Compiler to Author: A Process for Designing Rhetorically Aware Document Collections

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Although neutrality has been extensively questioned as a design principle for document collections and their descriptive infrastructures, little research has investigated how this conceptual shift might affect the collection designer's task. This article describes the development and evaluation of a design process to author document collections with an acknowledged rhetorical purpose: collections with a design goal to persuasively communicate a position on their material to an identified audience. Following principles of design research, the process was developed via the creation of two prototype collections. The process was then implemented in a classroom setting. Over the course of a semester, 16 participants used the design process both as individuals and in teams to create rhetorically aware document collections. Although study participants successfully used the process to create collections that persuasively expressed a position on their subject matter, reflections on their design experiences showed that the student designers felt some ambivalence regarding the assumption of authorial power.

Introduction

The process of selecting and describing information resources is more typically conceptualized as compiling or developing a collection, as opposed to authoring one. When considering the collection as Hur-Li Lee defines it, as "an accumulation of information resources developed by information professionals intended for a user community or set of communities," then the type of creative decision making and control suggested by the term *author* does not initially seem applicable (Lee, 2000, p.1106). However, a body of recent scholarship recognizes that the knowledge domains represented through resource, or document, collections are inevitably ambiguous and contested (the domain analytic view introduced by Hjørland and Albrechtsen, 1995, and subsequently elaborated by Hjørland in many articles is one expression of this general recognition). Which subjects lie

within the bounds of information studies, for example, and what should that field be called? Such decisions cannot be made mechanically; to enact them forms a judgment, and the accumulation of these judgments results in each collection's presentation of a unique perspective on the materials that it aggregates, organizes, and delivers to users.

Research has convincingly shown how all collections communicate such judgments, often through their descriptive infrastructures, which include classifications and other metadata practices (see, for example, Bowker and Star, 1999, and Mai, 2004 and in press, for classification systems, Olson, 2001, for library catalog records, Duff and Harris, 2002, and White and Gilliland, 2010, for archival description and practice, and Hooper-Greenhill, 2000 and Cameron, 2008, on museum collections). Through such work, the longstanding ideal of neutrality as a design principle for information systems has been repeatedly problematized. Although this conceptual shift has been widely accepted by scholars of knowledge organization and other related areas, implications for the collection designer's task have yet to be widely explored. For example, practice guides and standards for classificatory structures, such as National Information Standards Organization (2004) and Broughton (2006) for controlled vocabularies continue to portray the designer's work as *documenting* concept use within a subject domain, as revealed through analysis of subject literature, associated discourse communities, and perhaps targeted user groups. In contrast, a design process that confronted the problematic nature of neutrality more directly would portray the collection designer as *constructing a unique theory* of the subject domain through interpretive judgments on concept meanings, relationships, and scope. In traditional practice, the designer is a compiler, whose role is to accurately reflect the reality of a subject area; in a new practice that rejected neutrality as a design principle, however, the designer would be more like an author, forming positions and determining how to express them creatively and persuasively.

The research reported in this article takes the impossibility of neutrality in collection design as a starting point and is in alignment with further contentions by Andersen (2008)

and Feinberg (2008a)—that the classificatory and descriptive infrastructures that underlie collections constitute a type of creative, original expression similar to any form of document or artistic work. In this perspective, an information system's usefulness and interest are located partly in its ability to enact an interpretive frame that differs from a user's current way of thinking and that challenges existing ideas and expectations regarding the collection's subject matter. In acknowledging such an interpretation of a document collection's potential function, this research explicitly recasts the collection designer's role as an authorial one. The collection designer needs to formulate a position, or argument, for the collection and create strategies for enacting that position through the selection, interpretation, and description of collection resources. Like any author, the collection designer needs to determine how to communicate those ideas persuasively to the intended audience of collection users.

This article describes a design process to author document collections with an acknowledged rhetorical purpose: collections with a design goal to persuasively communicate a position on their material to an identified audience. (Note that although I use the term "document collection" throughout this article, I use the word "document" broadly and inclusively to mean any sort of information-bearing object. "Resource collection" is, for this article, a synonym of "document collection.") Following the principles of design research, I created the design process by developing and analyzing two prototype collections. The process was then implemented in a classroom setting. Over the course of a semester, 16 participants used the design process both as individuals and in teams to create rhetorically focused document collections.

The structure of this article follows the chronology of process development. First, I summarize the initial creation of the proposed design process for persuasive collections and detail the process structure, showing how it refocuses the design activity to emphasize the designer's role as an author needing to persuade an audience. Next, I describe the participants' use of the design process for both individual and team projects, and I relate the participant designers' reflections upon their experiences as collection authors. I synthesize related elements in these discussions to propose a subtle reorientation of design goals, moving from authoring a collection to writing the experience of information retrieval, which I suggest emphasizes the equivalent power of the audience with that of the author. Finally, I discuss the advantages of design research for information studies.

Design Process Development

In the spirit of design research, as described by Cross (1999), the process was developed and refined via the production of two complementary prototypes for systems that organize and provide access to information on the subject of vegetarianism. The two prototypes were created to express different points of view on the subject matter. A key goal in prototype development was to express the positions associated with each prototype systematically and persuasively to an identified target audience of current nonvegetarians with some interest in reducing meat consumption. One prototype advocated vegetarianism as an ethical imperative; the other prototype, while also supporting vegetarianism, did so from a cost-benefit perspective, not a moral one. The creation of multiple prototypes enabled the development of a design process that is robust and flexible enough to support a variety of both communicative goals and strategies and potential user interactions. (Complete details of prototype development, as well as the prototype designs, are available in Feinberg, 2008b.)

The process that emerged from creating the prototypes involves an interlocking set of activities that focus on the articulation of design goals through the prism of user experience. This type of approach is grounded in Donald Schon's (1983) idea of problem setting as a key design activity, as opposed to problem solving, and so the outcome of the process is a design or plan, as realized through a set of three coordinated design documents, and not an implemented system.

The eventual design product, the organized collection of resources, was conceptualized as a form of document and vehicle of rhetorical expression. Instead of an information professional creating an access and retrieval tool for a set of users, as in Lee's (2000) definition of collections, this project was conceptualized as an author creating a document for an audience, in alignment with recent scholarship that describes classificatory structures and collections as forms of arguments or types of stories (a selection of these works is cited in the introduction of this paper). This distinction foregrounds the communicative goals of the author (or information system designer) as an active agent with a set of ideas to share with a defined public, and it situates the audience's information needs in relation to that rhetorical goal.

In this formulation, although the perceived information needs of the audience are important, they are not the default goals of the system. Instead, the author needs to figure out how to negotiate these audience needs in a way that simultaneously facilitates the persuasive communication of the system's argument. For example, to configure a collection of resources that supports the contention that vegetarianism is an ethical imperative, it is not necessary, from the basic requirements of the argument, to include a set of vegetarian recipes in the collection, or other material related to the *practice* of being vegetarian, as opposed to the *decision* to become vegetarian. However, if the author wishes to communicate this argument persuasively to an audience of people who is, at the moment of encounter with the system, merely considering a reduction in meat consumption, and who may not currently have the strength of conviction to forgo all meat eating, then the provision of recipes and other materials that demonstrate the practicality and pleasure of a vegetarian lifestyle, because it may satisfy audience information needs and lead them to further interaction with the system, may be seen as a powerful and necessary component of the overall rhetorical strategy. This negotiation between author and audience forms the core of the resulting design process and its associated products. Author and audience are

conceptualized as partners in a dialogue, as co-creators and equally active participants of the collection experience.

Design Process Activities

In the proposed design process, primary activities are as follows:

- Learning: examining the conceptual landscape of the subject domain, characteristics of the user audience being addressed, and features of potential documents to be collected
- Envisioning: persona and scenario development
- Strategizing: making a plan to achieve the nascent vision, and documenting the plan in a brief
- Sketching: manipulating the conceptual landscape into specific illustrations of resource selection, descriptive infrastructure, and access mechanisms that implement the strategy and support the envisioned user experiences as depicted in the personas and scenarios
- Revisiting, reflecting, and refining: revising scenarios, briefs, and sketches into a coherent set of documents that together make up a comprehensive design prototype
- Analysis and critique

The following sections describe each activity.

Learning

The designer acquires more information about

- the subject area of the collection being designed,
- the structure, content, and format of potential documents to include in the collection, and
- the user audience being targeted.

The designer performs this research following standard practices for each information type, such as domain analysis for the subject area, interviews and focus groups for user research, and content analysis of potential documents.

Envisioning: Persona and Scenario Development

First, the designer builds *personas* as a way to encapsulate characteristics of a selected target audience, as described in Pruitt and Grudin (2003). Ideally, personas are constructed by synthesizing user research, but in a way that forms believable characters and not merely data composites (Nielsen, 2002). Next, the designer imagines a diverse set of experiences that show how these personas might interact with some potential document collection, using a variation of the scenarios technique commonly employed in human-computer interaction design (Carroll & Rosson, 1992). In contrast to traditional design processes for controlled vocabularies and other descriptive infrastructures, which do not typically explore how a scheme for organizing information might be embedded within a particular resource collection and accompanying mechanisms for user interaction, these scenarios envision the user's total experience with the collection. By reflecting on these scenarios, the designer can begin to perceive the extent of the design problem, or what the as-yet-undetermined collection might need to do. The scenarios might, for example,

illuminate potential areas of conflict between users' document access goals and the designer's communicative goals, and might also present a variety of potential outcomes for system interactions, to then be characterized according to a continuum of success and failure.

Strategizing: Making a Plan to Achieve the Nascent Vision

The designer uses the ideas generated from initial scenario development to postulate a tentative strategy for how the still-amorphously defined information collection might effectively communicate its position to the targeted audience. This strategy is presented through a systematic design document, called the *brief*, which includes the following sections:

- Authorial goals, or the position being articulated on the collection's subject matter
- Audience characteristics, including beliefs, values, and information needs
- Design rationale, or the strategies for resource selection and description that are used to persuasively convey the position to the audience through the document collection

Sketching

Sketching is a common mode of idea generation and development in visually oriented design fields, and it has gained popularity in Web design and information architecture (Buxton, 2007). Sketches express design possibilities in a loose, disposable format. Many sketches can be created; some are abandoned, and others evolve in new directions.

In this activity, the designer synthesizes the ideas generated from the Envisioning, Learning, and Strategizing activities by sketching possibilities for what the authored collection experience might constitute. The sketches show how different collection elements—selected resources, descriptive information, and access mechanisms—come together as a coordinated work of expression. Paper sketches were used to develop the initial prototypes that informed design process development. An example follows.

For the classroom implementation described in the following section, participants began with paper sketches and proceeded to sketch their evolving designs using a simple digital library environment, the Open Video Digital Library Toolkit (Geisler, 2010). The final forms of these sketches were functioning prototypes, as shown in the following example.

The process of sketching is intended to result in revised interpretations of the design problem and means to its solution, and so lead to evolved versions of the scenarios (the product of the Envisioning activity) and brief (the product of the Strategizing activity).

Revisiting, Refining, and Reflecting

Synergistic development of scenarios, brief, and sketches continues until a viable design emerges through the intersection of the three documents, which together represent the
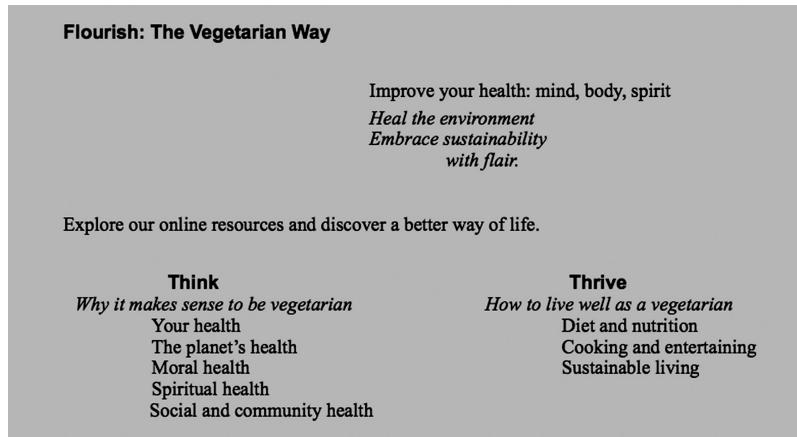
Flourish: The Vegetarian Way

Improve your health: mind, body, spirit
Heal the environment
Embrace sustainability
with flair.

Explore our online resources and discover a better way of life.

Think
Why it makes sense to be vegetarian
Your health
The planet's health
Moral health
Spiritual health
Social and community health

Thrive
How to live well as a vegetarian
Diet and nutrition
Cooking and entertaining
Sustainable living

FIG. 1. Sketch of prototype collection created during initial process development; the categories listed under Think and Thrive represent the top levels of a dual-hierarchy classification scheme that constitutes the primary descriptive infrastructure for the collection.

FIG. 2. Sketch of prototype collection created during classroom implementation of the design process (described more fully in the following major section of this article). Here, the browsing categories on the left represent one descriptive infrastructure element; the themed subcollections on the right represent another descriptive system. All are components of the integrated collection experience.

potential audience experience of the collection (through personas and scenarios), the communicative goals and strategies of the designer/author (through the design strategy brief), and the union of resource selection, description, and access mechanisms that support the audience experience and communicative goals (through the sketches). Together, these documents represent a considered negotiation between an author's desire for expression, an audience's information needs and associated tasks, and the shape of the subject domain.

As insights gained from developing the three documents accumulate, each document changes to reflect the author's emerging sense of the design: the features it should include, the categories that should structure it, and the way these fit together. The scenarios are rewritten to show in fairly detailed fashion how the collection resources will be revealed to the

target audience through various descriptive infrastructures, and audience interactions that show the potential success and failure of the rhetorical strategy are described. When the three documents coherently reflect each other, and an integrated set of ideas has stabilized, the design is ready for analysis and critique.

Analysis and Critique

The candidate design is systematically examined and potentially revamped before proceeding to implementation. Such critiques are established practice in many design fields (Zimmerman, Forlizzi, & Evenson, 2007). The results of the critique may result in another round of design activities. During initial process development, prototypes were self-critiqued by following a systematic review structure. During the classroom implementation described in the next section of this article, critiques were performed two ways. For the individual projects, critiques were performed by groups of peers in structured sharing sessions. For the team projects, outside experts (a group of professors from departments of design, composition and rhetoric, and information studies) were invited to a "crit" session, where teams formally presented their designs before receiving questions and comments.

Process Flow

The following diagram shows the activities described in the previous sections and their relationships to each other as the design plan is being created.

As clarified by the diagram, the proposed design process is neither linear nor circular in the sense of repeating a successive set of steps; although all the activities are independent, they may be occurring simultaneously, and the knowledge gained in one activity may necessitate revisiting another. How, then, is one to know when a design is ready to proceed to an implementation phase? This determination will depend on the judgment of the designer/author and the constraints of the design situation. Eventually, after a round of analysis and critique, when the accumulated suggestions primarily comprise refinements, as opposed to reconstructions, enough decisions will have been made so that a path to initial implementation can be discerned. In the classroom implementation, as will be the case in typical professional situations, established deadlines drove the design process to a point of completion.

Design Outcomes

The outcome of this process comprises the three related design documents developed during the coordinated activities: user scenarios, strategy brief, and sketches. Together, these three documents present a unified design vision for a collection of information resources that is organized and arranged to persuasively communicate a unique perspective on the subject matter that it makes accessible. The scenarios describe the audience experience, including possibilities
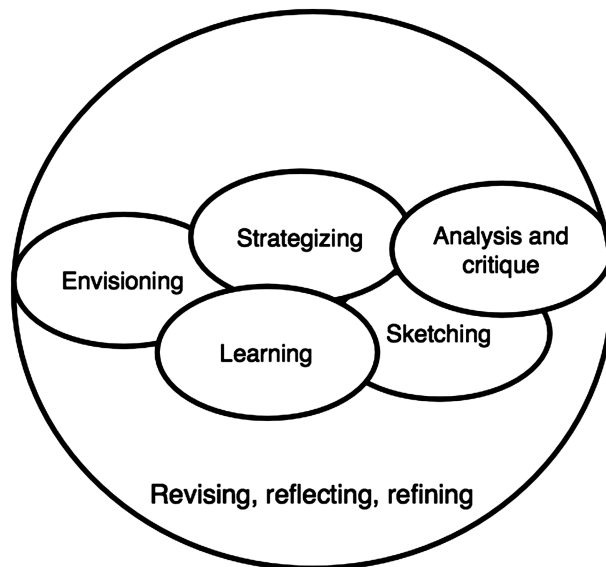
FIG. 3.   Map of collection design process.

for success and failure in terms of satisfying information needs. The brief describes the author's rhetorical goals and a set of strategies for persuasively communicating the author's position on the subject to a targeted audience. The sketches illustrate the integration of resource selection, descriptive infrastructure, and access mechanisms though which the communicative goals and associated audience experience can be supported. The coordinated vision expressed through this document set can then be used as the preliminary blueprint by which the described collection proceeds toward implementation.

Classroom Implementation of Design Process

In the spring semester of 2010, I taught a course in collection design, where the design process described in proceeding sections of this article was used by students to create two rhetorically aware document collections, one as an individual and one as part of a team. Sixteen of 17 students agreed to let their coursework be included in this research study. To ensure both fair grade assessment and reduce the potential for bias in data collection, another faculty member handled the consent process, and I did not know which students had agreed to participate in the study until after grades for the course were submitted. The structure of the course, composition of projects, and evaluative criteria were identical for participants and nonparticipants. (Full details are available via the online course syllabus [Feinberg, 2010].)

In addition to using the same design process, constraints on project contents were instituted to ensure that differences in the students' collections resulted primarily from differences in rhetorical goals and strategy. For both projects, students were limited to video clips as document media, and the subject matter for both projects was limited to the area of sustainability. For the individual project, the scope and

extent of "sustainability" as a concept was a decision left to each student, as part of developing a position on the subject. For the team project, a more detailed scenario was invoked, in which the team was to design a video library to support the city of Austin's zero-waste initiatives. Again, each team decided upon the eventual scope of the project. For the individual project, students selected at least three fourths of their resources from a common source library of approximately 100 videos gathered from YouTube using the ContextMiner tool (Shah, 2009). For the team project, each student contributed seven videos, obtained from any online source, to a shared source library, which the entire class could use. However, a team was not limited to the shared source pool to a mandated degree.

In the course, students were instructed in each design activity and the purpose and structure of each of the three design documents: personas and scenarios, strategy brief, and sketches. Final sketches for the individual projects were all implemented with the Open Video Digital Library Toolkit (Geisler, 2010), which provides a basic, extensively customizable structure for digital video libraries; for the team projects, students could choose another prototyping environment if they wanted, and one of the five project teams used a combination of the toolkit and Adobe Photoshop. Students who wanted to sketch features not available in the toolkit could do so even with the individual projects through additional paper sketches, and a number of projects included such enhancements.

The class was conducted in a hybrid studio-seminar format. Each week, students brought interim products from one of the design activities (such as a first draft of personas and scenarios) to class and shared their progress with peers in feedback sessions. Students were also assigned readings from design, rhetoric, human-computer interaction, and information studies to engage themes relevant to the week's work, and some class time was spent discussing the readings in the context of the design activities, with the goal of examining notions of collection authorship in both practical and theoretical ways.

All of the projects were completed to a satisfactory level according to the established evaluative criteria: the students' collection designs enacted defined positions on the subject of sustainability through the ways that they included, described, and arranged video resources, and all the students were able to articulate rhetorical strategies by which they attempted to communicate their positions persuasively to a defined audience.

As one example of an individual project, the designer of the Home Happiness library defined the collection's position in this way: "At Home Happiness!, we define 'sustainability' as a process to improve the quality of life for individuals, families and communities, while at the same time maintaining the resources of the world." The Home Happiness designer targeted the collection toward an audience of middle-aged, Austin-dwelling women who enjoy home projects but don't have an existing goal to enact sustainable practices in their daily lives. Accordingly, the Home Happiness designer

focused the collection around do-it-yourself projects that served long-term sustainability goals but also addressed more immediate concerns. The designer articulated this strategy as follows:

> Sustainability shouldn't be an intimidating process—it should make your life simpler! As such, our collection focuses on various small projects that are fun, can save you money, keep you healthier, and contribute positively to the world.

As illustrated in the following figure, the Home Happiness designer employed a number of rhetorical mechanisms to accomplish her communicative goals. For example, although most of the collection's resources comprised instructions for contained, simple home activities, the collection also blended in resources that introduced sustainability concepts and suggested the benefits of larger, more complex projects.

In her strategy brief, the Home Happiness designer described her rhetorical strategy for creating the browsing categories this way: "I start out my series of categories with 'How To, Projects, DIY' because I would like for the users to find fun first in my page before embarking strictly on what sustainability specifically is." The designer continues with this rhetorical strategy in formulating the metadata for each video: "To implement my general strategy, I plan to keep the descriptions of all the videos positive and light. In fact, in regards to the videos regarding DIY projects, I want first to describe the project itself, and end the description with how the project is beneficial in regards to sustainability." An example of this strategy appears in the following illustration:

As a contrasting example, another designer uses her Plan to Live Sustainably collection, as shown in the following figure, to present the position that "businesses, governments, and individuals need to plan in a grand scale and for long term benefits."

To persuasively convey this argument, the Plan to Live Sustainably designer selects, describes, and displays videos to present "proof that [planning] works, inspiration that it is possible for individuals to take actions, and steps and ideas on how planning works," as described in the designer's brief. The designer adds that "anything that does not require or promote planning, like small green steps or DIY crafts, should be excluded [from the collection] as it detracts from the overall statement."

The Plan to Live Sustainably designer targeted an audience of "logical thinkers" who "require facts." To increase the persuasiveness of each individual video for this audience, the Plan to Live Sustainably designer cataloged the individuals and institutions associated with each video, "to convey a sense of authority and expertise," as shown in the following example:

Although the more detailed scenario for the team project constrained the collection focus more strongly than with the individual projects, team-designed collections were similarly diverse in approach. One group decided to base their rhetorical strategy on motivations of Texas and Austin pride,

FIG. 4.   Home page of one student's persuasive collection.

FIG. 5.   Both the content and style of resource description facilitate rhetorical goals.

FIG. 6.   Another example of a student's persuasive collection.

FIG. 7.   Inclusion of specific descriptive information as an element of rhetorical strategy.

FIG. 8.   Team-produced library that connects zero-waste initiatives to Austin residents' pride in their city.

FIG. 9.   Team-produced library that emphasizes mutual responsibility for zero waste, without reference to residence in a particular location.

with sustainable practice positioned as a means for expressing Austin's excellence:

Another group emphasized the connections between individual, local, and global actions to encourage sustainable practices, without an Austin-specific angle.

Classroom Participants' Experience as Collection Authors
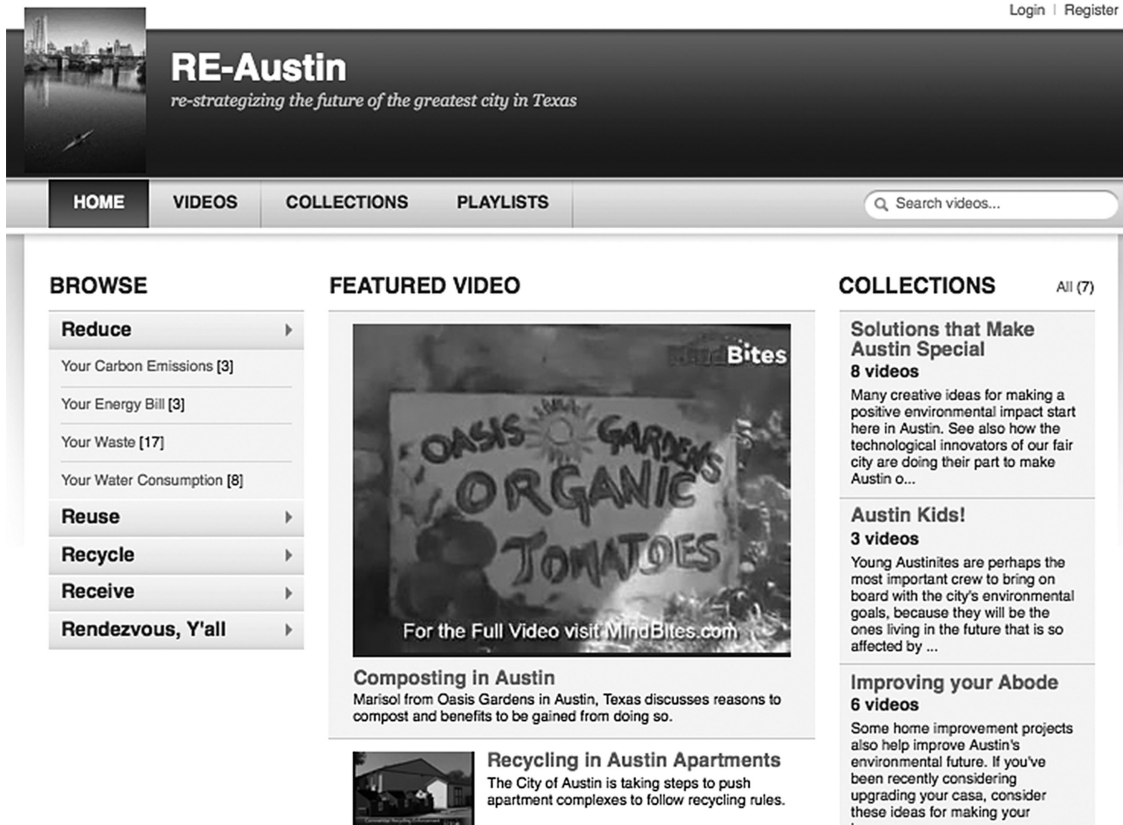
Most of the classroom participants were not drawn to the class for its emphasis on authorship but for its use of digital video as the document media for collection building. Few of the students had previously conceptualized collection design as a rhetorical problem, and some began the semester with acknowledged reservations about this notion and about the design process. In a concluding essay that reflected back on the semester's work, one student noted that she never would have previously related document collection design with "being an author," but that, at the end of the course, she could see the applicability of this idea, commenting that, in her opinion, "a curator becomes an author of a collection when he [sic] takes control of the audience's experience." Another student admitted that she was initially skeptical of the design activities and their various products, thinking that the weekly production of different design components was "busywork." By the end of the course, however, she suggested that "a poorly conceived digital collection in this age of Google and Wikipedia is essentially worthless. With this colossal amount of content today, it is imperative that we as designers have an awareness of our authorial vision and how to communicate this vision to our audience"; she continued by stating that "I believe that my own skills as a designer and author of a collection have improved tremendously now that I attempt to be in tune with the idea that productivity in design occurs when we make our collections a rhetorical problem."

Overall, classroom participants indicated general acceptance that the design elements they had been learning to manipulate as collection designers might produce similar rhetorical effects as the more familiar textual elements employed by authors of traditional written texts, as exemplified by comments such as this one: "every part of the collection, from a single word, picture, sentence, link, tag, or anything else are tools that I can use to show my authorial goals, and they do affect the way collections are perceived by users."

However, this endorsement was, for many participants, accompanied by a measure of anxiety in assuming an authorial role. Many participants felt uncomfortable with the sense of power and responsibility that they attributed to authorship. Their concerns centered around notions of authenticity, transparency, and trustworthiness, and described a feeling that they, as authors, did not sufficiently embody these characteristics. One strand of this anxiety manifested as a sense that expressing a position as an author might be acceptable, but expressing that position in a manner targeted toward a particular audience could be dishonest, even if the author would not otherwise be able to communicate effectively with the audience. For example, the designer of the Sustainability Is Easy project, which emphasized simple personal actions with immediate benefits as an entry point to sustainable living, developed an intricate rhetorical strategy that shaped every aspect of the collection and made the project a convincing statement for her targeted audience. However, she worried that certain elements of her presentation, oriented toward her audience's perceived values, obscured her own beliefs in a way that seemed ethically questionable. In developing an authorial persona that, in her words, "catered" to her audience instead of "challenging" them, she felt "embarrassed" at her "manipulation." The Plan to Live Sustainably designer, reflecting on her project, reconsidered her original strategy to "present the information from the resources as factually as possible, while pulling out the facts that were relevant to my overall themes," because she felt like her attempted "objectivity" was really an inhibitor of transparency, with the resulting effect of being "off-putting to users, as it is not obvious what position the author is taking in reference to the ideas presented in the resources." In formulating their rhetorical strategies, both these students decided that a persuasive collection would minimize the author's apparent interests, focusing on the existing values and beliefs of the audience. In hindsight, however, they wondered if the opposite was more true; they felt like the audience might find them, as authors, more trustworthy if they were more forthright about the potential differences between their viewpoints and those they perceived the audience to have.

In contrast, other participants began the design process thinking that they should adopt both subject positions and rhetorical strategies based on their own interests and concluded the process by wondering if they should have more directly considered target audience beliefs and values. Looking back at the individual project, one participant commented that "the personal interest I had in food sustainability sometimes overshadowed my persuasive interest in creating the collection"; the student concluded that successful rhetorical communication involves thinking about audience beliefs and values, and not just about what the author thinks or how the author would respond to an argument. Responding to similar tensions, several participants reported ambivalent feelings related to, as they described, imposing their own interpretations on documents that others had created. Several participants wondered if they were ethically remiss in describing a document differently from the way its creator might have done. One participant described an explicit ethical imperative to include materials in a collection only if she was certain that the document author's intended, true meaning coincided with her own authorial goals for the collection. Such uncertainties about the ethics and extent of authorial expression may have contributed to an agreement among many participants that, contrary to expectations, the team project was easier and the final product was better than the individual project. Participants commented that working in a group forced them to acknowledge and articulate their rhetorical goals, and they felt more comfortable pursuing those goals if their fellow group members agreed. As one student

noted, "I could not simply internalize my decisions, I had to express them to other people too. This made me develop a stronger voice. . . ."

What unifies these misgivings described by classroom participants, I think, is an unstated notion that rhetorical discourse is something that an audience receives, as opposed to something that an audience participates in. Students felt varying degrees of discomfort with authorial power because it was difficult for them to envision audience power, and the role that an audience would have in shaping their own interactions with the collections. Participants focused primarily upon the *outcome* of interaction with a collection—with a set of retrieved documents, perhaps—as opposed to the *process* of that interaction. When the design emphasis is on delivery of information, it is easier to imagine the audience more as passive recipients, being acted upon by the collection, as opposed to active agents shaping their own system interactions and understanding through the infrastructure provided by the students' designs.

Mixed reactions to the production of personas and scenarios, one element of the design process, provide some support for this interpretation. Of all the design activities, participants specifically described some initial, and in a few cases, continued, skepticism regarding the Envisioning activity, in which personas and scenarios were supposed to facilitate a sense of what an audience might do with the collection, or the interaction experience. Some students found both the actual data they had gathered (through pooling interviews of potential audience members) and the elaboration of that data in scenarios to be fake and unrealistic. One participant remarked that "I am troubled in placing too much stock into fictitious people, regardless of the level of believability of their actions and who they represent. I also do not know if real people are necessarily better," while another commented that the whole idea just seemed "silly." A third participant wondered if writing scenarios was just an opportunity to "create an audience" that would accommodate the designer's rhetorical goals. By the conclusion of the course, some of the participants felt like this design activity helped them to understand the audience on its own terms, to challenge their authorial assumptions instead of confirm them. One participant described a revealing moment during the team project "crit" session, when one of the invited experts cautioned that for one persona that the team had introduced, some descriptive text might have an unintended effect, and the student could immediately see how that might be the case. Upon reflection of the team's use of personas, the participant realized that "User data is great for highlighting people's expectations and background, but it can be hard to move from this sometimes nebulous body of knowledge to concrete design decisions. Although the user research helped inform and make believable the personas, the personas themselves also helped me integrate the findings from the research into our design." Another participant, with a background in creative writing, had entered the course believing that thinking about the audience too much would compromise the author's creative vision, but found himself persuaded that rhetorical discourse depended on audience interaction and that

scenarios were a useful vehicle for envisioning this interaction, admitting that "I was, in truth, surprised at how powerful these scenarios turned out to be." However, these realizations were not unanimous, and they seemed to come at the conclusion of the work, instead of informing the process all along.

The students' struggles with authorial power might be more directly confronted in the design process by subtly refocusing the idea of the artifact being designed. Instead of conceptualizing the design task as writing a collection, which is partly structured by the classification and description of documents, it may be more productive to think of writing the experience of information retrieval, as shaped by the collection being searched and its accompanying descriptive practices. In emphasizing the process of interacting with information, the three "participants" in the experience are more explicitly recognized in mutual connection and independence: the author, who shapes the collection via description and the means by which the audience interacts with it; the audience, who selects between interactive possibilities and, eventually, collection resources, and who decides whether the author's rhetorical position on the collected material is persuasive or not; and the collection itself, whose interpretation is constrained by the actions of the author but realized through the decisions of the audience.

Aligning the design task on the experience of information retrieval—broadly construed to mean a user's sustained encounter with a document collection, including all the ways that users can locate, discriminate between, and make sense of a collection's resources—means reorienting the idea of authorship as one of two actors in a dialogic process, with the audience taking a role that demands equal presence. While the author, by selecting and describing resources and specifying their means of access, defines the range of actions that the audience may undertake, the audience initiates the process, selects between actions, and determines the eventual outcome, be that a set of documents to examine, a new way of understanding the subject matter, a feeling of enjoyment or frustration, and so on. Given this conception, it seems like a compelling interaction relies on participants, author, and audience, taking an active role in the retrieval process; both are, in effect, writing the experience of retrieval. Charland (1995) argues that a rhetorical audience that finds itself mischaracterized and unpersuaded has an ethical duty to speak up, to enact the values and beliefs that it does not share with the author. In this environment of equality, the "user" cannot be patronized. The author must work to understand the audience's convictions but not reproduce them; instead, the author needs to use these as a foundation for new understanding on everyone's part, the author included.

To emphasize this and encourage this notion of mutual participation, the design product, or the set of collected documents with its structuring descriptions and access mechanisms, needs to make the idea of experience, or process of interacting with the document collection (as opposed to the idea of a set of relevant search results, or information found), more salient. In subsequent revision and implementation of this collection design process, I will examine this idea by

asking study participants to develop a general rhetorical strategy that both marks the activities of authorship and, in so doing, educates the audience in its own power to respond to those activities.

Discussion: Design Research in Information Science

This study has described a way of thinking about collection design—as a document to be authored—and has described the development and implementation of a design process to facilitate the creation of document collections in this mode. As a result of implementing the design process in a classroom setting, a potential refinement in the notion of collection authorship has emerged: to consider the experience of information retrieval, as mediated by an author, an audience, and the collection itself, to be the ultimate construct of authorship. In addition to these findings, the study also provides an example of design as both form and focus of information studies research.

Although there are various approaches to design research, the mode used here involves the development of novel artifacts, and reflection upon these artifacts and their creation, as its own type of inquiry. The idea that design itself is a form of research is connected to the work of Donald Schon, who claims that as a designer determines the possibilities and constraints of a particular design situation and creates a solution to fit the situation, the designer becomes "a researcher in the practice context" (Schon, 1983, p. 68). A possible solution to a design problem is characterized as a sort of hypothesis that may enable the reframing of the problem. This reframing is a type of experiment, which, according to Schon, exhibits a rigor equal to, albeit different from, the conventional rigor of the scientific experiment. If the experiment succeeds, the solution proceeds in a new direction. According to Zimmerman, et al. (2007), design practice makes the transition to design research when new knowledge is generated from the creation of an artifact. This new knowledge arises from innovations in process and product (which Zimmerman et al. term as invention), combined with relevance, or the ability for the designer to clearly explain how the new artifact results in a preferred state.

This sense of design research has similarities to the orientation of humanities research. One is the emphasis on the designer's reflection throughout the design process, which can be seen as an evolving interpretation of the design situation. This interpretation is based to a certain extent on the skills and judgment of the designer (as described, for example, in Vetting Wolf, et al., 2006). The interpretive process used by designers conceptualizing possible artifacts is similar to that undertaken by humanities researchers investigating the meaning and form of existing artifacts. The emphasis on the skills of the designer mirrors the emphasis in humanities research on the originality of the researcher's conclusions, where research contributions flow from unique insight as opposed to replicability. A design is research when it can be shown to reveal something new and interesting, yet

reasonable, about the category of artifacts to which it belongs or the means by which it was made, just as an interpretation of *Hamlet* is research when it illuminates something heretofore unseen, but yet reasonably explained, about drama. Building something and seriously reflecting upon it can lead to new and useful knowledge, just as reading *Hamlet* carefully, with scholarly rigor, can lead to new and useful knowledge, but the process and its inputs cannot be systematically delineated in the language of quantitative or even qualitative research methods and data, and the conclusions become part of an array of potentially valid interpretations, as opposed to a single, predictive explanation.

In this case, we can see the idea of a collection as a type of document that expresses a position on the subject matter it contains as a hypothesis suggested by a strong base of conceptual work of that showed the collapse of neutrality as a design principle. The design of rhetorically focused collections, initially by the researcher, serves both as a form of validation for that hypothesis as well as the means of generating a systematic design process to inform the creation of such collections. The subsequent classroom implementation of the design process similarly serves as a form of validation for the design process and as a means of refining the initial hypothesis regarding authorship and collections, potentially transitioning the object of authorship from just the collection itself to the dialogic experience of information retrieval.

In contrast to other forms of design research that emphasize measures of improvement over previous design solutions, such as showing that an information retrieval algorithm is successful because it improves precision and recall of search results according to accepted relevance judgment protocols, the reflective form of design research employed in this study uses artifact creation as a means for generating conceptual insights. It provides a means of explaining how a design works and how it might work differently, but it does not prove how one design is better than another. The various forms of design research can complement each other, just as research in the humanities, social sciences, and sciences can complement each other. As in the domain of human-computer interaction, where reflective design research is gaining currency, information studies can benefit from encouraging this form of design research when the area under investigation warrants it.

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References

Andersen, J. (2008). Knowledge organization as a cultural form: From knowledge organization to knowledge design. In Arsenault, Clement, & Joseph Tennis, (Eds.), Advances in knowledge organization, Vol. 11, 2008. Culture and Identity in Knowledge Organization (pp. 269–274). In Proceedings of the 10th International ISKO Conference (5–8 August, Montréal, Canada). Advances in knowledge organization, no. 11. Würzburg: Ergon.

Bowker, G., & Star, L.S. (1999). Sorting things out. Cambridge, MA: MIT Press.

Broughton, V. (2006). Essential thesaurus construction. London: Facet Publishing.

Buxton, B. (2007). Sketching user experience: Getting the design right and the right design. Amsterdam, the Netherlands: Elsevier.

Cameron, F. (2008). Object-orientated democracies: Contradictions, challenges and opportunities. In Trant, J., & Bearman, D. (Eds.), Museums and the web 2008. Retrieved from http://www.archimuse.com/mw2008/papers/cameron/cameron.html

Carroll, J.M., & Rosson, M.B. (1992). Getting around the task-artifact cycle: How to make claims and design by scenario. ACM Transactions on Information Systems, 10(2), 181–212.

Charland, M. (1995). The constitution of rhetoric's audience. Argumentation and values: In Proceedings of the Ninth SCA/AFA Conference on Argumentation (pp.12–15). Annandale, VA: Speech Communication Association.

Cross, N. (1999). Design research: A disciplined conversation. Design Issues, 15(2), 5–10.

Duff, W., & Harris, V.A. (2002). Stories and names: Archival description as narrating records and constructing meanings. Archival Science, 2, 263–285.

Feinberg, M. (2008a). Classificationist as author: The case of the Prelinger Library. In Arsenault, C., & Tennis, J.T. (Eds.), Culture and identity in knowledge organization. In Proceedings of the 10th International ISKO Conference, Advances in knowledge organization, no. 11(pp. 22–28). Würzburg: Ergon.

Feinberg, M. (2008b). Classification as communication: Properties and design (Unpublished doctoral dissertation), 22–28.

Feinberg, M. (2010). Syllabus for INF 385U, digital media collections. School of Information University of Texas at Austin. Retrieved from http://courses.ischool.utexas.edu/feinberg/2010/spring/INF385U/index.html

Geisler, G. (2010). Open video digital library toolkit software. Retrieved from http://www.open-video-toolkit.org/

Hjørland, B., & Albrechtsen, H. (1995). Toward a new horizon in information science: Domain-analysis. Journal for the American Society of Information Science, 46(6), 400–425.

Hooper-Greenhill, E. (2000). Museums and the interpretation of visual culture. London: Routledge.

Lee, H.-L. (2000). What is a collection? Journal of the American Society for Information Science, 51(12), 1106–1113.

Mai, J.-E. (2004). Classification in context: Relativity, reality, and representation. Knowledge Organization, 31(1), 39–48.

Mai, J.-E. (in press). Classification and modernity. Journal of Documentation, 67(4).

National Information Standards Organization. (2005). Guidelines for the construction, format, and management of monolingual controlled vocabularies. ANSI/NISO Z39.19-2005. Bethesda, MD: NISO Press.

Nielsen, L. (2002). From user to character: An investigation into user-descriptions in scenarios. In Proceedings of the Fourth Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques (DIS '02) (pp. 99–104). New York: ACM Press.

Olson, H. (2001). The power to name: Representation in library catalogs. Signs, 26(3), 639–668.

Pruitt, J., & Grudin, J. (2003). Personas: Practice and theory. In Proceedings of the 2003 Conference on Designing for User Experiences (pp. 1–5). New York: ACM Press.

Schon, D. (1983). The reflective practitioner: How professionals think in action. New York: Basic Books.

Shah, C. (2009). ContextMiner: Supporting the mining of contextual information for ephemeral digital video preservation. International Journal of Digital Curation (IJDC), 4(2).

Vetting Wolf, T., Rode, J., Sussman, J., & Kellogg, W. (2006). Dispelling design as the "black art" of CHI. In Proceedings of ACM CHI 2006 Conference on Human Factors in Computing Systems (pp. 521–530). New York: ACM Press.

White, K., & Gilliland, A. (2010). Promoting reflexivity and inclusivity in archival education and practice. Library Quarterly, 80(3), 231–248.

Zimmerman, J., Forlizzi, J., & Evenson, S. (2007). Research through design as a method for interaction design research in HCI. In Proceedings of ACM CHI 2007 Conference on Human Factors in Computing Systems (pp. 493–502). New York: ACM Press.