Mob or Army: Metaphors for Knowledge Organization

Hope A. Olson
School of Library & Information Studies,
University of Alberta
e-mail: hope.olson@ualberta.ca

Much of western philosophy implies a notion of hierarchy. Systems for topical organization of information typically exhibit hierarchical structures. This paper will examine two schools of philosophy and two streams of organization of information to trace the influence of philosophy on the founders of our systems and their current manifestations with an emphasis on their hierarchical leanings. It will conclude with implications of such a hierarchical focus for information access in diverse, global contexts.

The Army and the Mob in Dewey and Cutter

Melvil Dewey and his *Dewey Decimal Classification* (*DDC*) show the influence of Hegel and American Hegelians while Charles Cutter and his legacy, the *Library of Congress Subject Headings* (*LCSH*), show the influence of Thomas Reid and the Scottish common sense philosophers. Both Dewey and Cutter, the two "fathers" of modern cataloguing practice, used the metaphor of an army to justify their imposition of a hierarchical structure to order the chaotic mob of information.

Dewey was particularly dramatic in his use of the mob/army metaphor. He asserted (in his "simplified speling") that:

> A larj business or work unclasifyd or uncharted is not a worthy organization but **mere material** from which a **clever brain** may construct one. It differs in efficiency from the ideal **as a mob of men differs from a wel disciplind army**. Piles of brik and mortar ar not a templ any more than heaps of typ ar Shakspere's works, tho if 'clasifyd' and set, each in ryt relation to the rest, the transformation is bro't about. (Dewey 1932, hereafter *DDC13*, 44)

Dewey viewed information as a chaotic jumble needing order. He used a variety of metaphors to bring home this point. Taking exam-

ples from business, the military, religion and literature, Dewey indicated that classification, broadly conceived, is necessary for overcoming chaos. In each instance, Dewey offered only two choices: mob or army, bricks or a building, miscellaneous words or a masterpiece. Order, in Dewey's view, comes from "a clever brain"—which I will interpret to mean one that employs logic.

Charles Cutter, on the other hand, was not creating a classification. He was creating a dictionary catalogue to assign names to information. The chaos addressed by Cutter comes from the alphabet rather than from a mob of raw material. Cutter wanted to change the mob for an army, absurdity for logic:

> The dictionary catalog sets out with another object and a different method [than the classified catalog], but having attained that object—facility of reference—is at liberty to try to secure some of the advantages of classification and system in its own way. Its subject-entries, individual, general, limited, extensive, **thrown together without any logical arrangement, in most absurd proximity**—*Abscess* followed by *Absenteeism* and that by *Absolution*, *Clubfoot* next to *Clubs*, and *Communion* to *Communism*, while *Bibliography* and *Literary history*, *Christianity* and *Theology*, are separated by half the length of the catalogue—are **a mass of utterly disconnected particles** without any relation to one another, each useful in itself but only by itself. But by a **well-devised network of cross-references the mob becomes an army**, of which each part is capable of assisting many other parts. The effective **force** of the catalog is immensely increased. (Cutter 1904, 79)

As with Dewey, the choice that Cutter offered is a limiting duality. Either the catalogue can be made up of individuals (a mob of individuals) or it can be a highly restrictive structure (an army). No other options were considered. Cutter identified two options for a structure: the logical and the absurd. The absurd juxtapositions of alphabetical structure are like a mob. A logical structure, however, creates an order as efficient as that of an army. Cutter's implied presumption is that there are only these two options: logic or ab-

surdity, the army or the mob. His acceptance of this dualism led him to adopt a hierarchical structure for his universal language. The structure that Cutter devises to arrange entries so that they may be easily found is a hierarchical structure linked by cross-references.

G.W.F. Hegel has been specifically linked to Dewey. Dewey's philosophical mentor at Amherst College, Julius Seelye, was a follower of Hegel (Wayne A. Wiegand, e-mail message to the author, 7 April 1998) and William T. Harris, whose St. Louis Public School Library's classification was a basis for *DDC* (Wiegand 1996, 23), was a leader of the American, or St. Louis, Hegelians, publisher of their *Journal of Speculative Philosophy*, and wrote a book explicating Hegel's logic (Harris 1895).

Hegel's system of logic implies hierarchy. He defined three quantitative "moments": individual, particular and universal in increasing order of generality. Each of these moments characterizes an element in each figure of the three syllogisms Hegel proposed in his system of logic. As an example, the first is the commonly identified syllogism:

> All P are U All men are mortal
> I is P Gaius is a man
> ∴ I is U ∴ Gaius is mortal

It links the individual instance of Gaius to the universal notion of mortality via the particular category of "man." Were one to draw a Venn diagram, mortal creatures would be a large set containing the set of "men" which would contain the point that is Gaius. This syllogism follows the pattern of deductive logic in which a conclusion is inferred from accepted premises. Hegel used the whole/part or genus/species hierarchy of universal/particular/individual to structure the inference.

The three syllogisms that he proposes in his system also include an inductive syllogism as a subclass of his syllogism of allness. The inductive syllogism follows the pattern:

> $I_1, I_2, I_3, ... I_n$ are P Gaius *et al* are mortal
> All P include $I_1, I_2, I_3, ... I_n$ All men include Gaius *et al*
> ∴ P are U ∴ Men are mortal

The operation of induction, like the deduction of the first syllogism, rests on a hierarchy. But in the inductive syllogism it is a hierarchy in which the individual instances are the evidence that implies the link between the particular and the universal. In either instance, the three moments—individual, particular, universal—relate to each other via hierarchical genus-species or whole-part relationships. "Everything is a *syllogism*, a universal that through particularity is united with individuality ... " (Hegel 1969, 669).

Hegel built on the three moments of definition through a second process, division. Harris interpreted Hegel's "division" as "classification": "Classification is a synthetic operation in which is expressed the necessary relation of all the determinations of the universal. The contents are exhibited exhaustively." (Harris 1895, 394) Or as Hegel put it: "The universal must *particularize* itself; ... the individual content of cognition ascends through particularity to the extreme of universality ... " (Hegel 1969, 800).[1]

The dialectic to which this cognitive technique contributes is a method that proceeds through stages to an absolute. "The dialectic is no infinite progress, but it brings us to a final category ... " (Harris 1895, 402). Hence, the pinnacle of the logical progression that depends on the link of individual, particular and universal is an absolute idea or absolute knowledge.

Dewey created his hierarchical arrangement by gathering like entities in a structure that progresses through ranks of relationships between things:

> The field of knowlej is divided into 9 main **clases**, numberd 1 to 9, and cyclopedias, periodicals etc. so jeneral as to belong to *none* of these **clases** ar markt 0 (naught) and form a 10th **clas**; e.g. **clas** 1 is library of Filosofy; **clas** 5, library of Syence; **clas** 9, History, etc. These **special clases** or libraries ar then considerd independently, and each is separated again into 9 **special divisions** of the main subject, numberd 1 to 9, as wer the **clases**, jeneral works belonging to *no* **division** having 0 for their **division** number. Thus 59 is **division** 9 (Zoolojy) of **clas** 5 (Syence). A 3d

division is then made by **separating** each of these **divisions** into 10 **sections**, numberd in same way with 0 and the 9 dijits; and this decimal **subdivision** is repeated, til it secures as many **subsections** as may be needed in any topic. Thus 513 is **section** 3 (Jeometry) of **division** 1 (Mathematics) of **clas** 5 (Pure syence). (*DDC13*, 15)

Dewey's use of classes, divisions and sections recalls the hierarchy of an army (indeed, his tens and hundreds recall the Roman army). The *Oxford English Dictionary* defines them as:

class ... A **division** or order of society according to status; a **rank** or grade of society. ... A **division** of things according to grade or quality, as high or low, first, second, etc. ...

division ... The action of dividing or state of being divided into parts or branches; partition, severance. ... The fact of being divided in opinion, sentiment, or interest; disagreement, variance, **dissension, discord**; ... **classification**; ... A portion of an **army** or fleet, ...

section ... A part separated or divided off from the remainder ... *Mil.* A fourth part of a company. ...

Each differentiation of the hierarchical arrangement compounds the separation of classes, dividing like from like as more levels are added in a chain of facets like a chain of command. Instead of the chaos of a mob, Dewey introduced the rigidity of an army. "Thus all books on any givn subject stand together, and no aditions or chanjes ever separate them" (*DDC13*, 22).

In fact, one of the problems that Dewey addressed was the inflexibility of everything being in its place if that place was a specific position on a library shelf. His hierarchical arrangement had another attribute of an army:

In relativ location it is like finding a soldier if yu know his army, division, rejiment and cumpany. If John Smith is 3d man in 2d row of Cumpany B, rejiment 69, 4th division, whether the rejiment is in camp, on

> parade or on march, his place is not determind by the
> bit of ground on which he stands, but by his relation
> to the rest of the army. If soldiers ar ded and in the
> cemetery they ar as eazily found by fixt as by relativ
> location. But if the army is alive and militant, as every
> library or private working colection o't to be, its re-
> sources shud be *findabl* whether in camp, on march
> or in action. (*DDC13*, 22)

Having lived through both the American Civil War and the First
World War by the time these words were published in the last edi-
tion of *DDC* during his lifetime, it is stunning that Dewey links his
classification to the living soldiers as opposed to the dead. He will
have been familiar with the image of mass cemeteries of both wars
in which individuals were named on row upon row of white crosses.
However, his living soldiers are "in camp, on parade or on march,"
not in battle where even decimal systems cannot overcome chaos.

Charles Cutter's use of the mob *vs* army metaphor is present in his
generally-cited 1904 edition of the *Rules for a Dictionary Catalogue*.
Cutter's educational and social contexts relfected the American ver-
sion of the Scottish common sense philosophical tradition (Miksa 1977,
32-34; Miksa 1983, 40). As a student at Harvard, a Unitarian and a
member of Boston's intelligentsia, Cutter was exposed to the ideas of
Scottish philosophers such as Thomas Reid and Dugald Stewart, espe-
cially through the interpretation of Ezra Abbot, assistant librarian
and chief cataloguer at Harvard at the time (Miksa 1977, 19).

The Scottish common sense school began as a reaction to David
Hume's scepticism which Reid described as "absurd" (1997, 32) just
as Cutter describes the mob as analogous to absurdity. Philosophy
had built up to such a level of esoteric argument that Reid found its
artificiality more than he could bear. Further, Reid suggested that
common sense should be the measure of sound philosophy and that
its opposite is absurdity:

> If there are certain principles, as I think there are,
> which the constitution of our nature leads us to be-
> lieve, and which we are under a necessity to take for
> granted in the common concerns of life, without
> being able to give a reason for them; these are what

I call the principles of common sense; and what is
manifestly contrary to them, is what we call absurd.
(Reid 1997, 33)

In the service of common sense, Reid endorses inductive reasoning
(Marcil-Lacoste 1982, 149-150). Induction consists of drawing generali-
zations from specific instances. As described above in relation to the
second syllogism of Hegel's, induction depends upon a whole-part or
genus-species hierarchical relationship between concept and evidence.

Cutter is following just such a pattern when he creates a structure
he calls "syndetic" to achieve a hierarchical arrangement in the dic-
tionary catalogue. His definition belies the primacy he gives to hier-
archical relationships:

> *Syndetic*, connective, applied to that kind of diction-
> ary catalog which **binds its entries together by
> means of cross-references so as to form a whole,**
> the references being made from the most compre-
> hensive subject to those of the next **lower** degree of
> comprehensiveness, and from each of these to their
> **subordinate** subjects, and vice versa. These cross-
> references correspond to and are a good substitute
> for the arrangement in a systematic catalog. Refer-
> ences are also made in the syndetic catalog to illus-
> trative and coördinate subjects, and, if it is perfect,
> from specific to general subjects. (§§ 187-188.) (Cut-
> ter 1904, 23)

Only as an aside in the last sentence of his definition does he men-
tion the possibility of relationships other than hierarchical ones. He
imposes a hierarchy on the chaos of language as if it had no order
already. He rejects the structure of the alphabet and, instead, chooses
the only other option he sees.

Although Berwick Sayers said that for Dewey and Cutter
"classificatory practice forged ahead of theory" (1967, 43) it seems
that they did draw at least the hierarchical aspect of their practice
from the prevailing philosophies of their day. Their armies of infor-
mation reflected a western philosophical tradition which they de-
rived from two quite different schools of thought. Reid and the

Scottish common sense tradition were interested mainly in theories of perception. Hegel and the American Hegelians espoused a system of dialectical progress toward an absolute knowledge or ideal. However, both perspectives offered the structure of hierarchy.

Legacy of a Metaphor

The standards which follow from Cutter's and Dewey's work reflect the hierarchical structures of the army. The *Dewey Decimal Classification (DDC)* and the *Library of Congress Subject Headings (LCSH)* are their legacy. This section will demonstrate that these structures are as arbitrary as the alphabetical proximities that concern Cutter. These structures privilege hierarchical relationships over all other types of relationships. They also embody a rigidity that inhibits *LCSH* and *DDC* in their ability to adapt to changing contexts.

The hierarchical nature of *DDC* is still as Dewey described it. In the introduction to the current edition there is an explanation of *DDC*'s "principle of hierarchy" manifested in both the structure and notation of the classification. "*Structural hierarchy* means that all topics (aside from the ten main classes) are subordinate to and part of all the broader topics above it" (Mitchell 1996, hereafter *DDC21*, xxxiii). This arrangement is a clear indication of classification as an inductive tool. If one is to use the lower levels of the hierarchy as evidence of the generalization then it is imperative that those lower levels carry the characteristics of the generalities they represent.

The introduction also points out that: "The corollary is also true: whatever is true of the whole is true of the parts. This important concept is sometimes called *hierarchical force*. Any note regarding the nature of a class holds true for all the subordinate classes, ..." (*DDC21*, xxxiii-xxxiv). As a result, the hierarchy shapes the topics in it as Hegel's universal shapes the individual through the particular. The multitude of commonalities that offer possibilities for classification are represented in the rigidity of a chain of facets rather than as they might relate in different ways.[2] The rejection of relationships other than hierarchical ones is apparent in the need to instruct classifiers in handling them. If, for example, a document has more than one subject in the same discipline:

> Class a work dealing with interrelated subjects with the subject that is being acted upon. This is called the *rule of application*, and takes precedence over any other rule. For instance, class an analytical work dealing with Shakespeare's influence on Keats with Keats. (*DDC21*, xxxvi)

There is not a way to represent the relationship between Shakespeare and Keats as there is to represent the relationship between dogs and poodles. Of all of the non-hierarchical relationships possible, the best that *DDC* can do is to offer a "table of last resort" for deciding which of the dismembered aspects of an unrepresentable topic one should choose to represent (*DDC21*, xxxviii).

A similar situation holds for the *Library of Congress Subject Headings* (*LCSH*). In assigning subject headings the cataloguer is instructed in the *Subject Cataloging Manual: Subject Headings* to assign the most specific heading available (Library of Congress 1996, hereafter *SCM:SH*, H 180, 2). The cataloguer finds this specific heading by following the reference structure of NARROWER TERMS (NT) down the hierarchy as far as it applies. Given the hierarchical structure of *LCSH* this dictum is logical. However, it presumes that all headings and, therefore, topics fit neatly into hierarchies. If they do not fit, then the cataloguer will be led astray by the NT references. This rule also presumes that all cataloguers think in the same hierarchies.

The construction of the hierarchical NT/BT (BROADER TERM) references is governed by strict rules. Three types of hierarchical relationships require references: genus/species, whole/part and instance (*SCM:SH* H 370, 1). Further, all headings are required to have a BT unless they fall into one of five categories of "orphans" (*SCM:SH* H 370, 3-4). It is, perhaps, a manifestation of family relations in our culture that parents or lack of them should serve as a hierarchical metaphor. Another telling instruction for showing hierarchical relationships requires that an intermediate heading be established if needed to fill a hierarchical gap created by a new heading (*SCM:SH* H 370, 5). This requirement avoids unnecessary "orphans" by making certain that all headings in a hierarchy have a BT without jumping the chain of command. What is interesting about this rule is that *LCSH*

operates on the basis of literary warrant which requires that a subject heading be established "for a topic that represents a discrete, identifiable concept when it is first encountered in a work being cataloguing, ..." (*SCM:SH* H 187, 1). Headings are not to be created for new topics not yet identifiable and topics for which there is not consensus on terminology. It is surprising to find, in the context of rules governing the creation of references, a clear contravention of this principle of literary warrant. It is another indication of the primacy of hierarchy in subject access.

Another reinforcement of the hierarchy comes in the rules for creating associative references (RELATED TERMS—RT) representing all non-hierarchical relationships. RTs are to be minimized "to focus emphasis on hierarchical references" (*SCM:SH* H 370, 10). There are only three instances in which associative references are allowed: linking overlapping terms, linking a discipline with its object of study and linking a person with their field. However, RTs may be made for these relationships only if they do not: begin with the same word stem, have a broader term in common or have broader terms that are already associatively linked (*SCM:SH* H 370, 10-11).

The requirements for making hierarchical references, the overriding of literary warrant and the minimizing of associative references for the stated purpose of focussing on the hierarchical leave no doubt about the intended structure of *LCSH*. It is as unrepentantly hierarchical as *DDC*.

Cultural Implications of Choosing the Army

The choice that both Dewey and Cutter made was clearly the army rather than the mob. The idea that it was a binary choice is one of the problems we continue to confront. Another is that the army represents a particular type of regimented, circumscribed, hierarchical organization. The final section of this paper will discuss the implications of this choice for the library as a cultural institution in a diverse society.

The hierarchical structure that we adopt as the framework for our syndetic structures seems intuitive to us, but may be alien to other

cultures. Jacques Derrida has deconstructed the "universal" application of Hegel's system by illustrating its western European cultural bias:

> Hegel recognizes the difficulty: to speak of the African all our "categories" would have to be abandoned, and yet they always intervene "surreptitiously." This precaution taken, the discourse of *Reason in History* marches off: Africa "proper" has no history "properly so called." The Negro has come to neither consciousness properly so called nor objectivity properly so called, is a man who does not distinguish "between himself as an individual and his essential universality," is a man in "his immediate existence," "a savage," "man ... in a state of savagery and barbarism." (Derrida 1986, 207)

Hegel's historical schema was disrupted by inclusion of a culture not western European in basis. Derrida interprets Hegel as suppressing the translation of Africa into the discourse of western European culture (Spivak 1995, 172).

Western systems of logic dictate a hierarchical relationship between men and women and between white men and people of colour (Trinh 1989, 28). The primacy of white men reflects the hierarchical conceptions of these systems which are not necessairly present in other cultures. For example, Native North American cultures have developed a more holistic philosophy that sees people and other entities as part of a circle of life, each contributing to and valued as an essential part of that circle (Allen 1992, 59).

The linearity (up or down) implied by hierarchy suggests, as Hegel does, a teleological focus on progress even if it requires violence. For Hegel, war was the necessary means for a people to become free as a synthesis of the dialectic of family and bourgeois society into the State (Derrida 1986, 101). "In the *practical* war between singular forces, the injuries must bring about actual [*effectives*] expropriations. They must wrest from the other the disposition of its own body, its language, must literally dislodge the other from its possessions" (Derrida 1986, 137-8). That is, language, the means of representation, is taken from the loser. The war establishes the identity of the winner and the loser is left with no culturally-suited means of expression.

Does this happen with *DDC* and *LCSH?* The culturally-bound nature of their hierarchical structures certainly lends itself to a systemic discrimination to which we are easily oblivious. It is difficult to perceive the constructions that appear natural in one's own society. However, like the army, those constructions are orderly, effective and potentially violent.

End Notes

1. This pattern is identical to Berwick Sayers's description of how traditional classifications are structured: "The major principle originally expounded was that classification should start with knowledge in its totality and divide it up into classes ... the idea of starting with large subject fields and dividing them up, using one characteristic at a time, so that eventually they had attempted to list all departments of knowledge in a systematic sequence moving, from the very general to the highly specialised, in a series of regulated steps" (Sayers 1967, 43-44).

2. For examples see Olson & Ward 1997.

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