Project #1: Building Awareness of Classification

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Team Members:

Mary Beth Romo

Member 2

Member 3

INTRODUCTION

Information retrieval systems rely on records that represent information objects. In order to create meaningful records, it is necessary to classify each object. System designers attempt to classify objects according to essential descriptive attributes. Records containing these attributes allow a user to search the information retrieval system to discover the existence of relevant sources.

CLASSIFICATION

Bowker and Star (1999) define classification as "a spatial, temporal, or spatio-temporal segmentation of the world" (p. 9) that may or may not be standardized (p. 8). They also refer to classifications as boundary objects, which means they can work across communities, maintain a constant identity, be tailored to work for any community, and "both inhabit several communities of practice and satisfy the informational requirements of each of them" (Bowker & Star, 1999, p. 12). Lastly, as boundary objects, classifications are "weakly structured in common use, imposing stronger structures in the individual-site tailored use. They are thus both ambiguous and constant; they may be abstract or concrete" (Bowker & Star, 1999, p. 12).

CLASSIFICATION SYSTEMS

A classification system is "a set of boxes (metaphorical or literal) into which things can be put in order to then do some kind of work" (Bowker & Star, 1999, p. 9). In an ideal situation, there are three properties that a classification system would meet: "there are consistent, unique classificatory principles in operation," "the categories are mutually exclusive," and "the system is complete" (Bowker & Star, 1999, p. 9). In other

words, a system will use the same principles across all objects in the system, there is no ambiguity on which category an object will fit into, and the system will be able to classify everything in its focus area.

STANDARDS

Standards are “any set of agreed-upon rules for the production of objects” (Bowker & Star, 1999, p. 8). Standards are created in order to make “things work together over distance and heterogeneous metrics” (Bowker & Star, 1999, p. 8). They are often enforced by some sort of body, and without enforcement the standard will not persist. Not all standards are successfully implemented such as the HD-DVD standard, which lost out to the BluRay standard. It is not necessarily the “best” standard that wins. Rather fairly arbitrary factors can determine which standard wins, such as “[building] on an installed based, better marketing at the outset, and use by a community of gatekeepers who favored their use” (Bowker & Star, 1999, p. 8). When a standard is successful, it “imposes a classification system, at the very least between good and bad ways of organizing actions or things” (Bowker & Star, 1999, p. 8). Lastly, once a standard is instituted, it can be very expensive to change (p. 8).

CLASSIFICATIONS AND STANDARDS: SIMILARITIES AND DIFFERENCES

Classifications and standards are essential components in constructing a sound information environment. They are closely related and share several similar features (Bowker & Star, 1999, p. 6). Human beings use both classifications and standards to impose order in a wide range of activities from mundane tasks to complex bureaucratic operations (Bowker & Star, 1999, p. 4). Despite their perpetual presence, both

classifications and standards are merely idealized goals, which may not be achievable in real life. Classification systems, for example, are rarely complete, and objects are often classifiable in more than one category. Building standards are codified and universal, but minor digressions are commonplace (Bowker & Star, 1999, p. 11).

Both standards and classifications, the origins of which are often invisible, support certain beliefs and values. They imply ethical choices that may cause suffering to some while granting advantages to others (Bowker & Star, 1999, p. 6). The study of standards and classification systems provides insights into cultural, economic, sociological, and scientific developments (Bowker & Star, 1999, p. 5).

Despite their interconnection, there are important distinctions between classifications and standards. Categories utilized in classification systems arise in circumstances that are specific to an environment or an individual, and are not necessarily standard (Bowker & Star, 1999, pp. 5, 7). Whereas classifications may be limited to an individual, a single community, or a specific time frame, standards are widely accepted rules that operate across communities and continue over time (Bowker & Star, 1999, p. 11).

Classifications that are used by more than one community may become standardized. However, if they remain restricted, they do not become standard. All standards, on the other hand, require an underlying classification system (Bowker & Star, 1999, p. 11).

COMMON ATTRIBUTES IN A COLLECTION

The fundamental principles for creating a non-standardized classification system may be demonstrated by assigning attributes to a collection of pillows. Each pillow is classified by attributes that describe common features (**Table 1**).

USER CENTERED THEORIES

Designers should assess the users needs at the early stages of designing an information retrieval system in order to build a system that will be useful to the user. Assessing the users needs is an essential cornerstone to the design of a database**.** As Chowdhury states "The user is the focal point of all information retrieval systems because the sole objective of any information storage and retrieval system is to transfer information from the source (the database) to the user" (Chowdhury, 2010, p. 225).

"Information seeking is fundamentally an interactive process. It depends on initiatives on the part of the information seeker, feedback from the information environment, and decisions for subsequent initiatives based on this feedback" (Marchionini, 1997, p. 7). Marchionini explains how the users' initial information needs may begin to change as the user searches within a particular environment. The users' experience with the system may provide knowledge or awareness to the user and thus their searches will begin to evolve. This will result in the user potentially expanding or reducing items in their query search behavior. For example, in this exercise as we (the designers) began to consider the users perspective our view of the pillows attributes began to change. This evolution can be seen from **Table 1** to **Table 2**.

"Turning our attention to the user's perspective on information seeking, we become aware of an active personal process. The process of construction within

information seeking involves fitting information in with what one already knows and extending this knowledge to create new perspectives" (Kuhlthau, 2004, p. 4). Here Kuhlthau's statement focuses on the change in the users perspective. The process of shifting perspectives can occur as the user acquires more information, adjusts their query searches and begins to re-evaluate their goal. For example, lets say a target user in this exercise is specifically looking for a blue, cotton, and square pillow. The users' initial search has a specific goal, which is to purchase a pillow that is made up of three specific attributes "Color", "Fabric", and "Shape". As a result of the users' searching they may become aware of other attributes, think of other requirements, or questions that may be relevant to their pillow purchase. The user may then begin to re-evaluate their initial search goal after a number of iterations in their query searches. The user may then decide to alter their initial goal. The original goal of looking for a blue, cotton, and square pillow has the potential to completely change. The initial goal may change to include more, less, or completely alter the required attributes for the pillow the target user is intending to purchase.

USER PERSPECTIVE APPLIED TO ATTRIBUTES IN A COLLECTION

It is critical for designers to take users into account when building an information retrieval system. If designers can gain an understanding of the process in which the user may experience the information while querying, then they can project potential important attributes to build into the initial design. This will then result in a more inclusive, useful, and effective information retrieval system design.

In order to apply a user-based approach to designing an information retrieval system for the collection of pillows, we will envision a user group that might benefit from such a database. If the pillows were to be sold on ebay, the user group would consist of individuals who are interested in purchasing pillows on ebay. Those individuals could be described as home decoration enthusiasts who have specific decor requirements but are on a tight budget. This type of user might ask the following questions about the pillows: “What are the shape, color, fabric, fill, function, closure type, cover type, and size of the pillow?"

The above questions have already been addressed by the attributes in **Table 1**. These attributes have been considered by the database designers to be essential in differentiating one pillow from another.

Users may be interested in additional features of the pillows. They might also ask the following questions:

- In what condition is this item?
- Is this pillow machine washable?
- Where was the item purchased? Is there a brand name?
- Is there a design or pattern on the pillow? Is there a distinctive stylistic feature of the pillow?
- What is the price?
- What would the shipping costs be? (Where is the shipping origin?)

When considering the perspective of the user, it becomes apparent that additional attributes are necessary in designing a useful database. **Table 2**

demonstrates a description of each pillow by attribute. The list of attributes has been extended to include condition, washing requirements, brand, and design/pattern. Not included in the final list of essential attributes are price, shipping point of origin, and shipping costs. Although this information may be interesting to users, prices are often flexible and negotiable, and shipping costs are variable. They are therefore not practical to include, nor are they essential to identifying the pillows.

CONCLUSION

The process displayed above depicts the transition that occurs upon consideration of the user when designing an information retrieval system. We see the development of the attributes from the initial design steps, which consisted of assessing the collection of pillows individually and then as we considered the users' perspective. We were able to conclude this stage of development with additional attributes to provide useful information to the user. This progression of attributes substantiates Marchionini and Kuhlthau's ideas that the users' needs should be considered. As a result of this process we were able to build a user relevant foundation for our database.

Objects in a Collection of Pillows	**Attributes**
A collection of 15 pillows has been chosen to form a group of homogenous items. Gathered from the households of three LIBR 202 students, these pillows are used in various areas in and around the home: on beds, sofas, armchairs, and patio furniture. Although they all fall under the heading of “pillows,” each has features that can be used to identify them as a distinct object. The series of attributes to the right are common to each of the pillows. These attributes can be used to create a representation, or record, of each object in the collection. The records are unique and distinct entities within the structure of the information retrieval system.	Shape
	Color(s)
	Fabric
	Fill
	Function
	Closure
	Cover Type
	Size

Table 1. Attributes of a Collection of Pillows

	Attributes											
Object - Pillows	**1-Shape**	**2-Color(s)**	**3-Fabric**	**4-Fill**	**5-Function**	**6-Closure**	**7-Cover Type**	**8-Size**	**9-Brand/Retailer**	**10-Washing Requirements**	**11-Condition**	**12-Design/Pattern**
1	round	multi	cotton	unknown	throw	none	non-removable	17.5”	Pier 1 Imports	unknown	used	peacock
2	square	multi	cotton,polyester	feathers,down	throw	zipper	removable	20”x20”	Macys	machine wash	used	flowers
3	square	orange	polyester	feathers,down	throw	zipper	removable	18”x18”	Pier 1 Imports	unknown	used	paisley
4	square	blue,white	cotton	polyester	throw	none	non-removable	16”x16”	Target	spot clean	used	diamond shapes
5	rectangle	orange,yellow,red	polyester	unknown	throw	zipper	removable	13”x23”	Pier 1 Imports	spot clean	used	paisley
6	square	white, brown	faux fur	polyester	throw	none	non-removable	16”x16”	L’Air du Temps	spot clean	used	large heart
7	square	pink	polyester	polyester	throw	none	non-removable	14”x14”	Target	machine washable	used	Patrick (Spongebob)
8	square	salmon	satin	polyester	throw	flap	removable	16”x16”	handmade cover	machine washable	used	none
9	rectangle	white	cotton	down	bed	none	non-removable	18”x22”	Ikea	machine washable	new with tags	none
10	round	orange, red	cotton	polyester	patio	none	non-removable	14”	Interio	machine washable	used	none
11	square	purple, pink, tan	polyester, linen, cotton	down	throw	zipper	removable	16”x16”	Rodeo Home	machine washable	used	flowers
12	square	off-white	unknown	down	throw	zipper	removable	16”x16”	Rodeo Home	machine washable	used	none
13	rectangle	white	cotton, polyester, nylon	down	throw	zipper	removable	16”x24”	IKEA	machine washable	used	none
14	rectangle	white, pink, green, red, grey, off-white	cotton, polyester	down	throw	buttons	removable	20”x24”	IKEA	machine washable	used	flowers and vines
15	square	blue, teal, purple	polyester	polyester	throw	tipper	removable	16”x16”	DENY Designs	machine washable	new with tags	tie dye

Table 2. Description of each pillow by attribute. (User query generated attributes highlighted in red.)