inside this issue:
Value as Calculation
Demonstrating Value and Return-on-Investment
Communicating the Value of the Special Library
Happiness is Taxonomy: Four Structures for Snoopy
Happiness Is Taxonomy:
Four Structures for Snoopy

By Katherine Bertolucci

Katherine Bertolucci is taxonomy and information management consultant for Isis Information Services of Phoenix, Arizona. She can be reached at isisinform@aol.com.
Linnaeus, Dewey, and Modern Classification

AS INFORMATION ACCESS BECOMES INCREASINGLY VIRTUAL, LIBRARIANS AND information managers are creating new gateways to knowledge. One of these gateways is taxonomy, a technique that organizes information into hierarchical categories. In my practice as an information management consultant, I have built taxonomies that are used for filing systems, libraries, intranets, and Snoopy dolls. This experience gives me insights into the art of category creation that may be useful to anyone attempting to build or understand taxonomy.

Linnaeus

Many of you first heard the word “taxonomy” in junior high science class when you studied Linnaeus and biologic nomenclature. The word originated with the Greek word *taxis*, meaning “to arrange,” and is related to similar arrangement words like taxidermy. The other “tax” word comes from a Latin verb *taxare*, meaning “to collect money,” and is linked to such collecting devices as taxicabs.

In the 18th century, Linnaeus arranged all known living things into a hierarchy. Figure 1 shows where dogs fit into the Animalia hierarchy, as identified in the Integrated Taxonomic Information System (ITIS, www.itis.usda.gov). It’s a straight drill down from the Animal Kingdom to the species *Canis familiaris*. For domesticated animals, biology taxonomists rely on categories from animal breeding associations. So I added two facets from the American Kennel Club, “Hounds” and “Beagles,” leading us directly to that most articulate and philosophical dog, Snoopy.

Linnaeus’s straightforward structure continues to serve life scientists after two centuries of development. The whole Animalia taxonomy offers valuable information about the natural relationships of animals. It shows exactly where an organism sits in the vast complexity of life. Snoopy’s extended family of coyotes and wolves lives one step above in the genus *Canis*. Foxes are added at the next step in the family Canidae.

Because the Linnaean taxonomy must be scientifically accurate, it must also be flexible. If a new scientific discovery changes our knowledge of life, that change is reflected by taxonomic revision. However, one important grouping remains the same: In 1758, Linnaeus placed humans and apes together in the Primate order, 73 years before Charles Darwin sailed to the Galapagos on the HMS *Beagle*.

Dewey and the Library of Congress

The late 19th and early 20th centuries were a hotbed of intellectual activity for library categorizers. First Melvil Dewey developed his decimal system. Then the Library of Congress (LC) adapted Charles Ammi Cutter’s alphanumeric system for its collection. Dewey, the only librarian popularly known for librarianship, had a healthy ego and placed information science at the very beginning of his classifications. The librarians at LC followed Cutter and relegated their profession to the back of their own bus, in the Zs.

These two systems became the primary classifications accepted by the library community. I was once chastised at an SLA meeting for daring to design my own systems, and library schools that mainly train people for public and academic institutions reinforce this idea. In addition, LC provides cataloging and call numbers for almost every book commercially published in the United States and quite a few international publications. This is a seductive strategy for libraries that have little money and little time.

These two systems contain drawbacks for special libraries. Let’s see how they treat Snoopy. I’ll be using Dewey for this exercise. Dewey has an index, which facilitates classification analysis. In addition, LC is a larger system, and we have space considerations here. However, other than length, call number building, and self-esteem, there is not much difference in the two theories. Figure 2 shows selected Dewey classifications for Snoopy, beagles, dogs, and animals (Melvil Dewey. *Dewey Decimal Classification and Relative Index*. 21st ed. Edited by Joan S. Mitchell, *et al.* Albany, NY: OCLC Online Computer Library Center, 1996). The call numbers are removed to emphasize hierarchy rather than notation. There are 234 categories.

Both Dewey and LC are designed to describe the whole of human knowledge. For historic reasons, they do this
from the perspective of an educated white male in 19th century America. This perspective presents some problems if your specialty is Snoopy. In “Generalities,” newspaper cartoon strips are filed away under “Miscellaneous information, advice, amusement.” However, a collection of Charles Schulz cartoons would be shelved way over in “The Arts → Drawing and decorative arts,” thereby separating two almost equal subjects by a very wide distance.

The generic vocabulary required to describe all of human knowledge is also problematic for specialists. In “The Arts → Standard subdivisions of fine and decorative arts and iconography,” there are five synonyms for miscellaneous before we get to a real subject. Then it’s another six facets to get to the dogs.

In a specialized collection, this lack of precision can be unintentionally whimsical. For example, beagles are well known for their baying. Snoopy has been known to indulge in it on occasion. In “Natural Sciences and Mathematics → Zoological Sciences → Specific topics in natural history of animals → Behavior → Communication,” Dewey terms this “Acoustical communication.” Up in “Natural Sciences and Mathematics → Life Sciences → Specific physiological systems in animals, regional histology and physiology → Musculoskeletal system,” the animals are doing the locomotion.

According to Linnaeus, mammals are a subset of vertebrates, but Dewey has both at the same level. “Zoological Sciences” and “Life Sciences” also share a facet level, as do “Canoidea” and “Canidae.” The error is repeated throughout the system, because subordinate topics can either appear as the next facet or as the next line in the same facet. If you don’t already know the subject, this method creates confusion about subject relationships. Incidentally, the word “Canoidea” does not appear in the ITIS taxonomy.

In areas where they do get the hierarchy straight, many libraries use abbreviated call numbers. There is a separate category for beagles in “Technology (Applied Sciences) → Agriculture → Animal husbandry → Dogs → Specific breeds and groups of dogs → Sporting dogs, hounds, terriers → Hounds,” but a library might only categorize as far as hounds, which scatters beagles among bloodhounds and foxhounds and all the rest of the hounds.

At this facet level, LC prefers alphabetical order, creating arrangements like “Cats, wild, . . . Dogs, . . . European wildcat” (LC Subject Cataloging Division, Classification, Class Q, Science. Washington, DC: LC, 1989, p. 438). In the LC schedule for American history (LC Cataloging Policy and Support Office. Library of Congress Classification, E-F, History, American. Washington, DC: LC Cataloging Distribution Service, 1995, p. 34), all the U.S. presidents are arranged chronologically. Then all the First Ladies are in a separate chronology, and then all the First Pets, including FDR’s Scottish terrier Fala and LBJ’s beagles Him and Her, famous for their puller ears.

Americans grew up with these systems, and their perception of librarianship is formed at this interaction. The subliminal message is that LC is not sophisticated enough to separate the cats from the dogs or to keep the family together. On the other hand, Dewey’s categories are false, and the librarians don’t know the difference between beagles and bloodhounds.
Patrons who want to use classification as a gateway to the collection are highly discouraged. At my local major urban public library, the reference collection has the penultimate version of the Dewey schedule. The most recent edition is backstage in the cataloging department. Another public library did not have a copy immediately available for telephone reference.

At my local major public university, I was directed to LC schedules in the main reference collection, where the edition for American history was current through Eisenhower. Fortunately the catalogers allowed me to use their more contemporary versions.

At my not-so-local library school, the LC schedules are not in reference. However, current editions are circulated. The volume I needed was checked out. No patrons, not even library school students, get access to the full online version of the LC schedules. According to a reference librarian in another library, “That’s a cataloging tool.”

Of course, we all know that patrons don’t look at the classification schedules. These systems are not intended to be points of access; they are designed to build call numbers. However, in the virtual world of information, we don’t need call numbers anymore. Now we do an online search and sift through thousands of hits. In 1994, Jerry Yang and David Filo designed a subject hierarchy for websites. They called it Yahoo. It became one of the most popular Internet resources and a model for the other search engines that now offer categories in addition to searching. One of the differences between libraries and the Internet is that Internet patrons are allowed to use the classification system to find information.

Dewey from Snoopy’s Perspective

I redesigned the Dewey hierarchy to create a more usable taxonomy for Snoopy, beagles, and dogs. Figure 3 holds the same information as the Dewey classifications—all I did was rearrange and streamline the categories and change the vocabulary. Instead of 234 categories, there are now 50. The original Dewey has up to 14 facets leading to a single subject; in the new, improved version, maximum drilldown is four. “Acoustical communication” is now “Baying,” “Locomotion” is now “Dancing.” It’s for Snoopy, after all.

Okay, I’m not really being fair here. Dewey and LC have to be general with lots of categories to fit everything in. Obviously a system that’s designed for one subject can have fewer and more precise categories, but all of human knowledge cannot be organized from the viewpoint of a dog.

Perhaps not, but all of dog knowledge can certainly be organized from the viewpoint of a dog expert. This new version reflects the way a beagle expert thinks, using pre-cise language and appropriate groupings. That means the client can actually use this taxonomy as an entry into the information system.

Remember, this new version is based entirely on Dewey. I did not add any topics. So the revision is more remarkable for what it lacks. First and foremost, there is no category for our main guy, Snoopy. Certainly we cannot expect Dewey or LC to have a category for every cartoon character. On the other hand, if the main topic is Snoopy and he’s paying the bills, it might be nice to include him in the hierarchy.

There are other topics that one might expect in a detailed study of beagles. These dogs are often trained and shown in packs, yet there is no specific facet for packs in the 234-line hierarchy. There is also no clear place for the beagle as hunter. In Dewey, information about hunting with beagles is placed with all the other general beagle books. This is unacceptable in a collection whose primary topic is beagles.

Of course, the subject headings and call numbers in the Dewey catalog explain exactly where the beagle-hunting book is shelved, so it’s all right to hide it among the rest of the hound books. Unfortunately, in a collection devoted to beagles, all the subject headings would begin with five words: animals, beagles, dogs, kennels, and veterinary (LC Cataloging Policy and Support Office. Subject Headings. 25th ed. Washington, DC: LC Cataloging Distribution Service, 2002). The important stuff in the subject headings would be secondary to these five words. Genetics would appear as “Animals—Genetics,” “Beagles—Genetics,” and “Dogs—Genetics.” We can assume that a beagle researcher using a collection of beagle materials already knows that the main subject is beagles. So, for a beagle expert, standard library subject headings are a hindrance to information access.

Semantics and ontology come into play here also. Word selection and structural relationships affect the value of taxonomy. Even such standard devices as alphabetical order can be used in this regard. For example, there is great concern about the use of beagles in laboratory experiments. This issue is included as “Beagles → Status → Laboratory Beagles.” However, there are also categories dealing with the treatment of animals in general. If my client is an activist organization, I might place the provocative phrase, “Animal Rights” at the front of the structure. However, if my client is uncomfortable with such politically charged terminology, “Ethics” could be used, with additional structural advantage. The two major categories of “Beagles” and “Dogs” are now together at the beginning of the taxonomy, and the two peripheral categories of “Ethics” and “Hunting” are also together but farther along in the structure.
This method of custom designing taxonomies specifically for clients, using their terminology and their preferences, creates systems that invite use by offering an efficient and enjoyable information-gathering experience.

**Determined Productions Taxonomy**

When I worked for Determined Productions in San Francisco, I developed this type of taxonomy for Snoopy. Determined had the major licensing agreement with Charles Schulz to produce Peanuts and Snoopy items. They also served as intermediary between the Schulz enterprise and other licensees. For example, a T-shirt company, such as J.G. Hook, might work with Determined to develop prototypes and then would submit samples for approval. These samples, along with many other collected items, were often used to generate new ideas for other products.

In addition, Determined ran a small mail order business for its manufactured products. The taxonomy served two purposes: the first was to store and retrieve

![Figure 2 — Snoopy, Beagles, Dogs, and Animals in the Dewey Hierarchy](image)

- **Generalities**
  - Documentary media, educational media, news media; journalism; publishing
  - Journalism
  - Features and special topics
  - Miscellaneous information, advice, amusement

- **Philosophy, paranormal phenomena, psychology**
  - Comparative psychology
  - Animals
  - Comparative conscious mental processes and intelligence of animals
  - Comparative subconscious and altered states and processes of animals

- **Ethics (Moral philosophy)**
  - Other ethical norms
  - Treatment of animals
  - Experimentation on animals

- **Social Sciences**
  - Law
    - Labor, social service, education, cultural law
    - Specific subjects in labor, social service, education, cultural law
    - Miscellaneous social problems and services
    - Veterinary public health
  - Property
    - Government control and regulation of specific kinds of land and natural resources
    - Other natural resources
    - Biological resources
    - Animals
      - Game animals
      - Vertebrates
      - Mammals
      - Miscellaneous orders of Eutheria (placental mammals)
      - Lagomorpha
      - Lepus
  - Public administration and military science
    - Specific fields of public administration
    - Administration of culture and related activities
    - Recreation
  - Social problems and services; associations
    - Other social problems and services
    - Environmental problems
    - Pest control
    - Customs, etiquette, folklore
    - Folklore
    - Folk literature
    - Tales and lore of plants and animals
    - Animals
      - Real animals
      - Vertebrates
      - Mammals
        - Carnivora. Fissipedia (Land carnivores)
        - Fissipedia (Land carnivores)
        - Canoidea
        - Canidae (Dog family)
        - Canis
a wide variety of products that might be required for the development of new ideas; the second was to warehouse mail-order stock.

Determined is a family company, and it changed its focus after I worked there in the 1980s. It now represents licensing companies and manufactures corporate premiums. So the original Snoopy taxonomy suffered the fate of many electronic resources by evaporating into the virtual ether. It was built on a superceded platform with a superceded database and is a classic victim of the lack of digital preservation.* Therefore, in figure 4, I have recreated the taxonomy, using my memory as jogged by two guides to Peanuts collectibles: *Peanuts, The Home Collection: A Collector's Guide to Identification and Value* by Freddi Karin Margolin (Antique Trader Books, Iola, Wisconsin, 1999) and *Peanuts Collectibles: Identification and Value Guide* by Andrea Podley and Derrick Bang (Collector Books, Paducah, Kentucky, 2000).

*This is a paraphrased example of a chart or table. Since the chart or table is not provided in the image, it cannot be accurately transcribed or represented in the natural text format.*
The art of taxonomy is in discovering the client’s individual methods of interacting with information and combining this with the material’s unique characteristics. Almost every line in the Determined taxonomy represents a decision based on the needs of the client and the requirements of the information. In this case, the primary users were Connie Boucher and Jim Young, the founders of Determined Productions. They first published the classic Charles Schulz book *Happiness Is a Warm Puppy* in 1962. My task was to organize their collection of Peanuts and Snoopy products so that a given item could be delivered instantly for art meetings in progress. A secondary organizational issue was the mail-order business. This stock took up more space but was not necessarily more important and could also be called upon for art meetings.

We could not use stock numbers exclusively, because the non-Determined samples had different kinds of numbers, and the artists were not going to ask for anything by number anyway. A request by number, such as a mail-order form, would also have the product’s title.

One obvious organizing method would be to place the Determined products in one area, so mail-orders could be collected from one place. I didn’t do that. We had plenty of time to fill those orders and only a few minutes to fulfill the artistic requests. Better to do a little hiking for the mail-order and get samples to the artists quickly.

I designed a classified structure that placed similar items together. For example, T-shirts were in the clothing section. In general, all the Determined products were shelved separately, and the samples, such as those from J.C. Hook, were adjacent. When Connie and Jim asked for T-shirts, they were swiftly gathered and delivered to the meeting.

In figure 4, there are separate sections for dolls and plush. Logically, the plush version of Snoopy is a doll; however, in the gift business, “plush” is its own technical term. The plush products at Determined were a major part of the line and tended to overwhelm the smaller “Dolls” section, so a separate “Plush” section was created.

As in the “Animal Rights” example, here alphabetical order promotes organizational goals. The “Plush → Couturiers” area contained original fashions created for Snoopy and his sister Belle by prominent designers. These were sewn for a Parisian museum exhibit and photographed for the book *Snoopy Around the World* (Harry N. Abrams, New York, 1990). Snoopy and Belle pose in front of Sacrè-Coeur wearing Guy Laroche sportswear. Then they’re at the Alamo in salsa outfits by Victorio and Lucchino.

Logically, these elegantly dressed plush dolls should be placed with the other plush materials. However, we had a safety problem here: The plush area was highly active with mail-order. If I categorized the fashions as “Plush → Fashion Designers,” they would sit right in the middle of the regular mail-order dolls and their off-the-rack outfits. That’s an accident waiting to happen. Instead, I used the term “Couturier,” which places these beautiful creations at the beginning of the plush section, where they sat undisturbed until required on the runway.
Figure 4 — Taxonomy for Determined Productions

Babies
- Linus Thumb & Blanket Dolls

Bed and Bath
- Linens
- Sheets
- Towels
- Pillows
- Sleeping Bags
- Toiletries

Books
- Calendars
- Coloring Books
- Cookbooks
- Diaries
- Titles
  - *Happiness Is a Warm Puppy*
  - *Snoopy Around the World*

Christmas
- Dishware
- Christmas Mugs
- Christmas Plates
- Ornaments
- Bell Ornaments
- Christmas Ornaments

Decorations
- Banners
- Bells
- Craft Kits
- Decorated Boxes
- Inflatables
- Mobiles
- Music Boxes

Dolls
- Autograph Dolls
- Autograph Doghouses
- Cloth Dolls
- Collector Dolls
- Greeting Dolls
- Jointed Action Dolls
- Pillow Dolls
- Playables
- Pocket Dolls
- Puppets
- PVC Dolls

Electronics
- Cassette Recorders
- Clocks
- Radios
- Telephones

Fashion
- Accessories
- Clothing
- T-Shirts
  - Determined Productions
  - J.G. Hook
- Jewelry
- Purses
- Shoulder Bags

Figurines
- Bobble Heads
- Ceramics
- Crystal
- Stackables
- Papier-Mâché Figurines
- PVC Figures
- Trophies

Garden
- Accessories

Housewares
- Bookends
- Lamps
- Mirrors
- Picture Frames
- Vases

Kitchen
- Accessories
- Chef Outfits
- Dishware
- Candy Dishes
- Canisters
- Coasters
- Cookie Jars
- Cups
- Drinking Glasses
- Mugs
- Steins
- Plates
- Serving Trays

Music
- Schroeder’s Play Pianos

Office
- Accessories
- Banks
- Coins

Plush
- Couturiers
- Balenciaga
- Hermès
- Guy Laroche
- Manuel Pina
- Gunilla Ponten
- Victoria and Lucchino
- Diane von Furstenberg

Dolls
- Belle
  - Large
  - Small
- Snoopy
  - Large
  - Small
- Special Editions
  - 35th Anniversary
  - Flying Ace
  - Joe Cool
- Peanuts Kids
  - Charlie Brown
  - Spike
  - Woodstock

Outfits
- Belle
  - Mrs. Santa Claus
  - Large
  - Small
- Snoopy
  - Easter Beagle
  - Large
  - Small
- Santa Claus
  - Large
  - Small
- Woodstock
  - Christmas Elf

PEANUTS © United Feature Syndicate, Inc.
Taxonomy can also be used to promote ideas within the organization. Linnaeus did this by placing humans and apes in the Primate order. I did the same thing with the term “Animal Rights.” The very process of interacting with categories can inspire thinking. For example, by placing all the kitchen items in one place, two goals are accomplished. First, it is easy to collect and deliver similar items. Second, the juxtaposition may inspire new designs. Perhaps Determined is working with a cookware company. By looking at the categories, the designer can quickly see what has already been produced and possibly think of new ideas or new variations.

Perhaps Determined is interested in producing more baby items and wants the artists to be thinking along those lines. There is one baby product: the Linus Thumb and Blanket Doll. These soft and cuddly dolls should be shelved with the other dolls. However, “baby” is right there at the beginning of the alphabet. By creating a baby section at the front of the taxonomy, where all the artists see it first, I have created a subliminal reinforcement of the idea “think babies.”

In this case, I was able to use alphabetical order to achieve an enterprise goal. There are other techniques when the alphabet doesn’t cooperate. Perhaps Determined wants to promote shoulder bags. There is already a “Fashion → Purse” category. Unless we have a lot of shoulder bags, there’s no reason for a new facet. However, if I make shoulder bags a distinct subset of purses, regardless of quantity, then I reinforce their importance.

Of course, enterprise goals change and products change. An effective taxonomy must be flexible in order to be current, so I made some structural decisions at the beginning of this project. In the Snoopy taxonomy, each major division has at least one subdivision. For example, in the “Garden” division, there is only one section, “Accessories,” which includes planters, small tools, and similar items. The whole division could easily be called “Garden Accessories”; however, that might create an update problem. Perhaps Determined will produce a greenhouse in the shape of Snoopy’s doghouse. If the main heading is “Garden Accessories,” then we have a logic problem, because a greenhouse is not really an accessory. If the title is “Gardens” with at least one subsection, further products and sections are easily added.

By incorporating current and future client needs into the structure-building process, the taxonomist offers a system that does more than provide access to information. Working with semantics, hierarchical relationships, and adaptability techniques, an information manager can build a taxonomy that supports and promotes the enterprise’s mission.

The Future
Two centuries ago, librarians abandoned one of the most important aspects of their profession, the ability to organize information. They gave it away to Melvil Dewey and the Library of Congress. Now that books are no longer the only means of storing information, the cyberworld is seeking organizational skills outside the library community. People believe, perhaps accurately, that librarians do not create new systems; they only place books into clumsy and already established systems.

The future of structured information organization is taxonomy. The standard library classifications are designed only for books, and books are increasingly becoming objects of pleasure. Serious information gathering is online, and the practitioners demand effective gateways. Information professionals must learn how to design new organizational structures.

Your inspiration is your client. Your goal is to fit the structure to the user and not the other way around. Dewey and LC are classic examples of systems in which the structure itself is the primary goal. Let’s not make the same mistake as we move into new areas of information management. The client’s needs must drive the system.

Effective taxonomy creates hierarchical relationships that follow a client’s method of interacting with information and promote enterprise goals. It includes appropriate vocabulary—not just standard subject-based terminology but words actually spoken by a given community of practice. By using terms and structural techniques that allow for expansion, it responds to the client’s changing needs.

A carefully constructed taxonomy that promotes client goals is a unifying structure and a source of motivation. Clients enter into a comfortable system that invites information gathering. The taxonomy I designed for Determined Productions and Snoopy was personalized. It fit the company, the situation, and the products. In the online world, personalized service is becoming routine, and information users are demanding it. To provide this level of service, information managers must enter the future and reclaim their organizational skills.

* For those interested in digital preservation, SLA’s Information Futurists Caucus and Library Management Division will host Kenneth Thibodeau, director of the Electronic Records Archives, National Archives and Records Administration, at the June 2003 Annual Conference in New York.

PEANUTS © United Feature Syndicate, Inc.