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Organization as Expression: Classification as Digital Media

For most people, the word *classification*, if it connotes anything at all, conjures up a sensation somewhere between mild boredom and a gnawing unpleasantness. A mysterious anxiety-ridden dream, perhaps, of an older woman with hair pulled into an extreme bun, every tendril controlled, admonishing that the book in your hand on DNA profiling methods belongs in RA 1057.55 (public aspects of medicine—forensic medicine—DNA), not K 5465 (criminal procedure—DNA evidence), and no more silly mistakes of that sort, dear. Classification systems seem arbitrary, meaninglessly complex, and old-fashioned, not especially relevant to the dynamism of today's malleable information landscape. If one can call any particular classifications to mind, perhaps the Linnaean taxonomy of animals, they seem like fossils, somehow disgorged from nature instead of being man-made, relics of arcane academic interest, perhaps, but not alive or adaptable to one's current concerns. Classifications might have passing interest as intricate, brittle antiques, but not as strong or flexible tools for managing massive, constantly mutable information flows with the kind of customization or power that we've grown to expect from search engines and other modern information-management techniques.

If we strip away the preconceptions brought by distortions of classifications past, however, it is equally possible to see the general process of classification—the description, grouping, and arrangement of objects—as a particularly apt form of creative expression for the digital environment. Classification, for example, provides the conceptual infrastructure by which scattered information resources are brought together under a particular interpretive frame and made accessible to others. It is the selection, representation, and categorization of resources, I suggest, that propels the communicative force of your Facebook profile, of your Flickr photo database, of your blog's annotations upon other networked information sources. Through classification, you implement the filter of curatorship upon the vast expanse of Internet data, and in this way classification provides the basis for a growing set of network-based communicative artifacts. In this perspective, while classification still involves the revelation of underlying structure that characterizes and links both physical and conceptual objects, it is less a scientific enterprise than, as Jack Andersen suggests, extending the ideas of Lev Manovich, a cultural form (Andersen 2008).

It is possible, in other words, to consider classification as a form of digital media. In this essay, I explicate this assertion of relationship and show how it forms a manifesto with implications for the creation and use of information systems. I also consider how the interactions between a classificationist's

goals for rhetorical expression and a user's information needs can constitute a productive crucible for innovative design.

Classification demystified

A *classification* is a structure for grouping, describing, and relating objects. Classificatory structures go by many names—taxonomies, classifications, ontologies, metadata schemas, information architectures, controlled vocabularies, systematic bibliographies—all of which involve core functions of description, categorization, and relation. While there is a common perception that classification mandates the imposition of an inflexible, and thus inevitably tenuous, order upon every object in the universe, most classification is limited and contingent, applicable only to a particular set of entities in a specific context, with the order that it suggests merely one interpretation amongst many possibilities. Too, as regards the general process of classification, there is no necessary requirement, at least if one is not bound by restrictions of single physical manifestations, that any entity appear in only one category (although, since one goal of classifying is to emphasize distinctions between groups, too much cross-classification typically dilutes the utility of any organizational scheme; if *all* your Web bookmarks are “useful,” then the meaning of that category becomes uncertain, and the description may not provide much expressive power). To be sure, some classificatory forms do have strict rules associated with them: a true hierarchy, for example, takes the shape of a tree, beginning with a single root node whose children are derived based on a single principle of division at each level (for example, with the root node of Animals, the first principle of division is the presence of a backbone, and the children are vertebrates and invertebrates). Characteristics are inherited down the branches, so that one can be certain, for example, that all mammals, being also vertebrates, have a backbone, and all dogs, being mammals, have both hair (from being mammals) and backbones (from being vertebrates) as well as particularly shaped teeth (from being dogs). Placement of entities in multiple classes is thus frowned upon in true hierarchies, as this would imply some sort of contradiction, as in both having a backbone and not having one.

The type of restrictions mandated by true hierarchies, when implemented, enable various useful properties in a classification, as in the ability to use relationships to make logical inferences about entities in certain classes (for example, because wolves, dogs, and coyotes are in the same branch of the hierarchical tree, we might infer, if we were to meet a coyote on a lonely mountain trail, that its mode of attack might be similar to a dog's, based on their shared physical characteristics, and we might fear its teeth). But classification itself, as a basic activity, does not necessitate these sorts of constraints. In some contexts, such as the characterization of living things by their physical properties, rigid structural rules and relatively clear demarcations of category boundaries are both useful and possible to implement (although probably with more difficulty and flexibility than many people might initially think, as

Umberto Eco notes in describing the categorically ambiguous case of the platypus). In many contexts, though, object properties are both delightfully and woefully ambiguous, and our attempts to design systems that organize and arrange them may aspire to a limited pragmatic utility, perhaps even a flickering sense of illumination, but not to the permanence of truth.

For example, the goal of the Dewey Decimal Classification is merely to arrange books on shelves in smaller libraries in a way that facilitates browsing for the general library patron, so that, for example, the materials about physics (530s) are next to chemistry (540s) and someone interested in atomic properties can productively scan the stacks for pertinent resources in both areas. In the way that it includes, labels, and relates its categories, the DDC formulates some particular interpretations of the subjects that it describes, some of which we may find helpful, and others that we may disagree with, some that match our own way of viewing the world, and others that do not. But the classification aims to help library users find books, not to dictate a grand, falsifiable model of the world's knowledge in which every concept has precisely one correct place (Miksa 1998). By selecting, describing, and arranging its books, the library as an institution creates the library an artifact, the structure of described and organized resources that are made accessible to the public. The patrons of the library are readers not only of the books, but also of the library itself. Just as we don't always agree with everything we read—in fact, we may derive the most benefit from documents that differ from our current way of thinking—we don't need to agree with the way that a classification organizes objects in order to find it useful or interesting.

The point here is to illustrate the limitations and possibilities of all classificatory structures, whether they are developed by individuals or institutions, whether they are longstanding or ephemeral, whether they attempt to corral libraries full of assorted documents, the chemical elements, or your astoundingly eclectic music collection. All classifications have some motivating purpose, and accordingly they describe and label categories in certain ways, emphasize some characteristics at the expense of others, and select only a small subset of possible relationships to depict. In describing the competing interests at work as the scientific community debated the best place in the Linnaean taxonomy to add the dinosaur, Rebecca Bryant (2000) notes that even scientific classifications may reflect personal and political agendas, that while they may accord with natural evidence, they are also motivated by specific interests and situations. In other words, a classification is itself something to read and interpret, just like the documents or other entities that it arranges. A classification isn't merely a container for documents; it is a type of document. Take this very book, for example: if the constituent essays were arranged and described differently, wouldn't the character of the overall volume, and even of each component chapter, be changed, perhaps subtly, perhaps significantly?

Classification as digital media

The idea of a library, as structured through its classified resources, being a form of artifact to read and interpret, is of course equally true for a digital library, or any type of resource database. If you've used PubMed, the online database of the U.S. national library of medicine, to access articles from medical literature, you've also been reading PubMed itself, as structured through its controlled vocabulary, MeSH (the Medical Subject Headings). If you've searched JSTOR, the non-profit archive of scholarly journals in the social sciences and humanities, you've also been reading the form and structure of the JSTOR collection. JSTOR, for example, enables browsing by discipline, and one can select fields such as African American Studies and Film Studies, or Library Science. Why Library Science as a category and not Library and Information Science, or Information Studies? In the circles I run in, this apparently innocuous bit of categorization and description could be seen as a political statement in favor of traditional views about the discipline, that it should continue to emphasize the library context, instead of branching out to encompass all information-related phenomena and institutions. To any reader of the database, even one not steeped in academic controversies, such descriptive choices, in conjunction with other category definitions, labels, and relationships, and combined with the assignment of resources to each category, work together to provide an interpretive frame through which the database contents are filtered.

While a classification, or organizational structure, need not be digital or involve digital resources, the potential of the networked world to create, store, and aggregate documents or information resources goes hand in hand with the need to develop and scale new organizational structures to manage and make sense of these data masses. In turn, the digital environment enables an explosion of possibilities for the design of new types of classifications and means by which categorized resources are arranged and presented, revealed to system users. It also enables those "users" to more easily themselves be information system designers, creators of accessible information repositories, or, even more easily, creators of organized citations to network-accessible resources, or designers of metadata installations.

It's easy to think how you or anyone might invent quite original and creative means to organize the physical collection you have selected for display via your office bookshelves: arranging your books to display your intellectual lineage or development, or to argue for your current pet idea, for example that critical theory has a place within information studies, or to show how you are, despite being a professor and a classificationist, still with a sense of the cool, and so on (see how I put Umberto Eco's *Foucault's Pendulum* on the shelf with the *Anglo-American Cataloging Rules*? They're both about description, see? Isn't that cool? I am pretty cool!). However, just as with the physical library, the books in your office are embodied objects that can only be placed in one order at a time. You can certainly arrange the books with multiple descriptive attributes (metadata), ordering by color or length or level of verbosity to suit your whim, and if you are extremely industrious, you can even imbue a linear order with multiple

characteristics, organizing your tomes by subject and language and author, for example (first all of the art history in English, then the art history in Italian, then the biochemistry in German). But you can't reshuffle your categories easily, and you can't put a single book with essays about music, art, and literature in multiple spaces on your shelves. Moreover, because of differences in size and form, it's difficult to mix media in your display; although you might want to showcase the similarities between a DVD, a few flimsy journal issues of disparate sizes, some books, and a videocassette, it's not so simple to place all of these together in a clear physical arrangement along with other disparately shaped items.

However, just as with the artifact classes we are perhaps more commonly used to defining as media types—text, still images, music, moving images—organized collections that describe, arrange, and collocate a selected universe of resources have the potential to become quite different sorts of objects in the digital world. In a digital implementation, I can organize by multiple attributes at once and rearrange automatically, and I can put any resources in as many categories as makes sense. In digital form, it is also much easier to create, publish, and access such documents. To browse your bookshelf, I have to go to your office. To access your bookmarks, I don't have to go anywhere, and neither do you, when you are selecting, organizing, and publishing them. Moreover, to create a digital collection, one doesn't need to own a physical copy of each resource; you just need a network-accessible address to the item's location. While the communicative impact of a traditional printed bibliography may be blunted by the potentially laborious task of locating and accessing each item of interest, a digital bibliography—that is, a curated arrangement of online resources, described with key metadata and annotated with critical commentary—enables instant access.

Classification as creative expression

Within information science, the design goals of classifications and other organizational structures have focused on user-directed acts of retrieval and question answering; information systems, from bibliographies to databases, have been conceptualized as tools for locating known objects rather than as communicative artifacts for interpreting and discovering ideas. To create useful finding instruments, the standard thinking goes, designers of information systems need to describe documents consistently in ways that match how information seekers are most likely to look for those resources. If information is described in a manner seen as outdated, biased, or idiosyncratic, that has the potential to impede accurate retrieval, and it is likely problematic. If someone is looking for information on physical activities to increase flexibility and strength, they should be able to find all such activities in the same place, Pilates, yoga, and so on. If Pilates and yoga are grouped together, so that even if I search for yoga, I may also become aware of Pilates, then we have a useful tool, an organizational structure that accurately reveals the relationships between subjects, and I, as a user, have some measure of control over the chaotic mass of information

lurking out there in databases, in digital libraries, on the Internet. I have isolated the pertinent information from whatever structure it might be housed in, I have lifted a diamond out of the muck of the mine. (And this, incidentally, is where search engines lack the potential contextual awareness of a curated, organized collection; full-text retrieval will not relate concepts unless document creators use the words that indicate each concept in their texts.)

But if information science has tended to be interested in the efficient extraction of diamonds, I have to confess that I have become an enthusiast of the muck. No doubt the more typical goal, of creating organizational schemes to facilitate the efficient extraction of just the right knowledge from the world's information messiness, of answering questions clearly and “objectively” in just the way I expect, with nothing extraneous—is a noble one, with a long history. Indeed, the nineteenth century Belgian classificationist Paul Otlet, creator of the horrendously complex Universal Decimal Classification, sometimes described as “Dewey on steroids” and still in use in European libraries, fervently believed that by classifying knowledge accurately and completely, he could engineer world peace (Rayward 1994). If you are an optimist, that does make sense, that perfect information leads to perfect understanding, and so to political harmony—but to me, this goal has always seemed both impossible and a little pallid. It seems to suppose that information seekers view both individual documents and the systems that make them accessible merely as repositories of (true or false) facts, of interest only for the raw data they might provide, and not at all for the means by which any information is shaped, styled, and structured. It's a drab existence if we don't value a text for the enjoyment and perhaps inchoate insight it may bring, in addition to the informational evidence it might provide. But if the kinds of things that we are more used to identifying as documents—books, articles, images, videos, songs—convey meaning, utility, and pleasure beyond the facts that they contain, then so to do the repositories that hold these resources, have the potential to express ideas, to be surprising, amusing, even illuminating. (While information science has been slower to embrace such ideas, archivists and museologists have begun to acknowledge the rhetorical inevitabilities of systematically described and arranged collections, as in Duff and Harris 2002, and Cameron and Robinson 2007.) Moreover, this expressive potential of information systems is a property that might be exploited and appreciated. If we want to keep the gemstone analogy but ascend from the mucky underground, we might think instead of the infinite variation of jewelry settings, and how each carefully crafted necklace or ring can transform the way we see the collected stones that are integrated into the design. Not every setting is to our taste; some settings fall out of fashion and seem outdated and ugly. But a well-made, original necklace can make us appreciate even flawed jewels, the artistic sensibility of the maker spurring a reappraisal of the raw materials.

More often, however, when the communicative aspects of information systems are acknowledged, the goal is to identify and suppress these characteristics as a form of bias. A variety of

commentators throughout the information science field have noted the difficulties involved in attempting to classify anything in a manner that will consistently be viewed as objective, accurate, and useful, as a true model of reality removed from any underlying social and political context (for example, Bowker and Star 1999; Beghtol 2001;). As numerous critiques of various descriptive paradigms have repeatedly noted, today's accurate representation of the world's knowledge becomes tomorrow's unanticipated bias (Olson and Schlegl 2001, review subject-access critiques in library catalogs, for example). Many critics of established classifications have pointed out, for example, how that darn Dewey Decimal Classification religion class has eight primary categories for Christianity and one for all other religions, and the Internet pundit Clay Shirky used this classificatory snippet as part of his rationale for why established classifications are inevitably incorrect and ultimately not worth the effort they take to produce (Shirky 2005). A generous assessment would call the interpretive frame expressed via the Dewey religion classes a historical remnant of the nineteenth-century America in which the classification was initially constructed, in which religion for most library patrons was primarily defined by Protestant Christianity. More pointed critiques would say that the DDC (now on version 22, so it's not like it's never changed) characterizes religion in a way that's outdated, biased, and just plain wrong.

I wholeheartedly endorse the critical spirit that motivates such analyses of existing classifications. The application of rigorous skepticism is an important aspect for the systematic reading of any document, including information systems. Many commentators on information systems, however, still yearn for the ideal of a neutral, objective representation of concepts, and their critiques are propelled by a sense that rooting out the “biases” they uncover will “fix” the systems they investigate (as, for example, Sanford Berman’s classic 1971 critique of the Library of Congress Subject Headings). If a classification has been tainted by virulent subjectivity, then it needs to be altered to fit reality. The DDC's religion classes need to more fully represent the religious diversity that characterizes our current society because that better reflects the objective state of the world. While I might agree with the goal of creating a classification that endorses tolerance by providing more categories for more religions, I find the justification here flawed. This type of perspective supposes that we don't just prefer some jewelry settings over others, but that some jewelry settings are false. While we might have a variety of cogent arguments to support our preferences, making use of social, moral, political, and personal perspectives, reaching for the grail of unbiased, objective representation seems misguided, as accusations of bias can easily cut in opposite directions. (In the current American political climate, for example, such arguments fuel accusations of reverse racism and calls to rescind affirmative action.)

In contrast, I would say that the DDC, or any classification, is not problematic if it expresses a point of view on the subject matter that it organizes. Indeed, there is no way it can avoid doing so. The problem is that when the DDC, or any classification, is not forthright about its position, when it doesn't

acknowledge its own rhetorical effects, when it hides behind an assumed tool-nature to avoid coming to terms with its document-nature. The DDC, or any representational system, cannot be reduced to a type of hammer, and designers of such systems need to recognize and take responsibility for the communicative aspects of their creations. Of course, one could attempt to limit the purview of the classificatory enterprise to encompass only those characteristics that could be the most objectively determined. One could choose to organize a set of documents by the number of characters that they contain, or by the precise date and time of creation, and other attributes that seem consistently and reliably measurable. (Creation date can actually be quite complicated if we leave open the possibility of continuous revision, but we'll leave that aside.) Still, however, our “objective” organizational scheme has nonetheless applied its own form of interpretive frame on the documents; we've asserted that the important characteristics of description are those that we can express with the most agreement and consistency in definition. We are indeed making some statement about brevity and freshness as document attributes, whether we have some explicit rhetorical goals in that direction or not. And we are certainly expressing a preference for the quantifiable and measurable as the means by which relationships are drawn between information entities.

If acknowledging the rhetorical aspects of information collections implies increased responsibility on the part of designers, however, it also suggests a corollary responsibility for system users. Information seekers need to acknowledge their equal role as readers of system-documents. As readers, users of information systems need to question, and not blithely accept, the collocation of, say, children's comic books with graphic novels, characterizing this classificatory element as some technical side-effect, perhaps inconvenient but without meaning. Indeed, this relationship might indicate a variety of judgments upon the material: that visual media are less serious than text-based media; that, perhaps due to this perceived inconsequentiality, for visual media, form is a more important signifier than content or theme; and so on. The “user” must be active, critically engaged, and expect to be challenged in his or her thinking.

And, indeed, to my mind, this is a responsibility that both users (or readers) and designers (or authors) should welcome. We should relish the opportunity to confront, explore, and enjoy systems of organization that differ from those we might instinctively gravitate towards ourselves. The interest and pleasure of looking at your bookshelf, be it physical or virtual, comes partially from its difference from my bookshelf. In fact, it's the potential for a classification to embody a unique perspective, or interpretation of the subject matter that it organizes, that to me enables the possibility of more radical discovery, innovation and creativity. If I discover the digital library of Yoga as a Way of Life, which, through the way that it selects, organizes, arranges, and makes available its collected documents, advances an argument that yoga is not merely a physical practice, that it is nothing like Pilates, that it, in its comprehensive form, encompasses spiritual, mental, and physical aspects that cannot be easily

separated without losing significant parts of its character—even if I don't agree with that interpretation, even if I think that I can experience and enjoy the full potential of yoga merely by vigorously contorting myself in a hot room, my idea of yoga has potentially been expanded, and this library, this set of resources arranged in a way that creatively communicates a particular interpretation of yoga and what it means, has worked itself as a type of document, an interactive expression that is, to me, an increasingly common and important form of digital media. The explosion of so-called social software is to me an explosion of organized, collected citations working as a new form of writing, of a reanimated bibliography as document for the networked age. Facebook? Bibliography of friends, framed to convey a certain idea and arranged for expressive display. Blogroll? Potentially, manifesto via systematically arranged citation.

Designers and users: productive tensions

So far in this essay, I've contended that information systems are communicative artifacts with rhetorical goals. Moreover, I've also claimed that the online environment facilitates the aggregation and access of disparate resources and their description via multiple characteristics, and also enables the flexible rearrangement of collections. These properties work to promote the creation of collections-based digital media of increased complexity, originality, and expressive power, through the agency of both traditional information-providing institutions (such as libraries, archives, and museums) and of the general citizen hoping to share insights by creatively filtering the continually growing onslaught of network-accessible information. Furthermore, I've argued that the acknowledgement of such qualities in information systems necessitates a certain responsibility on the part of both designers and users: designers need to be forthright about the rhetorical effects their systems produce, and about their own communicative goals for design, and users need to approach information systems as documents to read and evaluate, as suggestive interpretations rather than neutral models. Then we can all be happy readers and writers in a multilayered universe of metadata-fueled documents, exploring numerous potential visions of the world's resources through filters of expressive bibliography. It's my own, Habermasian version of an information utopia!

But what about the goals, activities, and perspectives of various user communities? Within the frame I've laid out, doesn't power reside mostly in the writer? Haven't I essentially said that it's okay for a library that uses the Dewey Decimal Classification to effectively endorse Christianity, as communicated through the DDC's organization of resources about religion, as long the library is honest and open about it, if it acknowledges and accepts the responsibility associated with adopting that position? While I've also said that the library patron should be encouraged to criticize the viewpoint expressed via the collection, is that really acceptable? Shouldn't user needs and preferences be more explicitly taken into

account, especially when considering institutions, such as libraries, archives, and museums, that have enjoyed historical power to regulate information access? Jonathan Furner (2008) suggests that information seekers have an affirmative right to access materials by means of the seeker's own vocabulary, arguing that any system of organizing information should match the way that a particular user currently sees the world (and similar calls have been made in archival science and museum studies, that archives and museums should better represent the descriptive preferences of marginalized groups). If, for example, I describe my academic field as information science, then the JSTOR database should be structured so that resources that I define as "information science" are labeled as such and grouped together in a way that I expect, given my self-determined identity as an information scientist, and not described as "library science" or "knowledge management" or "documentation." If, however, I were to define my area of study as "library and information science" or "information studies," I should be able to locate appropriate materials with those descriptions as well. Furner's goal, I believe, is noble, and in a way similar to Otlet's vision of world understanding through accurate classification. Access to information is a form of power, and if people are prevented from finding and using information because the resources they need are cloaked in an unfamiliar, perhaps even hostile interpretive frame, that constitutes a significant social problem, particularly when the means of organization are pervasive, endorsed by institutional authorities (such as libraries and their use of standard schemes such as the DDC). Who is any system designer/author to impose a foreign way of thinking upon people whose need for information may be urgent? Can't that form a cornerstone of systematic oppression?

But does that line of reasoning also mean that if I am a committed advocate of the scientific method, either as an individual or as an institution, such as the National Science Foundation, who believes it is ethically untenable to describe intelligent design as a form of scientific dissent to evolution, that I have to enable supporters of intelligent design or creationism to access information about evolution as "just a theory," as its adherents claim? Wouldn't doing so imply some endorsement of the legitimacy of that position on my part? There is a conflict here between my rhetorical goals as a system designer, or author, and between the information needs of a potential user community, or the existing vocabulary of a particular audience group. How are these competing perspectives to be negotiated? Whose goals take precedence, and by what justification? On the one hand, I want to be able to share my own ideas, in the spirit of learning, discovery, and debate, and to see that activity as a potential instrument of liberation. On the other hand, descriptive power seems to be equally able to enforce domination.

My approach to this dilemma is to focus once again on the information system's character as a communicative artifact, as a document, and on making those rhetorical properties more salient. It is rare, in information systems design, to systematically and purposefully consider the way that any particular system forges an interpretation of its subject matter, and to create designs that candidly seek to advance a

determined position on the materials being collected, organized, and made available to some defined public. For example, the traditional means by which semantic judgments are determined when creating controlled vocabularies and other schemes for organizing information involve the designer's selecting only the form of authority that the scheme should faithfully reflect; the most common is "literary warrant," in which decisions about which concepts to include in a classification and the meaning and form of those concepts are determined based on the terms used by authors in the collection being structured (Hulme 1911; Beghtol 1986). If, for example, scholarly books and articles use the term "information" to describe the basic phenomenon under study in the field of "information science," and this term is distinguished in the literature from "knowledge," "data," and "documents," then all those terms should be specified, defined, and related in a resource collection as they are used by authors. Other forms of warrant include user warrant (the ways a system's user groups define and label concepts) and cultural warrant (the same for the larger culture). In discussions of traditional design methods, the role of the designer is merely to compile a set of categories and associated relationships based on the selected warrant (Soergel 1974; Aitchison, Gilchrist, and Bawden 2003). In practice, however, it is not so easy to discern the structure mandated through any selected warrant. There are not merely several schools of thought, or identifiable discourse communities, within a particular discipline, for example, as Birger Hjørland and Hanne Albrechtsen (1995) suggest; debates and ambiguities are common even when experts discuss basic phenomena in their fields, such as "information" within "information science" (Buckland 1991; Meadow and Yuan 1997; Floridi 2002; Bates 2006, among many others). Inevitably, the designer of an organizational scheme must bring his or her own judgment to bear on the way that categories are defined, described, and included. However, this crucial aspect of design is not well characterized. Marcia Bates (1976) is one of the few to find this omission problematic. In proposing that systematic bibliographies, or subject guides, should incorporate their own specifications into the final product, Bates endorses a position similar to that I have been advocating here. Bates claims that "it is not enough to say that a bibliography is on trees if it in fact has been defined to include shrubs, or if it is meant to cover only material on tree species and not to cover ecology of trees." In other words, who decided what the scope and extent of the subject should be, and what rationale was used to make that decision? Indeed, Bates asks, "is it not absurd how little information reference sources provide about themselves?" The designer's status as an author, as opposed to a compiler or documenter, is submerged, and thus the designer's responsibility to identify and justify a coherent position in relation to a selected audience is also not recognized.

If an information systems designer accepts the mantle of authorship, however, then the basic activities associated with rhetorical production—formulating a cogent argument, using various modes of evidence to support the argument, tailoring the argument's content and structure toward identified

audience values—become necessary aspects of the design process, and they need to be explicitly and forthrightly addressed. As with the creation of any rhetorical document, authors must identify and implement persuasive strategies that carefully consider the audience's current views on the subject at hand, or the document will fail to advance the position. In accepting the document nature of information systems and their own status as authors, in other words, designers can no longer shift decision-making responsibilities to other authorities (the “literature,” the “users,” and so forth). They need to accept their power.

To use that power effectively, designer/authors need to honestly examine both their own rhetorical goals and the current values, beliefs, and feelings of their intended audience (or user group) toward those goals. While the common view of rhetoric is that it involves some level of nefarious manipulation in which unsuspecting, naive recipients are led to agree with opinions contrary to their interests, the determination and application of persuasive strategies need not adopt a dastardly character. In fact, I would argue the opposite, that there is potential in more actively taking on the roles of author and audience, as opposed to designer and user, to increase respect and understanding between the parties. There is a tendency, which I have often observed as a practitioner in the fields of technical communication and information design, for well-meaning teams of user experience professionals to portray “the user” as a formless other who is far removed from the designer's own experience. Countless times, I've heard variations of the idea that a system should be designed so “your mom” can automatically understand it, using “your mom” as a signifier for someone whose lack of experience requires a patronizing simplification of system features. Never mind the fact that no one would think of their actual mom in such terms—my mom, for example, was a school principal who managed a staff of hundreds with an efficiency that I could never hope to master—”your mom,” or “the user” is almost inevitably an infantilized, reductive concept. Within this perspective, systems are rarely conceptualized as vehicles through which competent, if perhaps initially inexperienced, users might gain new knowledge and skills. Occasionally an attempt is made to sketch more vivid, realistic accounts of various potential users via devices such as personas or scenarios (Pruitt and Grudin 2003; Carroll and Rosson 1992). However, in actual practice, these tools are used with much less rigor than is proposed by the researchers who describe them. Instead of using personas to craft succinct yet lifelike portrayals of potential users based on extensive research data, for example, user experience practitioners cobble together a set of stock attributes that end up creating further distance between designer and user, instead of facilitating actual understanding.

However, it seems more difficult to encourage someone to consider a position they do not currently hold toward a subject if one characterizes them primarily via stereotypes and platitudes. One may wish to instruct the audience by means of a rhetorical argument, but one also needs to court them, to

demonstrate how their goals and yours align—or in the words of the literary critic Kenneth Burke, who developed a model of rhetoric as courtship, to show how author and audience are *consubstantial*. Burke elaborates that:

A is not identical with his colleague, B. But insofar as their interests are joined, A is *identified* with B. Or he may *identify himself* with B even when their interests are not joined, if he assumes they are, or is persuaded to believe so...In being identified with B, A is “substantially one” with a person other than himself. (Burke 1969, 20-21)

Again, some may catch a slight whiff of the unsavory with this idea, that B, the author, is deluding A, the audience, into recognizing a false relationship that is against A’s interests. Rhetorical tools, such as the construction of ethos, or a believable authorial character, are morally neutral; deception is possible. But I suggest that the rhetorical *process*, if approached with care, sensitivity, and honesty, has the potential to engender both sympathy and respect between author and audience. If the author looks upon the audience as an equal partner in argumentation, then it becomes more readily apparent that rhetorical success is difficult to achieve without some significant understanding of audience goals and values. One cannot hope to persuade a mass of formless others to change their current position on a topic via generic truisms. Not that platitudes can’t form a persuasive rhetorical argument—of course they can! But even platitudes must be accurately aligned with audience beliefs if they are to succeed. The formless other must be allowed to take firmer shape. The digital environment, I think, facilitates this recognition, too: while, as various contributors to this volume have emphasized, the empowerment potential of the online universe, for consumers to become contributors, may be overblown to some degree, nonetheless that potential is there, and barriers to reciprocal authorship have been lowered. The knowledge that any audience comprises a multitude of potential authors provides yet another stimulus to approach information system design as if one were joining a complex, many-faceted debate. Incidentally, though, I do not mean to imply by this that all participants in such dialogues may have equivalent standing, although determining what merits authority is a difficult question. But I am often quite happy to be guided by those with superior, complementary, or just plain different expertise; this can be a powerful means of learning and discovery. As a mundane example, when I go to the salon, I want a stylist who will use his or her skills and experience to provide interesting suggestions for a cut; I’ve got no clue what actually suits me, and no sense of new developments in fashion, let alone the vocabulary to structure any vague images I might have. But if the stylist can explain and teach me, then I can begin to participate in the conversation, and we can both come to a shared understanding of the new me to be formed under the shears.

To make this discussion less abstract, I offer an extended anecdote based on a personal design experience in which I took on the role of author/designer with clear rhetorical goals for an information system. I wanted to explore, in the vein I've been explaining here, the potential for systems of organized documents to act as communicative devices. In particular, I focused on examining how it is that a classification is able to persuasively convey its perspective on the subject matter that it is organizing, or more generally, how it is that classifications are able to be persuasive, through the employment of what structural elements. So, for example, I described ways that some existing schemes of organization are able to marshal evidence with which to make rhetorical arguments, and I looked at ways that classifications can display a unique authorial voice and how that works as a persuasive mechanism. Once I had characterized some of the means by which classification systems can communicate persuasively, I then wanted to use this understanding in design. So I created some prototypes, two information systems to make available documents on the subject of vegetarianism. In one prototype, I tried to design an environment that argued for vegetarianism as a moral imperative. I called this prototype The Ethical Vegetarian Resource Library. In the other prototype, I tried to convey the argument that, when considering all potential costs and benefits of the position, vegetarianism just makes sense, it's the logical lifestyle choice. I called this one Flourish: The Vegetarian Way. As I began prototype design, I was interested in designing a particular form of digital artifact in order to exploit what I saw as its expressive properties. I wanted to create a form of the artifact that was creative and potentially challenging, yet ultimately cogent and persuasive, and that potentially used new combinations of structural elements to expand the boundaries of the form.

At this point, I was so focused on my goals as an author, I wasn't sure how the explicit consideration of user needs would help me in the creative process. To be sure, I was interested in rhetorical effects, and so I had to think about the audience I wanted to address, and its projected values and expectations, but I wasn't really sure what that meant in practice. I was thinking, for example, more about the thoughts my audience might have for the subject in the abstract, and not much about the context of goals and activities through which my audience might initially approach my prototypes: the kinds of information they might want or expect to find, for example, and how those needs might complicate or complement my own communicative purpose.

Given time and resource constraints, I had grudgingly (and warily) decided to employ the tools of user personas and scenarios as an initial envisioning exercise to think about the overall experience of how the organized collection would be made accessible, be revealed to its audience, and not just immediately on its categories, and so forth. I had misgivings about these tools, to be sure, and I wasn't quite sure what would happen with them, but I nonetheless needed some systematic means to explore different ways in

which my communicative goals as an author, to express my position on a subject, might interact with the particular situations of different audience groups.

So I devised relatively detailed portraits of three characters, Jason, Mabel, and Lucy, and tried to imagine how they might come to these two information systems, the Ethical Vegetarian Resource Library, and Flourish, the Vegetarian Way, and how they might interact with these collections and experience the arguments that I would present through the organization of resources and so forth. As soon as I began this exercise, I realized that my initial ideas for selecting and describing information resources would not address my characters' immediate tasks, and that my nascent rhetorical strategies, devised without sufficient consideration of the audience's equally powerful desire for access to certain types of information in particular ways, were doomed to fail, even if the intended audience might be sympathetic to my position at some abstract level. In other words, if I did not consider those needs and the means by which to fulfill them, I would not be able to accomplish my primary goal of creating a persuasive interpretation of the subject matter. I would not come close to persuading these folks to consider the ethical necessity of a vegetarian lifestyle.

When I imagined my personas, Jason, Mabel, and Lucy, whom I had conceived as a group of non-vegetarians with some moderate to negligible interest in eating less meat, I could not see them arriving at the Ethical Vegetarian Resource Library with no other goal than to experience it, as I had initially, naively, imagined (I will present my views, and the audience will just arrive with open minds, and I will show them a new way of thinking!). I could see Lucy, for example, a middle-aged woman with high cholesterol and some extra pounds, who was interested in generally becoming healthier, wanting some easy and satisfying vegetarian recipes. However, based on my rhetorical purpose alone, recipes would not be central to my arguments, and so would be deep within the site's structure, if they were there at all. I imagined Lucy getting very confused browsing through the top levels of the collection: Moral Standing of Animals? What does that mean? Compassionate Conduct? That sounds nice, but what does it have to do with eating vegetables? What about basic advice for eating less meat and cooking penne with eggplant? Living as an Ethical Vegetarian? What is an ethical vegetarian? Now, the last question is what I would actually be pleased, as the author, to see Lucy ask. But I had to admit that were I in Lucy's shoes, I might well abandon the Ethical Vegetarian Library before I got to that point. If I didn't make some accommodation for the efficient resolution of Lucy's information needs, if I didn't embrace her goal to retrieve information in a way that she could immediately understand, in addition to facilitating my own, authorial desire to create an interesting and instructive textual experience, then my rhetorical goals would fail, no matter how convincing my arguments, how captivating my authorial voice, or the theoretical success of any of the other mechanisms that made up my persuasive strategy.

Now, my prototype design experience was, of course, a preliminary venture in this area. But it certainly emphasized, for me, the seriousness and depth with which the author of an information system, with the purposeful intent to persuade an audience of a specific position on a particular subject, must attempt to understand and incorporate that audience's complex and multifaceted web of goals, activities, beliefs, values, preferences, the full extent of their potential perspective, in order to craft an effective rhetorical case in the form of a persuasive system/document. To have some chance at wooing my Jason, Mabel, and Lucy characters, I needed to assimilate and negotiate their different ways of thinking into my rhetorical plan. I could not ignore them, nor patronize them as formless others; I had to accept them as rational agents, as my argumentative equals.

Concluding thoughts: power, participation, and performance

Information systems, and the classifications that structure them, are a form of document, and a form of digital media. By adopting this orientation, and by recognizing the inevitable measure of editorial sensibility with which these documents are shaped, we can become more responsible readers and writers in the digital world. When we create collections of information resources, be those as simple as a set of personal Web bookmarks or as complex as a fully functioning digital library, we are publishing a document that conveys a position on the materials we have made available, and we need to approach this task systematically and purposefully, taking ownership of our rhetorical goals, strategies, and even unintended effects. And when we browse a friend's Flickr photos, or when we search a research database, we are reading the collection as well as each individual document, and we need to look critically upon the interpretive frame with which our experience is bounded.

While it's true that the ability to provide access to information is a power that must be taken seriously, and that description of resources in particular ways can be linked to oppressive practices, especially when endorsed by gate-keeping institutions, such as libraries, archives, and museums, I suggest in this essay that conscious assumption of the role of author can compel a system designer to actively consider the intricate web of context in which an identified audience community, or user group, approaches the system. Indeed, failure to characterize the audience with sufficient accuracy and complexity may result in the reciprocal failure of the author's persuasive strategy, and in a document that satisfies no one.

In these complementary acts, of taking on the responsibilities of authorship and of being a responsible audience, we begin to actualize the potential of digital media, where these roles are becoming more fluid, and where the barriers to participation have, with some overenthusiastic hyperbole, but also with some truth, been lowered. In curating our own expressive, online bibliographies, and in providing public access to our unique information filtering mechanisms, we have the potential to extend an

emerging creative form of dialogue and discovery, to communicate our own views and examine the perspectives of others.

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