilligan as they develop their theory of women's ways of knowing (pp. 6–9). They identify five stages of knowing from silence to constructed knowing. The one that shows potential for the organization of knowledge and the one that most follows from Gilligan is the fourth: procedural knowledge (pp. 100–152). Procedural knowledge focuses on the techniques for acquiring knowledge, offering the most attention to structure of the five stages. Procedural knowledge has two manifestations: separate knowing and connected knowing. Separate knowing is exemplified by distance between the knowing subject and the object to be known and is based on traditional/Aristotelian logic (p. 114). Connected knowing privileges experience and relies on connections to others to discover what they know. The knowing subject learns through empathy, putting herself in the place of the object to be known rather than maintaining distance.

Clinchy (1996) elaborates on connected knowing in a collection published ten years after *Women's Ways of Knowing*.¹⁰ She describes connected knowing as "a rigorous, deliberate, and demanding *procedure*, a new way of knowing that requires *work*" (p. 209). She defines it in opposition to subjectivism which Belenky et al. (1986) viewed as effortless and intuitive (Clinchy, 1996, p. 121). Clinchy particularly rejects subjectivism as opposed to connected knowing because the former allows truth to be individually defined. This assertion is especially important when transferring a model to the organization of information, which is normally represented in a tool for collective use.

This focus on practical application is justified by the applied nature of the organization of information. It is effectively explained by M. E. Maron (1977) who identified three different kinds of aboutness related to the indexing and retrieval process. The first is subjective aboutness (or S-about), which is the psychological concept, the individual's inner ex-

perience. S-about is, therefore, a very personal aspect of aboutness. The second is objective aboutness (or O-about), which is what the individual will actually use to search. O-about is therefore an individual behavioral aspect of aboutness. The third is retrieval aboutness (or R-about), which is what groups of users who will find a document relevant will use in searching (e.g., a document is about cats if most of the users in a group who would find it relevant would seek the concept of cats in searching for it). R-about is therefore the most appropriate type of aboutness to use in a catalog or database because it is not limited to any one individual's conception. A cataloger who can be accurate in terms of identifying concepts to represent might well be defined as one who can achieve R-about or retrieval aboutness, since retrieval is the purpose of the process. R-about might be construed as a kind of connected knowing because of its ground in a knowing community.

On a spectrum from objectivist to subjectivist, connected knowing is somewhere in the middle. Separate knowing focuses on the known object while connected knowing acknowledges the role of the knowing subject. Connected knowing avoids the adversarial practices of traditional philosophy that focus on objectivity and validity, but it does maintain the notion of a singular concept of truth (Clinchy, 1996, pp. 212–215).¹¹ Particularly interesting in light of the increasing presence of wikis, collaborative tagging, and similar participatory forms of collective information on the Web is Clinchy's (1996) discussion of "knowing communities," which, in connected knowing, are made up of unique individual knowing subjects and known objects (pp. 213–214)—much like Maron's. Further, Harding (1996) notes that Belenky et al. did recognize the differences among women, differences in context, and differences in power are factors affecting knowing (p. 432). The connections that knowers make are not all the same.

Characteristics of connectedness that can be useful in informing an alternative model for the organization of information include its:

- rejection of a universal model
- acceptance of a singular concept of truth
- focus on relationships
- web-like structure as opposed to a pyramidal hierarchy
- situatedness; consideration of context and experience
- involvement of knowing communities
- recognition of power as a factor in knowing.

These characteristics are not essentially feminine. The separated knowing that Belenky et al. (1986) identified in their research is directly linked to traditional logic, demonstrating that not all women are connected knowers. However, there are other groups for whom connected knowing may be appropriate. For example, indigenous cultures do not necessarily as-

cribe to a hierarchical structure. As Donald Fixico (2003) describes it: “‘Indian Thinking’ is ‘seeing’ things from a perspective emphasizing that circles and cycles are central to the world and that all things are *related* [italics added] within the universe” (p. 1). Linda Tuhiwai Smith (1999) sees the hierarchies of classification as a tool of imperialism and of a positivist approach to knowledge in general and research in particular (pp. 25, 42–43). She includes connecting, networking, and naming in advocating a research agenda for indigenous peoples (pp. 148, 156–157). This potential applicability beyond the women studied by Gilligan (1982) and Belenky et al. (1986) suggests that intersecting sets of information seekers might find this approach fruitful.¹²

That this approach might be especially fruitful in the organization of information is evidenced in two empirical studies. Most notably, Lori Lorigo et al. (2006) tracked the eye movements of women and men graduate students while searching Google. They found that men followed a linear “scanpath” when perusing a list of hits more often than did women and that women were more likely to return to something they had previously looked at than were men (p. 1129). This difference in browsing styles suggests that a linear approach is not equally appropriate for all searchers. Women also submitted longer queries (p. 1129). Did they connect more concepts together? Further research would be helpful. Lucinda Zoe and Diane DiMartino (2000) looked at language background as well as gender in studying differences in search techniques. They found that students whose first language is not English used different search techniques than those for whom English is a first language (p. 301). They attribute these differences to language, but given that language and culture are intimately intertwined, cultural differences are also likely to play a role.

TRACES OF CONNECTED KNOWING IN THE ORGANIZATION OF INFORMATION

Even though current practices of the organization of information are fundamentally hierarchical, they already exhibit some traces of connectedness that could be enhanced. Four that bear particular notice are associative relationships in thesauri and subject heading lists; facets and synthetic practice in classification; the entity-relationship model, particularly as embodied in the new Functional Requirements for Bibliographic Records; and the collaborative tagging in increasing evidence on the Web.

Associative relationships in thesauri and subject heading lists are well-established, though inexplicit, ways of connecting concepts that do not exhibit a hierarchical relationship. These are the connections designated as related terms or RTs. The current thesaurus construction standard, ANSI/NISO Z39.19, notes that “the associative relationship is the most difficult one to define, *yet it is important to make explicit the nature of the relationship* [italics added] between terms linked in this way and to avoid

subjective judgments as much as possible; otherwise, RT references could be established inconsistently” (section 8.4). Two issues arise: first, the relationships are not individually designated, that is, they are not made explicit, but are, as mentioned above, all lumped together as RTs; and, second, there are limited relationships that may be included. Specifically, with a few arcane exceptions, the associative relationships in Z39.19 are: process/agent, process/counteragent, action/property, action/product, action/target, cause/effect, concept or object/property, concept or object/origins, concept or object/measurements, raw material/product, and discipline or field/object or practitioner. Antonyms may also be included as associative relationships for a total of twelve types (section 8.4.2).

“Node labels” *may* be used to indicate which types of relationships are represented in a vocabulary, but this option is not widely used in practice. Further, node labels are normally visible only in the thesaurus, not in the index or database in which the thesaurus is applied. A more visible option is that “in certain controlled vocabularies, it *may* be considered desirable to refine Related Term references in order to make the nature of the relationships explicit. Codes for such relationship indicators and their reciprocals *may* be developed locally” (ANSI/NISO Z39.19, 2005, section 8.4.4). This option is one that should be exploited far more often for situating connections in a particular context.

In LCSH, associative relationships are more severely curtailed:

In order to focus emphasis on hierarchical references, simplify future special projects to revise references in the subject authority file, and reduce the size and complexity of *Library of Congress Subject Headings*, restrictive rules are in effect for making related term references with the intended effect of minimizing the number of related term references that are made. (Library of Congress, 1996, H370, 2)

Associative references may be established only in the following three situations (and then only if not otherwise prohibited):

- To link two terms with meanings that overlap to some extent, or terms used somewhat interchangeably. . . .
- To link a discipline and object studied. . . .
- To link persons and their fields of endeavor. . . . (H370, 2.)

Associative relationships offer some options for expressing connectedness, but to varying degrees in principle and in practice.

Potential for greater focus on connection also lies in the synthetic aspects of classification. Number-building mechanisms in DDC allow making some connections, but these opportunities are carefully controlled and the nature of the relationship is not denoted in the resulting number. For example, adding “51” to a number will represent China in some instances and the Italian language in others plus miscellaneous other mean-

ings in individual cases. While they cannot be used interchangeably in any specific instance, they could even be used in the same number such as 305.751051 Italian-speakers in China. Which "51" is which? In this case, the language comes first and then the place. So this topic will sit between Italian-speakers in Bulgaria (305.7510499) and Italian-speakers in Japan (305.751052). When classifying works about social groups, language will always take precedence over location in DDC. It is not possible to group speakers of foreign languages in China. Each must be classed with the individual language group. This dictum regularizes the classification so that a topic is always classified the same way, pulling together all of the works on that topic in one place. However, it also allows the hierarchy to exert its hierarchical force. Works are gathered by one facet and then subdivided by another and so on, creating a hierarchy. As a result, one facet is the primary point of gathering and others are not gathered in one place. In DDC, the chain or order of facets is always the same. Elizabeth Spelman (1988) describes such a classification:

Imagine a huge customs hall with numerous doors, marked "women," "men," "Afro-American," "Asian-American," "Euro-American," "Hispanic-American," "working class," "middle class," "upper class," "lesbian," "gay," "heterosexual," and so forth. . . . The doors are arranged in banks, so that each person faces a first bank of doors that sort according to gender, then a bank that sort according to race, or alternatively sort first according to race, then according to class, then according to gender, and so on. (p. 144)

Different orders of sorting have different results. If gender is first and then racial or ethnic background, all of the women are together and all of the men are together, but Afro-Americans, Euro-Americans, Asian-Americans and Hispanic-Americans are each in two different places. However, if racial or ethnic background is the first characteristic in sorting then Afro-, Euro-, Asian-, and Hispanic-Americans are each together, but women are in four different places and men are in four different places. ". . . we get different pictures of people's identities, and of the extent to which one person shares some aspect of identity with another, depending on what the doors are, how they are ordered, and how people are supposed to proceed through them" (Spelman, 1988, p.146).

In the Universal Decimal Classification (UDC), more synthesis is possible; a symbol indicates the types of relationships, and the order of elements can be adapted. Any topics in the classification scheme may be combined using a symbol "+" that indicates two topics that simply coexist in a work (dogs and cats 636.7+636.8 where part of the work is about dogs and a separate part is about cats). The order of elements is generally in ascending order, but may be varied for emphasis (ailurophiles may prefer 636.8+636.7 for cats and dogs). A different notation ":" indi-

cates topics discussed in relation to each other (pharmaceutical products consists of the chemical industry in relation to pharmaceutical preparations 661.1:615.4). Other types of relationships can be added (critics of the pharmaceutical industry would be classed in 661.1:615.4-056.157 with -056.157 representing persons anti- or against something). This faceted classification allows for considerable flexibility in presenting relationships, especially where the citation order can vary with emphasis rather than being at the service of the hierarchical structure.

A third trace of connectedness in existing organization of information practice is the emerging use of the entity-relationship model, most notably in the Functional Requirements for Bibliographic Records (FRBR) (IFLA Study Group on the Functional Requirements for Bibliographic Records [IFLA], 1998), but also in the increased use of XML and RDF for encoding metadata. The entity-relationship model allows representation of the relationships between different entities. Things are related to other things. It also adds the concept of attributes: qualities or characteristics that describe entities. The entities in FRBR are divided into three groups:

- Group 1: Products of intellectual & artistic endeavor, such as novels, films, songs, reports, biographies, operas, etc. Group 1 entities include:
 - A work is “a distinct intellectual or artistic creation” (IFLA, 1998, section 3.2.1)
 - An expression is “the intellectual or artistic realization of a work” (section 3.2.2)
 - A manifestation is “the physical embodiment of an expression of a work” (section 3.2.3)
 - An item is “a single exemplar of a manifestation” (section 3.2.4)
- Group 2: Those responsible for content of the products, such as authors, artists, sponsoring organizations, etc. Group 2 entities include persons and corporate bodies.
- Group 3: What the products are about, that is, topics.

There are two factors regarding FRBR that are of particular interest to this discussion. First is FRBR’s explicit recognition of relationships:

In the context of the model, relationships serve as the vehicle for depicting the link between one entity and another, and thus as the means of assisting the user to ‘navigate’ the universe that is represented in a bibliography, catalogue, or bibliographic database. (IFLA, 1998, section 5.1)

Relationships can be identified between groups and within groups. The relationships between groups are not hierarchical as shown in the example in Figure 6.

Groups 2, 1, and 3

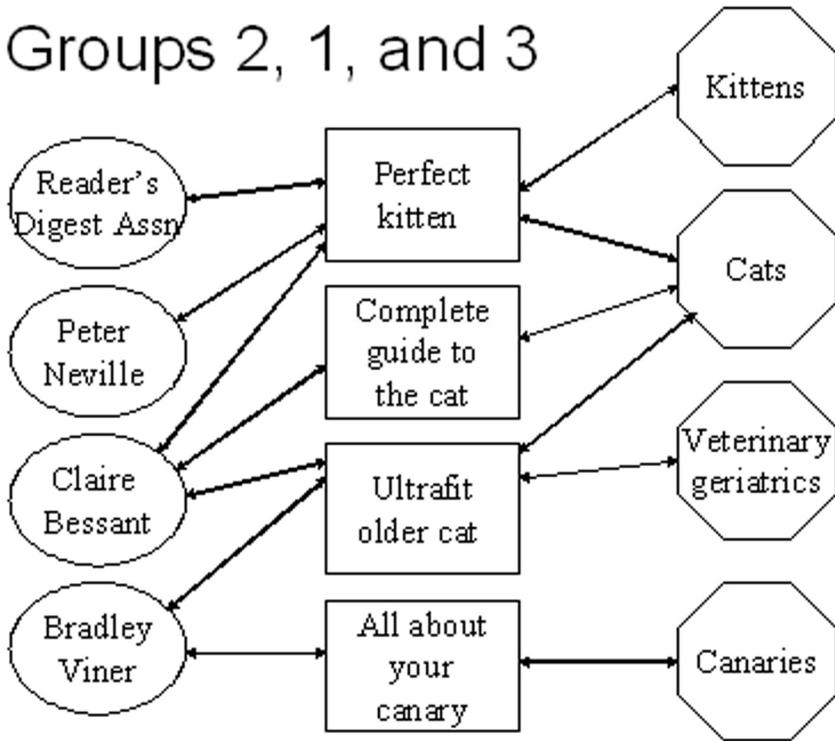


Figure 6. Entity-relationship Model in FRBR.

These relationships represent a wide range of possibilities. For example, a person may be the author of a work, the translator of an expression, or the owner of an item.

The relationships between different types of entities in group 1 (works, expressions, manifestations, and items) are hierarchical in that what is true of a work is true of its expressions, what is true of an expression is true of its manifestations, and what is true of a manifestation is true of its individual items. So they line up as in the following example, much like uniform titles in AACR2R:

- w_1 *Pride and Prejudice*
- e_1 the original text of *Pride and Prejudice*
- m_1 *Pride and Prejudice* published in New York by Century in 1902
- i_1 first copy held by the Library of Congress
- i_2 second copy missing from the Library of Congress
- m_2 *Pride and Prejudice* published in Naples, Florida by Trident Press International in 1999
- i_1 first copy held by the Library of Congress

e₂ the text of *The Annotated Pride and Prejudice*
 m₁ *The Annotated Pride and Prejudice* published in Delmar, NY
 by Pheasant Books in 2004
 i₁ first copy held by the Library of Congress

Nonetheless, the introduction of the entity-relationship model is an example of connectedness increasingly present in the organization of information. In addition to the connectedness developed in a feminist context, Yann Nicolas (2005) describes how FRBR, except for the hierarchical aspects described above, has the potential for better accommodating oral tradition works than current standards, revealing the cross-cultural potential of FRBR if a range of voices is heeded in FRBR's further development.

The fourth indication that connectedness is present in the organization of information is the practice of collaborative tagging that is growing rapidly in the context of what is being called Web 2.0. While collaborative tagging is not the creation of specialists in the organization of information, it is being greeted with interest in library and information science circles.¹³ Like the wikis that have become a central feature on the Web and intranets, collaborative tagging involves shared content. Multiple users of a site create tags, basically keywords, for bookmarks to Web pages (e.g., Del.icio.us) or academic publications (e.g., CiteULike.org). The tags are then searchable by other users. If a bookmark has already been tagged a user may replicate previous users' tags or assign different ones or some combination thereof. The result is that frequently tagged bookmarks will be represented by a group of tags that are related syntagmatically through the bookmark being tagged; that is, the relationship between the terms is not necessarily an innate relationship, but stems from their co-occurrence in describing an individual Web page. For example, a del.icio.us search on "embroidery" retrieved, among others, the page of The Home Sewing Association, <http://www.sewing.org/>, which had been saved by sixty-six users as of November 24, 2006. Its common tags included, by frequency:

56 sewing
 13 craft
 12 crafts
 11 patterns
 9 howto
 7 sewing_patterns
 5 diy
 3 sew
 2 how-to
 2 imported
 2 organization

There is no semantic link between “sewing” and “howto.” It is perfectly possible to talk about sewing without discussing how it is done and vice versa. However, collectively the tags create a verbal picture of this Web page. Unlike conventional postcoordinate indexing in which an indexer assigns descriptors from a thesaurus, in collaborative tagging users arrive at something resembling a consensus as to what is the core topic more or less inductively. In this instance, fifty-six (85 percent) of sixty-six users deemed “sewing” to be applicable, with seven using “sewing patterns” and three “sew.” These three tags are linked by their meaning—that is, they are linked semantically. Similarly “howto,” “diy,” and “how-to” suggest another cluster—possibly overlapping with “patterns” and “sewing patterns” and “craft” and “crafts.” The lack of a controlled vocabulary requires users to interpret synonyms and near-synonyms. Nevertheless, the degrees of connection between a Web page and a concept are shown more distinctly than in conventional indexing and those connections come from a group of interested individuals similar to Maron’s definition of R-about (retrieval aboutness)—a knowing community. Individual users may organize their tags into folders that imply very shallow hierarchies (“sewing” might be in a folder for “creative” for one person, “home” for another, and “hobbies” for a third). Users may also designate some tags as related to others, though, again, they cannot designate the type of relationship.

These four traces of connectedness—associative relationships, facets, FRBR, and tagging—illustrate that our existing systems are not monolithically hierarchical and are not incompatible with further connectedness.

A FUTURE FOR CONNECTEDNESS IN THE ORGANIZATION OF INFORMATION

As it stands now the organization of information generally follows a logical model and privileges hierarchical relationships, although at least a few instances of connectedness already exist. How might a larger future for connectedness develop? Returning to the characteristics drawn from the work of Gilligan and her successors, how might they be translated to apply in the case of the organization of information? The first, rejection of a universal model, is addressed simply by accepting multiple structures that might operate separately or in some complementary manner. We already accept this situation in library catalogs where we include classification, represented by notation in a hierarchical order, for the purpose of browsing for topics on library shelves and online, and subject headings, represented by words in an alphabetical order, for searching for topics in the catalog. The acceptance of a singular truth is not incompatible with accepting different ways of knowing or different systems of organizing information. The core of the connectedness model comes from its focus on relationships, its web-like structure as opposed to a pyramidal hierarchy, and its situatedness and consideration of context and experi-

ence, especially as derived from knowing communities. Finally, there is the justification for change: recognition of power as a factor in knowing, especially the imbalance of power characteristic of hierarchy. How, then, can these characteristics be applied to the organization of information? Three approaches illustrate some possibilities: enhancing browsability as compared to linear searching; focusing on nonhierarchical relationships within standards; and increasing the functionality of syntagmatic relationships within surrogates.

BROWSING OVER LINEAR SEARCHING

Enabling users to find something specific and to gather things with some common characteristic have been the usual objects of creating access points in the organization of information at least since Cutter's 1876 *Rules for a Printed Dictionary Catalog*. The searching tasks that exploit this model of the organization of information are basically linear. Catalogers or indexers lay a path to a surrogate (a catalog record, index entry, or metadata record) that represents a document and users follow that path from their queries or needs to the relevant results. It presumes a goal-oriented view of information seeking. However, as Charles Hildreth pointed out already in 1995: "We now understand that people do not think in terms of formal, boolean queries. Rather, they pick and choose as they go, and the outcome of this activity may be only a redefinition of the original information need. Modern interactive systems can support this kind of non-linear, trial and error thinking process" (Online Catalog Design Models, <http://www.ou.edu/faculty/H/Charles.R.Hildreth/clr-opac.html>). Hildreth suggests a paradigm shift to a retrieval model that focuses on browsing. Browsing seen in these terms is not just a process of searching for information. It can also be a process of gaining knowledge. The process shapes the outcomes. Evidence from Lorigo et al. (2006) supports the view that linear searching may be less used by women than by men, making this alternative particularly appropriate.

The structure of a bibliographic tool will shape the browsing process. For example, browsing up and down a hierarchy can lead one from general to specific and vice versa as shown in the examples from DDC and the UNESCO Thesaurus above. A classification hierarchy, often considered a tool for browsing, has the side effect of grouping subordinate topics next to each other (such as specific kinds of embroidery in the range from 746.442 Canvas embroidery and needlepoint to 746.447 Silk ribbon embroidery in the DDC example above). Browsing between hierarchies is not possible without references which are not normally visible to users of a classification scheme and are only available as RTs in a thesaurus or subject heading list. As noted earlier, even within thesaurus construction standards, "node labels" and specifically-developed references that indicate the type of relationship are only an option.

Though classification schemes do not currently have references where users can see them, they are available to catalogers. For example, a cataloger will see the reference in DDC from 646.2. Sewing and related operations (hierarchically under 640 Home & family management) to embroidery, “see 746.44,” but there is no mechanism for the user browsing the shelves to see the same reference. References for browsing on the shelves would be difficult (“dummy books” are an awkward possibility), but better interfaces for browsing online could easily include them. The schedules for DDC and for the Library of Congress Classification (LCC) are both available in machine-readable form. Interfaces already exist that display references in subject headings. The technical difficulties of the task should be manageable.

Even the references that do exist in thesauri and subject heading lists are not easily browsable in most current interfaces. Most indexing and abstracting databases have references only in the thesaurus or subject heading list, not in the searchable database. So users need to go back and forth between the thesaurus or subject heading list and the database to take advantage of the references. Library catalog interfaces vary in their display of the references from subject heading lists. Some include the references directly in a browsable display of headings, but many others require clicking on a link to see the references, thus removing the user from the browsable file. Fortunately, browsability can, to a significant degree, use existing data through improved technological applications to achieve a more connected, more situated result. However, nonhierarchical relationships need fuller development in the breadth of the types of relationships identified; in the frequency of their usage in standards (e.g., thesauri and subject heading lists); and in their application to achieving better browsability that is lateral as well as vertical.

NONHIERARCHICAL RELATIONSHIPS IN STANDARDS

As mentioned above, standards such as thesaurus construction guidelines privilege hierarchical relationships (BT/NT), but also include nonhierarchical relations (as RTs). The latter are more flexible in thesauri than in subject heading lists, but are still limited to certain types of relationships. Further, the thesaurus construction standard allows node labels to specify the types of relationships in a related term (RT) reference. Different types of relationships may be appropriate in different contexts. As a simple example, chronological relationships (earlier, later, and contemporaneous) are likely to be more important in a historical database than in a database of health tips. Developing ways of expanding the types of relationships and denoting them shifts the focus from hierarchical relationships to a more encompassing array of relationships.

A type of relationship that is not defined in current standards is that between a concept and its manifestation. Such a relationship is grounded

in experience rather than logic. For example, in the ERIC thesaurus the heading "Sex Bias" is defined in the scope note as "Prejudicial attitudes toward people because of their sex, including the conscious or unconscious expression of these attitudes in writing, speaking, etc." My initial reaction upon reading the scope note was to think of gender-biased language. The closest ERIC descriptor is "Sexism in Language," which has the scope note: "Forms of language that instill and perpetuate (or avoid) sex role stereotyping." Certainly, sexism in language, by these definitions, seems to be a manifestation of sex bias. Yet ERIC does not relate the two at all. A clear designation of the concept/manifestation relationship could link these two descriptors in a way that situates sex bias in the experience of sexism in language. A woman may say with all sincerity that she has not encountered sex bias in her career, but bias is unlikely to remain invisible if one thinks in terms of sexism in language, which we have all experienced.

One issue to be confronted in expanding types of relationships will be how to make them machine readable. In current MARC authority records for names and subject headings the only relationships that can be encoded specifically are: earlier heading, later heading, acronym, musical composition of a literary work, broader term, narrower term, and immediate parent body.¹⁴ If other particular types of relationships are to be displayed in references they may currently appear as notes (MARC authority field 360). These are now most typically generic *see also* references to free-floating subdivisions and groups of headings such as the reference under the LCSH "Women," which tells the user to search also under the "subdivision Women under individual wars, e.g. World War, 1939–1945—Women; also subdivision Relations with women under names of individual persons; and headings beginning with the word Women." Use of this MARC authority field could be expanded to other types of relationships between specific headings or more specific codes could be added to the subfield that defines relationships (\$w/0).¹⁵

Another mechanism for defining relationships is the scope note. Scope notes are more typically used in an effort to differentiate between headings in LCSH. An example is found under the heading "Women and religion": "Here are entered general works on the relationship between women and religion, including the involvement of women in religion. Works on the religious or devotional life of women are entered under Women—Religious life. Works on theology or religious doctrines concerning women are entered under Women—Religious aspects." It suggests a mutual exclusivity among the three headings. There are no references to link the three, only the reciprocal scope notes under each heading. The effort to distinguish among these headings implies that, while it is not easy to attain mutual exclusivity, it is important to do so. In the terms used by philosopher Nancy Jay earlier in this paper, it is a matter of A/Not-A, but

more complex. If A is “Women and religion,” then everything else, including “Women—Religious life” and “Women—Religious aspects” is Not-A. However, the characteristics of these three headings are not mutually exclusive. “Women and religion,” being the general heading, may readily be interpreted as encompassing the other two topics. Certainly how women practice religion and doctrinal views on women fit under the umbrella of “the relationship between women and religion” or, at the very least, overlap with it. And women’s religious life is unlikely to be divorced from doctrine. There is no absolute essence that defines each of these headings.

Mutual exclusivity is an even more prominent feature in classification than in subject headings, especially when it is used for determining shelf location. The DDC manual is filled with entries explaining how to decide between A and Not-A. For example, there is an entry in the DDC manual for 306 vs. 305, 909, 930-990 Social groups vs. Culture and institutions vs. History which requires establishing boundaries between the aspects of a topic (social groups) so that they can be located in different disciplines. The struggle to distinguish between social groups and culture and institutions is apparent in a change between the two latest editions of DDC. In the twenty-first edition, lesbians were classified with other groups of women. In the twenty-second edition, lesbians are classified with “lesbianism,” which is hierarchically under “sexual relations”:

- 300 Social sciences
 - 300–301 Social sciences, sociology & anthropology
 - 302–307 Specific topics in sociology and anthropology
 - 305 Social groups
 - 305.4 Women
 - 305.48 Specific kinds of women
 - 305.489 Miscellaneous groups
 - 305.4896 Women by social, economic, cultural level; special social status
 - 305.489621 Upper class women
 - 305.489622 Middle class women
 - 305.489623 Working class women
 - [305.489664] Lesbians
 - Relocated to 306.7663
 - 305.489692 Violence in women
 - 305.4896942 Homeless women
- 306 Culture and institutions
 - 306.7 Sexual relations
 - 306.76 Sexual orientation
 - 306.766 Homosexuality
 - 306.7663 Lesbianism
 - Class here lesbians [formerly 305.489664]

The result is that lesbians are defined only by their sexual relations because of the essentializing effect of hierarchical force. Two topics, lesbians as women and lesbians as gay were collapsed into one. The logic had been A/B (lesbians as gay/lesbians as women), but has changed to A/Not-A, (gay/Not-gay).¹⁶ Maintaining or expanding options rather than limiting them can offer more of the situatedness characteristic of a connected approach.

The articulation of more types of paradigmatic relationships in thesauri and subject heading lists and the presence of alternative classification numbers in different contexts, or even disciplines, offer potential for the web and the hierarchy to work together.

SYNTAGMATIC RELATIONSHIPS

Most of the relationships seen in thesauri and subject heading lists, as those in classification schemes, are limited to paradigmatic relationships. That is, they are intrinsic relationships; they do not depend on context. So "Embroidery" (unless used as an image: an "embroidered truth") is always related to "Needlework." Ferdinand de Saussure, the seminal semiotician, suggested that paradigmatic relationships belong to the relatively stable system of language. A more dynamic relationship is the syntagmatic relationship. Saussure identified it as belonging to speech (Maniez, 1988). The syntagmatic relationship is more spontaneous. It is determined by context. So a book of patterns for embroidered Christmas ornaments will have "Embroidery" and "Christmas decorations" as subject headings but the relationship between the two is only in a particular context. There is no innate relationship between embroidery and Christmas decorations. There is considerable room for expansion of this contextual relationship to enhance situatedness and connectedness.

As Jacques Maniez (1988) puts it: syntagmatic relationships "are not statements but a creative process, which produces a new compound phrase or concept (a syntagm) out of the two original words or concepts. This type of relation is *not permanent, but casual* [italics added]" (p. 133). Paradigmatic relationships are contained in controlled vocabularies. Syntagmatic relationships are represented in surrogates for bibliographic entities: catalog records, index entries, and other metadata. In these surrogates, concepts can be linked in a way compatible with the connectedness of *Women's Ways of Knowing* and related texts. Rebecca Green (1995) suggests that paradigmatic relationships are less stated than syntagmatic relationships:

Since lexical paradigmatic relationships are built into our understanding of the meanings of words, to go around affirming them for other than educational purposes risks redundancy at best and tautology at worst. When we make a statement, we are much more likely to be asserting something whose meaning and logic are not a matter of definition, something whose meaning is constructed. Such statements express syntagmatic relationships. (p. 367)

That is, when we encounter the word “poodle” we do not need to be told that it has a relationship to “dog.” However, when we encounter a concatenation of “poodle,” “smuggling,” “lace,” and “Belgium” we learn something. It opens possibilities of meaning that are represented in surrogates for bibliographic entities, not in authority files. But if we see only a list of descriptors we know nothing about the relationships. Is the lace Belgian? Are the poodles? Which, if either, is being smuggled?

The current practice of organizing information is generally paradigmatic although syntagmatic relationships are present by co-occurrence in postcoordinate indexing, requiring Boolean searching (with AND or NOT). However, co-occurrence of terms does not guarantee that they are related. For example, in a search on the descriptors “Females” (the term ERIC uses for women) and “Religion”, the results crossed a wide range of topics from “A Forum of Their Own: Rhetoric, Religion, and Female Participation in Ancient Athens” to “Imaging [in film] Women’s Spirituality.” These relationships are syntagmatic, but not explicit. Green (1995) advocates enriching the representation of syntagmatic relationships to be more specific about the nature of those relationships.

One type of syntagmatic relationship that is all but omitted is that of object/perspective. For example, in LCSH, a work taking a feminist perspective cannot express that aspect. The Library of Congress’s record for the book *Through the Kitchen Window: Women Explore the Intimate Meanings of Food and Cooking* has the subject headings:

Food.
Cookery.
Feminism.

However, the book is not *about* feminism, it is written from a feminist *perspective*. Nevertheless, if someone searches for a book about feminism this book will be retrieved. LCSH does have some broad headings such as “Feminism and literature” and “Feminism and science,” but they do no more to specify the type of relationship than do the subject headings for *Through the Kitchen Window*. One or more explicit subdivisions such as “—Feminist perspectives,” “—Feminist aspects,” or “—Feminist criticism” would solve the problem. A subject heading such as “Food—Feminist perspectives” would express the relationship in a manner compatible with LCSH structure by taking advantage of the precoordinate nature of subject headings. The same approach could be used for other perspectives: “—Psychoanalytic perspectives,” “—Postcolonial perspectives,” and so forth.

Green also notes the potential of the entity-relationship model (1995, p. 382). Because FRBR uses this model it might be expanded to reflect specific syntagmatic relationships between topics as they are linked to particular works. Certainly, the entity-relationship model is supported by the increasing use of XML and RDF for encoding.

CONCLUSION

These examples of possible approaches to increase the connectedness of the ways we organize information only touch the surface. However, they do indicate that the dominance of hierarchy and linearity is neither absolute nor insurmountable. It is possible to have the web as well as the pyramid. There are numerous additional directions that merit further exploration. The A/Not-A hierarchical duality could be circumvented through fuzzy logic by turning it into a spectrum such as is used in relevance ranking. Switching languages and metathesauri offer interfaces between standards—perhaps between a hierarchy and a web. Augmenting our traditional standards with something like cluster analysis might enhance the situatedness of syntagmatic relationships. Human-defined relationships, both paradigmatic and syntagmatic, may be ideal, but some automatic techniques akin to find-more-like-this-one functions might be developed on a more sophisticated level, perhaps with natural language processing. Mapping the complexities of relationships would add greater connectedness, even if those relationships were not named. Such an approach could lead to development of standards based on inductive rather than deductive logic.

The ideas explored in this paper and those suggested for future research are a first step in weaving new patterns and textures in our models. To bring this work to fruition will require two things. First, it will need creative work of both theory and application to develop actual tools. Second, it will require institutional will to underwrite and implement such innovations. The knowing community of librarianship has evidenced the possibility of conceptual change in the past.¹⁷ As a community we recognize our situatedness in a context of social and cultural differences. The notion of connectedness offers us one path for better serving the great diversity of knowing communities of users.

NOTES

1. For more on Aristotelian logic and hierarchy, see Olson (1999).
2. For further explanation of this and other topics in logic a useful source is Sparkes (1991).
3. See also Marjorie Hass (1998).
4. See Hass, 1998, p. 20–21; Lloyd, 1984/1991, p. 168; Code, 1991, p. 110.
5. As Code describes it (1991, p. 79+)
6. See Olson (2001c)
7. See also Weinberg (1993)
8. For a discussion of interconnectedness across disciplines see Scheman, 1993, pp. 210+.
9. A largely critical collection of commentary, *An Ethic of Care*, edited by Mary Jeanne Larrabee, appeared in 1993.
10. Much of the collection (Goldberger, Tarule, Clinchy, & Belenky, 1996) answers critiques similar to those incurred by Gilligan.
11. Accepting the correspondence theory of truth.
12. Joan Tronto (1993) addresses Gilligan's ethic of care more than she does connectedness, but she draws parallel lines suggesting that the ethical model more appropriate for women is adaptable in addressing issues of race and class as well as gender.

13. Collaborative tagging was a prevalent topic at the 2006 American Society for Information Science & Technology (ASIST) Information Architecture Summit and is embedded in the theme for the 2007 ASIST annual conference.
14. These relationships are coded in subfield \$w character position 0 in 4XX and 5XX fields in MARC authority records.
15. A parallel difficulty arises in the MARC Classification format used for LCC. It has the same mechanisms available as the MARC Authority format with the specified relations being: previous classification number, new classification number, see reference, class elsewhere reference, see also reference, and standard subdivision do-not-use reference.
16. There are also numbers for lesbians in relation to film, the arts, literature, and religion, but these numbers do not define characteristics of lesbians; they define film, the arts, etc.
17. Indeed, the changes embodied in FRBR and the first efforts at implementation are a recent example.

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