The Web and the Pyramid: Hope Olson's Vision of Connectedness in a World of Hierarchies

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Abstract: Hope Olson's mission is to analyze our traditional knowledge-representation systems from the point of view of those whose voices are not well reflected. Her focus is not only on the content of these schemes but also, and perhaps especially, on their structures. There is no structure more established than the hierarchy, and yet the hierarchy makes assumptions and imposes rules that have shaped our world view. In her 2007 *Library Trends* article, "How We Construct Subjects: A Feminist Analysis," she takes apart the the notions behind hierarchies and brings to bear feminist thinking to offer a penetrating critique followed by a careful evaluation of implications. By way of examples she explores several existing schemes: The *Dewey Decimal Classification*, thesauri, and the *Library of Congress Subject Headings* to demonstrate how there do exist ameliorating (non hierarchical) techniques, but how they do not adequately solve the problem. Having laid out the limitations of our existing tools, both in content and in structure, she suggests rewriting and restructuring our schemes so that the all-important connections are visible—a web instead of a hierarchy. The article, written almost a decade ago, continues to be prophetic of what modern approaches and ways of thinking can achieve. As such, an analysis of the article serves here as a way of explicating Hope's rich and penetrating intellectual contributions and her critical yet hopeful vision.

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1.0 Introduction

Hope Olson is what I call a vigilant scholar. She brings thoughtful analysis to longstanding assumptions, especially to those we accept as conventional wisdom. She is the one who asks her students and colleagues to question legacy information structures, and in doing so addresses the challenge of representing and opening doors for those under- and misrepresented by traditional systems and approaches. She's not alone in this, of course. There are many who can point to omissions, biases, distortions, and the well-intentioned but often wrongheaded tradeoffs and compromises made in trying to provide pathways to information. All would agree that we need structures that are both trustworthy and efficient but are also expansive, generative, and what Hope would call "caring."

Recognizing the problems, though, is not sufficient. How many times do we continue working with the systems as they exist and mentally postpone action even if we understand that our classification schemes, thesauri, and other standards are inadequate in the face of the diversity and the dynamism of human endeavor. At best, we devise workarounds and add-ons that may yield some improvement but that ultimately do not provide a framework for fundamentally doing it differently. Hope has never let such defeatism stand. Instead she has explored many domains—feminism, philosophy, classification theory, and library practice among others—in an attempt to find a conceptual lens through which to think about practical and conceptual action and to rethink our practices.

Her work covers a wide range of contributions, but in this essay, I'll use just one of her seminal papers: "How We

Construct Subjects: A Feminist Analysis" (Olson 1998) to demonstrate how she compellingly combines deep analysis with concrete examples to lay out a critique of existing knowledge structures, especially hierarchies. How might we address the failure of such structures by accepting a more holistic and connected way of approaching representation issues? Almost a decade ago, when this article was written, we were just embarking on the journey of RDA, linked data, and ubiquitous networks, and now here we are. The time seems ripe to revisit this work and put it into action, but first, let's admire the elegance of the unfolding model (Olson, 538): "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." These are the closing lines of her article, but it's also a good place to start. What is the connection between this broad vision and the dimension of feminist analysis promised in the title?

2.0 Logic and hierarchies

Hope takes a position of advocacy for those people and concepts ill served by existing tools. This includes women, but also any other constituency outside the "straight, white, male" box. She argues that our favored structures, especially hierarchies and a reverence for logic, are not suitable for doing justice to different perspectives and experiences. Thus, before addressing more specific questions, we step back to ask: Why aren't hierarchies, the most common form of knowledge organization in our legacy systems, a good solution for addressing diversity? Hope starts with a discussion of logic and the embodiment of logic in hierarchical structure. Logic drives the practice of categorical syllogism (Olson, 510): "All Greeks are human beings; all human beings are mortals; thus all Greeks are mortal." This basic structure is so familiar to us it seems to be as solid as the Law of Gravity. There is, indeed, much to like about hierarchies (Kwasnik 99):

- They follow an orderly analysis, preferably guided by thorough evidence and a theory or conceptual model to set out the rules for aggregation and differentiation.
- They reduce complexity by requiring one to pare down to elements with no fuzziness. The aim is to represent the "essence"—no more, no less.
- The requirement for mutual exclusivity means that an element can't be a member of more than one class.
- In doing so, one strives for boundaries that are crisp. Something is either "in" or "not-in." This allows for transitivity and clean paths of inference, a potentially powerful attribute for a knowledge representation structure because it allows you to come to some conclusions without complete evidence if you know where in the hierarchy the element is found. For example, you can infer that a creature is an ammonite from its fossil remains.
- One is able to navigate a hierarchy in a systematic way and adjust the granularity of the view (to more specific or general).
- A carefully designed hierarchy can reveal gaps, therefore leading to the discovery of missing knowledge.
- It can also describe regularities, leading to further heuristic conceptualization and discovery.

For all these reasons, systems designers, including librarians, love hierarchies. They build and invoke them even when the requisite conditions are not met. The foundations of many of our sciences are hierarchies and hierarchies are admired as solid, "factual," and, yes, logical. Despite these admirable qualities, Hope addresses the deficiencies in both the structure and the content of hierarchies and urges us to explore other approaches, namely networks.

2.1 What's wrong with the structure of hierarchies?

As noted above, there's nothing wrong with hierarchical structures for representing some phenomena and in some situations. The problem arises when we consider the explicit and implicit requirements of hierarchical thinking and the dilemma such thinking produces.

First, the very nature of a hierarchy posits a "top element," the concept at the apex of the pyramid. This element represents the domain being classified and is inclusive of all the sub-elements. Thus, if the top element is "mammals," then what is true of the class "mammals" is true of all the subclasses: canines, felines, and so on. The rules for class inclusion and distinction are set in advance. The structure appears to be logical, precise, and carefully bounded. We grow up with these structures and think of them as taken for granted. Aristotelean thinking posits that the world falls "naturally" into such categories, so long as we appropriately (and logically) observe and define the phenomena around us (Kwaśnik, 99). Having set up this structure, we see that the top element guides the design of the rest of the pyramid, and as Hope points out, this element is privileged; everything else is defined by it. Moreover, the sub-elements are dependent and subordinate. There is no way around this. If logic is followed, you can't just flip the elements around giving each one a turn at the top because the rules for differentiation and aggregation

are set by the "theory" of the structure, making the attributes used for class definition work in only one direction—top to bottom. You can't decide to put the "canines" on top and arrange the other elements subordinately unless you want to change the criteria by which you've divided them up in the first place.

2.2. Why is this a problem?

Well, so what? A clear hierarchy seems like a nifty plan. The problem lies in what is privileged by this structure and what is not. Hope reviews the feminist criticism and applies it to our own tools in the field of library and information science (LIS). The first problem is that in many instances the top element is by default construed as "masculine." It's not always obvious. For example (Olson, 520), the element and its subelements

The mentally ill
Mentally ill children
Mentally ill older people
Mentally ill women

seems legitimate and inclusive since it provides a class for the special concerns or experiences of mentally ill women (and others). It isn't until you notice that there is no subelement for "mentally ill men" that you see the definitive power of the top element. According to this scheme establishing a sub-element for mentally ill men would be redundant. Whatever you might say about "mentally ill men" is already incorporated into the top element, and the subelements are defined with respect to that element. Put another way, the fact that women may have a particular experience of mental illness is defined with respect to men's experience. If this were to be a gender-neutral scheme, the top element would refer to the common experiences of all mentally ill people, and the subcategories would specifically address the unique aspects of being mentally ill and old or a child or a woman or a man.

Efforts to make classifications gender neutral have often worked only at the surface level. So, using a hypothetical case, you may now have "firefighters" rather than "firemen," but then you still have a sub-element of "women firefighters" but no separate element for "men firefighters." The default, even if it is not explicitly stated, is that a firefighter is a man; the women are expressed as modifications of this, inheriting the attributes of men firefighters overall but with the recognition that some attributes about them may be different or unique.

In incorporating the feminist perspective in her critique, Hope points out that at core, logic itself is viewed as masculine. Reason and rationality, the foundations of logic, are described in exclusively masculine terms. These are contrasted as opposite to the "feminine" attributes of emotion. Traditional logic denies the value of affect and practical activities (Olson, 513). The subtle but insidious consequence is the resulting limitation of hierarchies to address any varying perspective and to ignore the importance of context. In hierarchies governed by logic, the core position is fixed. It's impossible to view the perspective from a different center (Olson, 513). As Hope puts it, the hierarchical structure enforces distinctions, but in such a way as to make one the default and everything else the exception.

3.0 Possible responses to traditional hierarchical knowledge structures

One could imagine a number of ways to position a response. For example, one could discard existing schemes and replace them with different content, that is, position the "other" perspective as the one of privilege. This might be an improvement within a narrow scope but would continue to suffer from the limitations of hierarchies in the first place: the requirement for mutual exclusivity, the necessity for precise definition using logical reasoning, and the assumptions behind a logic that places one entity at the top and all others in subordinate and dependent positions. Furthermore, this approach also requires an assumption that the feminine (or "other") perspective is essential. For instance, if one were to represent work from a feminist point of view it would be essentially different from that of work from a non-feminist point of view and that, moreover, such a view would hold true for all women. As Hope points out, the goal would be to see differences along legitimate lines of discrimination but not necessarily once and for all.

Another approach might be to remedy the existing schemes by carefully monitoring omissions and distortions and by providing additional tools for increasing the ability of these systems to represent a diversity of views. Many of our existing tools make some attempts at doing so.

3.1 Some ways our LIS systems partially address the problem

Hope's paper discusses several approaches we have adopted in softening strict, dominating hierarchical structures, none of them sufficient or totally satisfying but a start. These are facets, the RT function in thesauri, scope notes and the FRBR model.

3.1.1 Facets

The *Dewey Decimal Classification* is often offered as the quintessential hierarchical scheme: ten classes, subdivided

hierarchically by ten classes and so on. As such, the *DDC* does in fact exhibit many of the faults of hierarchies:

- Entrenchment in the original division of ten. In other words, the starting point of each hierarchical pyramid stays fixed.
- The distortion or bias towards some privileged subjects, such as Christianity, English language and literature, and Western concepts, especially in the social sciences.
- The awkwardness of fitting in concepts that span the classes and/or perspectives using criteria for association and distinction other than the ones assumed by the basic structure. For example, it's difficult to consider complex subjects, such as abortion or sexuality from the vantage point of different value systems.

It's true that the *DDC* was not invented to be a global representation and that it had the support of the literary warrant of the times. We have learned to adapt it or work around it. Even so, it has proven to be brittle for accommodating the diversity of possible perspectives even in the United States. In response, over the years, the *DDC* has made strides in enabling the representation of different subjects or aspects of subjects through the Auxiliary Tables. You can think of them as "facets" in the sense that they allow the expression of geographical and chronological detail, the subject as considered from a particular view and the combination of classes into fresh combinations that are potentially more responsive to diverse applications.

Nevertheless, these auxiliary tools do not essentially alter the basic structure (the ten classes, divided into ten, etc.) and thus preserve the limitations of hierarchies mentioned previously. The auxiliary notations are carefully controlled and must be applied in a particular order under particular conditions. This is because the *DDC* is a tool that was designed for placement of books on shelves in a "useful" order. The head term decides the placement, and the auxiliary facets then determine the subdivisions. One could imagine a different order rendering different results (Olson, 529). The scheme does not build in flexibility of mixing and matching to provide an information-retrieval environment that could, for instance, search by the facet.

What results is a system that is more expressive, but still stuck in hierarchical rigidity, where the higher level has authority and defines the rest (Olson, 515). For example, history is laid out on a timeline divided by country first, then by conflicts or reigns and terms of office. Literature is divided by language and then by genre and then by time. To implement it, we need to define what is a "country," a genre, or a language for instance and to draw neat lines. The effects of movements lie buried under these lines, as do other conceptual ecologies, such as the notion of work or family. So, it's not that you can't describe certain subjects but that it's difficult to do so and more difficult still to keep the scheme coherent. This is because to introduce different ways of looking at history, say, requires one to redraw the lines of distinction.

3.1.2 The RT function in thesauri

Thesauri comprise another type of knowledge-organization tool that suffers from the same constraints of hierarchical thinking. According to thesaurus standards, the core relationships in a thesaurus are hierarchical. Some allow the Part/Whole relationship, which nevertheless decides on what constitutes the "whole." In these relationships subjects must be articulated as unitary concepts and limit the relationship to "is-a" or "is-part-of." Thus, we see the power of the top term and the subordinate nature of the subdivisions.

Furthermore, the role of a thesaurus is to provide guidance in the standardized use of terms. This means that not only the lexical form but also the semantics must be laid out precisely. This is done by the use of scope notes (to distinguish one sense of a term from another) and by the syndetics—the structure, which acts as a way of defining terms by their place in the hierarchy.

The other relationships permitted in a thesaurus are the related terms—concepts associated with the main term in some way other than hierarchically. It is here that Hope sees promise for expanding the connectedness among subjects, because the RTs recognize that hierarchy is insufficient (Olson, 516). Hierarchy requires a strict decision about likeness and differences, while the RTs offer an alternate path of association (Olson, 514).

3.1.3 Scope notes

The *Library of Congress Subject Headings* is one of the oldest term repositories in our arsenal of tools. As a compilation of "subjects" compiled over more than a century, it has undergone many changes, including one several decades ago to make it seem more like a thesaurus, and therefore more like a hierarchy. To be fair, the *LCSH* did not set out to be a comprehensive or fully articulated "web of subjects," but that doesn't mean we cannot identify some areas that fall short in terms of providing the flexibility and expressiveness we need to represent a diverse and dynamic set of experiences, especially those of marginalized people.

To start, unlike in a classical thesaurus, the *LCSH* lists pre-coordinated terms. This means that individual concepts can be made into complex subject phrases. Prior to the use of computers this was a great service provided by librarians to help with improved specificity and efficiency, especially in subjects with many documents mapped to

them. Furthermore, the term can be modified by one or more subheadings, further adding information about different aspects of the subject such as time period, place, genre, and so on. It is thus possible in principle to take a subject and flexibly add modifiers or fuse with other topics, thereby, representing a broad array of subjects. As mentioned previously, though, the basic order and structure remain rigid. The term remains in the lead position and the subheadings are strictly regulated with respect to their order (Olson, 526). The subordinate role of the subheading stays subordinate.

There are also the subtle omissions (Olson, 520). For example, for the concept of "work," the entry reads:

> *Work:* Here are entered works on the physical or mental exertion of individuals to produce or accomplish something. Works on the collective human activities involved in the production and distribution of goods and services are entered under *Labor*.

This is an example of a scope note, meant to clarify and distinguish one sense from another. The goal of thesauri and subject heading lists is to provide such clarity and unambiguous boundaries of meaning. Under "Work," you can also find narrower-term entries for "Chores," "Manual Work," "Mental Work," and "Quality of Work Life," among others. The scope note and NTs function to preserve the attribute of mutual exclusivity required of hierarchies and to represent the conceptual structure of the various subjects. There is no term for "Unpaid Work," however (Olson, 520), and even though the term "Unpaid Work" matches the definition presented in the scope note and certainly has the mandate of literary warrant, it is excluded from this representation.

3.1.4 The FRBR model

The Functional Requirements for Bibliographic Records (FRBR) is a conceptual framework that posits multifold aspects of entities in the bibliographic universe. These include the notion of a work, that work's expression and manifestation in particular ways, and the production of physical items that are acted upon by individuals and institutions, such as being owned, stored, borrowed and so forth. In addition, one can attribute a subject to any of these aspects. The effect of a FRBR approach to analysis is that one can "see" a given entity from many non-exclusive perspectives. A work can have a subject, and the work itself can be a subject. An item can have multiple works, and each of these can have relationships with other works, people, and institutions.

Why is this notable in the framework of Hope's paper (Olson, 525)? I think it's because the FRBR way of thinking allows for a work to have significance in different ways, and that the context of that work's provenance, use, and interpretation can lead to a network of representation that goes beyond simply representing similarities and differences as expressed in traditional hierarchies.

4.0 Where does this leave us?

Having laid out the limitations of our existing tools, both in content and in structure, what does Hope suggest for the future? The best approach, she says (Olson, 522), is to rewrite and restructure our schemes so that the all-important connections are visible—a web instead of a hierarchy. We need "richer and more situated logical models" that allow for the representation of interdependence and connectedness (Olson, 514). We do not have to discard everything, nor do we have to build from scratch. Here are some of the key points to help guide us forward:

4.1. Equality of views

First and foremost, we must find ways to capture the fundamental equality of views and the willingness to accept what is valued. One is not more important than others. We can still, for instance, talk about the "female essence" but with certain shared characteristics. In other words, one is not superior and the other dependent, there is no one absolute essence that defines the privileged position (Olson, 535), nor is there one essential set of values for any one set of people.

Hierarchies and rigid structures put a distance between the "known" and the "knower." In a more connected scheme, it's possible to put yourself in the place of the object rather than maintaining this distance (Olson, 523). This means that you would not have to strip it of the context or everyday consideration that marks our lives and individual perspectives. Hierarchies aim for idealized, essential representations that are meant to endure in order to act as standards and anchor points. More interactive, dynamic representations allow for modification without being "demoted" to the status of dependent and subordinate modifiers, always defined with respect to the apex of the hierarchy.

4.2 A place in the middle: individually defined but collectively used

What about the strengths and solidity of hierarchies and controlled vocabularies, though? What about the desirability of logical, "objective" representations versus the possibly chaotic situation of limitless subjective ones? According to Hope, perhaps it's possible to find a place somewhere in the middle, where the subjects are "individually defined but collectively used" (Olson, 523). With a rejec-

tion of the universalism that strict hierarchies require (one definition, a prescribed set of distinctions, and one permitted set of relationships), we could allow multiple models to co-exist (Olson, 522).

In fact, we could allow for casual and non-permanent representations to exist, ones in which the criteria for association and discrimination are not essential in the Aristotelean perspective. Thus Christmas patterns for embroidery do not get at the "essence" of embroidery, but do in fact bring in the world of work and contextual endeavor that can't be accommodated in a strictly logical system (Olson, 536). Such a flexible approach could also help us relieve the fixation on exclusively goal-oriented design and support more exploratory approaches in which the "process shapes the outcomes (Olson 532)."

5.0 Conclusion

Certainly, modern technology will allow us to do this. It just means we have to look carefully at what we do when we apply and use systems that are taken for granted and not probed for distortions and omissions or that are barren of what makes these representations valued. It's not that they don't have the right terms, or even that they are wrong *per se*, but rather that if we persist in trying to mold the richness of our experience and interpretation into pyramids, we will be forced to mask and ignore so much. Hope calls for using webs instead.

It's always easy to find the flaws and to draw lines in the sand. It's much more difficult to think of fundamental approaches that might help leverage our legacy systems into something that nourishes us all intellectually without over-responding with solutions that would only replicate the ones with which we find fault. At this point, I'd like to offer my personal thanks, Hope, for providing me with such a graceful and, shall I say, luminous view of how to think about the issues outlined in this paper and represented in much of your work. Having taken the time to read very carefully I now appreciate the incremental contributions you've made, and how they fit together into a positive view—that of caring connectedness.

References

Kwaśnik, Barbara H. 2000. "The Role of Classification in Knowledge Representation and Discovery." *Library Trends* 48, no. 1:22-47.

Olson, Hope 2007. "How We Construct Subjects: A Feminist Analysis." *Library Trends* 56, no. 2:509-41.