How information systems communicate as documents: the concept of authorial voice

Melanie Feinberg

School of Information, University of Texas at Austin, Austin, Texas, USA

Abstract

Purpose – This study aims to examine how systems for organizing information may present an authorial voice and shows how the mechanism of voice may work to persuasively communicate a point of view on the materials being collected and described by the information system.

Design/methodology/approach – The paper synthesizes a conceptual framework from the field of rhetoric and composition and uses that framework to analyze how existing organizational schemes reveal authorial voice.

Findings – Through textual analysis, the mechanism of authorial voice is described in three example information systems. In two of the examples, authorial voice is shown to function as a persuasive element by enabling identification, the rhetorical construct defined by the literary critic Kenneth Burke. In one example, voice appears inconsistently and does not work to facilitate persuasion.

Research limitations/implications – This study illustrates the concept of authorial voice in the context of information systems, but it does not claim to comprehensively catalog all potential manifestations of authorial voice.

Practical implications – By analyzing how information systems work as a form of document, we can better understand how information systems communicate to their users, and we can use this understanding to facilitate design.

Originality/value – By creating designs that incorporate an enhanced conceptual grasp of authorial voice and other rhetorical properties of information systems, the construction of information systems that systematically and purposefully communicate original, creative points of view regarding their assembled collections can be facilitated, and so enable learning, discovery, and critical engagement for users.

Keywords Knowledge organization, Classification, Rhetoric, Authorial voice, Humanities, Information systems, Knowledge management

Paper type Research paper

1. Introduction

Conventionally, information systems work as unobtrusive tools to streamline existing user tasks, rather like good kitchen knives. It is practically impossible to shave fennel slices for an autumn salad without a sharp knife; performing a systematic review of medical evidence is equally daunting without the collected citations, indexing vocabularies, and search facilities of Medline and similar databases. As the knife enables the task of slicing fennel, smoothly expediting the larger goal of salad making, so does the medical information system efficiently advance the progress of a systematic review without unduly intruding itself into one's activities. Foskett (1974) represents this conception of information systems when he asserts that the primary goal of organizing information is to save users' time through the efficient provision of documents relevant to their existing tasks.

Even the trusty knife, however, is less neutrally instrumental than it might seem. A paring knife might be said to suggest sectioning an orange into supremes in a way that a cleaver does not, perhaps leading to a new idea for salad composition. A specific knife's affordances, in other words, advance certain interpretations of ingredients differently than another knife's features might. So it is as well with information systems. If it is difficult to retrieve documents about "urinary surveillance of people with spinal cord injuries" using the combination of MeSH vocabulary and keyword searching available in Medline, this may suggest that a systematic review of medical evidence on such a topic would be premature, as few studies have been conducted. While these system expressions may be viewed as unnecessary hindrances to one's original goals, they may also be productive contributions, enabling a new interpretation of the task situation, and perhaps altering one's perceptions in an interesting, if unanticipated, way.

Moreover, because information systems are essentially language constructs (they both contain language, in the form of documents, and use language to structure access to the collected documents, in the form of subject categories and other metadata), their ability (or, perhaps, their inevitability) to be suggestive in this way is much greater than the knife's possibilities. A complementary analogy for information systems might be, instead of a knife, a recipe for a familiar dish, such as spaghetti and meatballs. A well-written recipe, as a sharp knife, does facilitate preparation of the meal. But each recipe in addition forms a particular interpretation of the dish, an interpretation that can be suggestive in quite different ways. A version of spaghetti and meatballs with ground turkey says, "It's possible to have healthier versions of old favorites." A version that nestles a nugget of foie gras in the meatball says "Comfort foods can also be elegant."

The interpretive aspect of information systems, that they inevitably take a point of view on the material that they collect, organize, and make accessible, has been widely discussed (as in, representatively, Bowker and Star, 1999; Beghtol, 2001). Through equivalence relationships, for example, a medical information system might be said to assert that performing certain tests on a regular basis constitutes a type of urinary surveillance, thus validating that concept as a clinical possibility. But this conceptual understanding of information systems' "recipe nature" has not been systematically translated into the design context. Studies have generally tended to focus on what information systems communicate, as when Hope Olson (1991) describes how an LCSH heading for "male contraception," for example, without an equivalent heading for female contraception, implies that contraception is by default a woman's responsibility. Research has yet to systematically describe how such messages are put forth more and less effectively.

This study begins to address this gap, to consider the mechanisms by which information systems communicate. I accept the theoretical orientation established by various researchers, including Hjorland and Nissen Pedersen, 2005, Feinberg, 2007, and Mai, 2010, who endorse a pragmatic, pluralistic approach to understanding information systems, and I build upon this foundation by showing how such an orientation translates into design practice. If, for example, we wanted to design a digital library of spaghetti and meatball recipes in which we argued for an approach that celebrates culinary diversity, how could we facilitate this goal? What rhetorical mechanisms are at our disposal? If we can identify and describe such communicative properties of information systems, then we can deploy these characteristics more actively in design. We can make the rhetorical expression inherent in information systems systematic and purposeful, instead of accidental and haphazard.

2. Scope and approach

This study isolates one communicative property, the concept of authorial voice, and demonstrates how this property operates in several existing information systems. In previous studies that complement this one, I have identified additional rhetorical mechanisms and similarly explored their working through analysis of examples: these include logical argument in the rhetorical mode (Feinberg, 2010), ethos (Feinberg, 2009b), and genre adaptation (Feinberg, 2009a). Together, these studies provide a sense of the potential expressive richness available to information systems and hint at the range of communicative strategies that designers might employ in crafting systems that convey a particular perspective cogently and persuasively. The current examination of authorial voice extends the previous work by focusing on the unique persona projected by the author/designer, in contrast to manipulation of evidence (logical argument), incorporation of audience beliefs and values for the purpose of engendering trust and believability (ethos), and adjustment of formal elements (genre adaptation). While this set of studies does not attempt to comprehensively identify all expressive possibilities open to information systems, they nonetheless illustrate the potential breadth of rhetorical elements that systems might exhibit.

To investigate how authorial voice functions as a rhetorical mechanism in information systems, I employ a humanistic, interpretive mode of research, with the primary investigative technique of close reading, or critical textual analysis, as commonly employed in the humanities to comprehend the meaning and form of texts. First, I show how authorial voice, as described through work in composition studies, manifests itself in systems for organizing information, using the initial example of the Prelinger Library. I then extend the Prelinger Library analysis to show how voice may function as a persuasive element, via the mechanism of identification, a rhetorical device described by the literary critic Kenneth Burke. Next, I present several additional examples of voice as a vehicle for identification in information systems, including the DrugSense Newsbot Concept Dictionary (n.d.) and the Warburg Institute (n.d.) classification. Finally, I explore some of the broader implications of acknowledging the potential for information systems as forms of expression in their own right, as documents themselves, as opposed to merely containers of documents.

The three examples under analysis were purposefully chosen for their illustrative qualities in explicating the concept of authorial voice and its potentially various manifestations, and not to be representative of all information systems. In contrast to most information systems, all three examples express a clear point of view on the documents that they collect and describe, and their rhetorical goals are made explicit through supplementary material. The web site for the Warburg Institute library explains, for example, that the main classes in its organizational scheme were chosen to reflect the institute's goal to reveal the "survival and transformation of ancient patterns in social customs and political institutions." In addition, while the Prelinger Library and DrugSense concept dictionary show two different contexts where authorial voice works to persuasively advance a rhetorical argument, the Warburg classification presents a case where the reader's experience of voice appears inconsistent, and the rhetorical goals of the organization are not persuasively advocated.

My goals in this study are limited to the identification of a communicative mechanism, authorial voice, in several schemes for organizing information, and a demonstration of how that mechanism serves rhetorical goals in the example systems.

My claims are restricted to the idea that information systems may exhibit authorial voice, and that this authorial voice may be used to advance a position on the material collected and organized by the information system; accordingly, it should be possible to design systems that systematically take advantage of this mechanism. I am not attempting to prove that all information systems do, or should, incorporate authorial voice to any particular degree, nor am I claiming to present a comprehensive catalog of all possible expressions of authorial voice.

Further, I am considering authorial voice here as a textual effect, as a device that is accessible to the "reader" of an information system. The circumstances in which the systems were produced, including issues of authorial intent, or of potentially changing institutional goals over time, are not germane to my purposes. It may be, for example, that the current structure of the Warburg classification scheme results from the intersection of various decisions and visions over the history of the organization; however, this context is not apparent to the general user, or reader, of the Warburg collection, and it does not contribute, therefore, to the experience of authorial voice as I am describing it here.

3. Authorial voice

Although intuitively understood to mean a sense of the author's presence and vision, voice is a tricky, even controversial, concept. Peter Elbow (2007) describes how concepts of voice have changed within the field of composition studies, or the teaching of writing: in the 1960s and 1970s, the idea of voice was associated with a sense of agency, authenticity, and "rhetorical power," in keeping with a pedagogical focus on individual expression. However, in the 1980s and 1990s, voice, and individualist pedagogy in general, was subjected to postmodern critique. Scholars and writing teachers focused more on social construction of the text, in particular on the constraints of dominant discourse structures, and became cynical about authorial intention, which seemed inextricably connected with voice. The idea of the writer as a coherent self or any sort of autonomous agent was repudiated as an artifact of the hegemonic discourses of capitalism and patriarchy (Faigley, 1992). Under postmodern scrutiny, the idea of a writer's voice was an illusion, a screen for social and political forces working through the author. It would not only be naive but irresponsible for an author to believe that he or she had ultimate control of the vision expressed through a text, that the text could somehow escape the net of socially constructed discourses from which it emerged and be the original product of an individual agent.

However, it is possible to reconcile these two seemingly opposite ideas of voice. One need not equate the expressive qualities of a text with a particular author's true identity or intentions, or the success of voice as a textual element with its congruence to a writer's actual authenticity. No matter how a sense of an author's presence or vision is constructed, to what extent this occurs via the expectations of particular discourses, or whether this sense of presence really is connected to an author's personal agency, this presence may be nonetheless discerned by readers and affect their interpretation of the text. Wayne Booth (1983), for example, asserts that a sense of authenticity in writing results from the textual construction of an "implied author," not from the actual self of the writer. For example, the omniscient narrator of *Pride and Prejudice* may describe Mr Bingley as "amiable," and the four Misses Bennet, characters in the novel, might in their dialogue echo this description. However, through the action, the readers

are also shown how Mr Bingley is easily influenced by the opinions of his devious sisters and forceful friend, Mr Darcy, to break off his acquaintance with Jane Bennet, even though she is lovely and virtuous. The implied author, it would seem, has a more nuanced attitude toward Mr Bingley than the narrator, that his character may indeed be amiable, but may also be weak and easily manipulated. In isolating this element and analyzing how it contributes to the novel's experience, it is not necessary to determine whether this is actually Jane Austen's personal view of Bingley, or whether this is an unconscious manifestation of a social context in which, perhaps, drive is associated with confidence and arrogance (as in the dashing Darcy, eventually revealed as the suitor worthy of the novel's heroine, Elizabeth) and amiability with weakness. The experience of voice, as manifested through textual evidence, has its own existence whether or not this sense of voice represents a key to the author's authentic self or into a culture's particular discourses and contradictions. A canny author might indeed manipulate textual elements to create an authorial persona that guides the reader toward a certain interpretation; such a manipulation may still be effective and revealing of meaning even if the author's personal sentiments (consciously or not) lie elsewhere. In other words, although we may not be able to see voice as an unerring line into a text's true meaning or its author's real identity, we may still identify voice within a text and mark the work that it performs and the effects it produces.

In addition, even within the coordinated structures of a particular discourse community, rhetorical situation, and set of genre conventions, writers are able to make choices that contribute to a sense of authorial presence (Clark and Ivanic, 1997; Johnstone, 1996). Johnstone, a sociolinguist, comments that "self-expression plays a crucial role in . . . mediating between options and outcome" and notes as well that "even the most formulaic genres," such as thank-you notes, can be "self-expressive in the hands of good writers" (Johnstone, 1996, p. 90 and p. 179). In this vein, Matsuda defines voice as an "amalgamative effect of the use of discursive and non-discursive features that language users choose, deliberately or otherwise, from socially available yet ever-changing repertoires" (Matsuda, 2001, p. 40). Voice, in this definition, represents the overarching quality of difference that distinguishes one writer's response from another's, despite the inevitability of various social constraints. In fact, one could say that such constraints contribute to the experience of voice by marking deviations. A thank-you note that manages to express a singular voice indeed stands out.

The textual features that combine to convey voice are often described as stylistic, referring to form but not content (as in Elbow, 2007). Clark and Ivanic (1997) comment, however, that what is being said may reveal authorial presence more strongly than the manner in which content is presented. An author who claims ownership over unique ideas (as opposed to, for example, primarily citing the ideas of others) has more presence in a text, even if the style is unobtrusive. This detail is particularly important for the investigation of voice in the texts of information systems, which lack the range of stylistic resources possible in more conventional forms of writing. We may find voice not merely in the nomenclature used for categories or other primarily expressive techniques, but also in the constitution of classes and their relationships, and in the assignment of categories to selected resources. The way that classes are defined and used, in addition to the way that they are named, may show the confluence of imagination and vision that the concept of voice represents.

4. Voice in the Prelinger Library

The Prelinger Library is a non-circulating private institution, located in San Francisco, with a collection of 50,000 items (Lewis-Kraus, 2007; Prelinger, n.d.). The items are not catalogued, but they are arranged in a progressive order from one end of the library to the other, and different sections of the shelves are physically marked with subject headings.

As an example of how the headings progress, a series of headings on shelf 5 runs from US Internal Dissent to Nuclear Threat, then to War, Conflict, and on to Peace, followed by Radical Studies and then Utopia). In contrast to traditional design goals of neutrality and predictability, the Prelinger Library's classification shows personality and surprise. These characteristics combine to endow the Prelinger collection with an authorial voice.

While the Prelinger Library provides public access to its materials, it does not operate under a standard retrieval orientation. Megan Shaw Prelinger describes the library as being "browsing-based" rather than "query-based," to "[open] wide the possibility of discovery." Shaw Prelinger further characterizes the library's organization as a conscious attempt to "represent the realms of thought that bounce around the insides of both our [Shaw Prelinger and her husband, Rick Prelinger] minds" in a coherent linear flow across the library's six shelves. The library's primary organizing principle, geographic location, provides one example of how this personality is expressed through the collection and its organization. When geographic location is a significant element of a resource's content, documents are classified according to location over the larger subject in most cases.

While it is possible to consider geographic location a subject, it is more typical to consider location as an element that contributes to or refines a wider topic (I use the terms subject and topic interchangeably). For example, in the University of Washington library catalog, 490 resources are assigned Library of Congress subject headings that refer in some manner to the country of Belize. However, only 11 of these are assigned the basic subject "Belize." All the other documents are assigned a subject heading that is qualified with the location of Belize, as in Guidebooks – Belize, Shrimps – Belize, Indians of Central America – Belize – Antiquities, and so on. Similarly, in Ranganathan's PMEST formula, the central facet of Personality is modified by Space. Megan Shaw Prelinger also describes location as different from subject when she comments that books are often grouped together in the library according to geographic location "no matter what the subject matter is."

In the Prelinger Library, classes based on location (primarily an idiosyncratic selection of US states, regions, and cities that reflects the contents of the collection; examples include Pennsylvania, Tennessee Valley Authority, California, and San Francisco) are placed first in the sequence, in a sense out of order from the rest of the classification, which is organized under a more typical understanding of "subject." The effect suggests to the browser that, although the Prelinger Library may physically resemble typical libraries with standard classification schemes in some ways, this library also incorporates significant differences from one's local public branch. The location emphasis, additionally, suggests a focus on context and particularity as significant aspects of meaning. Where something happens contributes to meaning almost more than what happens.

Lewis-Kraus ties the location principle to the Prelingers' personal outlook, claiming that "landscape anchors not only the library but the Prelingers' own approach to most

intellectual questions" (Lewis-Kraus, 2007, p. 50). This quotation is testament to the library's success in conveying an authentic sense of voice. Note that it does not matter if the library's location principle really does represent the Prelingers' thought processes accurately; actual authorial intent is not at issue. The outside interpreter's belief that the library expresses particular worldview and personality provides evidence that a strong authorial voice has been established. The location principle presents a convincing vision that obtains through multiple texts: Prelinger's online essay, Lewis-Kraus's commentary, the classified collection itself.

As another example of the singularity represented by voice, the Prelinger Library's classification has a particular emphasis on the concept of infrastructure, which runs throughout the succession of classes. Categories related to production and resulting products are followed by categories related to services on which those production processes rely. Categories for manufacturing and industry are followed by categories for transportation, power systems, and urban infrastructure such as sewers. Media products and production (television, film, video, radio) are followed by broadcasting and communications infrastructure, including telephone, telegraph, and computer networks. It's possible to think of infrastructure in the Prelinger Library as playing a contextual role similar to that of location: the structure that surrounds a product contributes to the product's meaning. The repetition of this ordering and the detail with which infrastructure technologies (including social technologies, such as urban planning) are enumerated additionally suggests a concern to consider the deep connections amidst the complex variety of systems upon which our production processes and resulting products depend.

The selection and distribution of resources also help to shape both the organization of the library and the user's experience, and to facilitate a sense of surprise. The collection comprises many forgotten publications, substantially from the first half of the twentieth century, most of which would initially seem to have a short "shelf life" (examples: *Practice and Science of Standard Barbering,* from 1951; *A Study of Cider Making in France, Germany, and England, with Comments and Comparisons on American Work,* from 1903 (a government-sponsored work); *Report on a City Plan for the Municipalities of Oakland and Berkeley,* from 1915; *Big Dam Foolishness, The Problem of Modern Flood Control and Water Storage,* from 1954). There is little contemporary or popular material. Runs of old serials, primarily on industrially focused topics, have been incorporated throughout; most of these are castoffs pruned from other libraries (examples: *Bus Transportation, Candy Manufacturing, Modern Plastics, Retail Lumberman, Texas Police Journal).*

Surprise is also achieved by interleaving ephemera (often in separate boxes) within the book shelves. The transportation section, for example, includes, in addition to books about rail travel, a shelf of nineteenth and early twentieth century local train schedules from various parts of the United States. The library's subject section of "domestic environments" includes an extensive number of advertisements and informational publications for household appliances, as well as internal company "sales helps" and other information for appliance salespeople, dating from about 1900 to 1960. Examples include:

- A 1924 pamphlet of the Society for Electrical Development on how to create advertisements for electric ranges (one should emphasize the absence of soot in the kitchen and the end of blackened pots).

- A 1930 issue of *Silent Hostess* magazine, published by General Electric, which relates the story of the Grays, who had to offer half-melted ice cream at a dinner party. Their guests kindly advise them to look on refrigerator purchase as an investment, and not to delay until they can actually afford the appliance: not only will they be able to serve ice cream with the proper texture (and thus avoid social mortification), they will save money because their food will last longer.
- A 1926 US Department of Agriculture Farmer's Bulletin on floor plans for efficient kitchen design: "A kitchen is a workroom. Spaciousness is paid for in extra steps." An oblong-shaped kitchen is more efficient than a square one, for example.

The unique selection and arrangement of such materials bespeaks a larger purpose to the collecting and constitutes a singular experience, a form of narrative expressive of a particular vision and style.

As another example, the selection of materials in an ephemera box titled Intellectual Property includes not only government documents such as the US copyright code and reports from 1970s US congressional committees on copyright but a wide-ranging assortment of anti-copyright essays, from a 2007 *Harper's* magazine article by Jonathan Lethem entitled "The ecstasy of influence" to a 1923 article from *Libertarian* magazine contending that all land should be public property. Included in this box also is the US Supreme Court decision for *Eldred* v. *Ashcroft*, which challenged the constitutionality of the most recent extension of the US copyright act, and an amici brief for this case submitted on behalf of the Internet Archive. A subset of the Prelinger Archive (a separate collection not to be confused with the library), an archive of mostly industrial and educational films from approximately mid-century (for example, an educational film telling schoolchildren to duck and cover in case of attack by nuclear weapons) is available through the Internet Archive. Now, the Prelingers themselves may or may not have certain beliefs regarding intellectual property. But through acts such as the inclusion of *Eldred* vs *Ashcroft* and the Internet Archive amici brief, which show connection to other activities in the Prelingers' lives, the sense of authenticity, or active authorial presence, is strengthened. No matter if the actual selection is random; to the careful reader, it does not seem that way. The collection and its organization appear to be consciously structured, to have intentionality behind it.

Surprise also imbues the Prelinger Library's transitions from one subject to another, which often display a subtle wit. Educational material and vintage textbooks shift into public health and prisons, a transition that makes sense when Shaw Prelinger explains that these are all examples of government-supported institutions, and seems as well to be a reference to Foucault's concept of governmentality, which refers both to self-policing for deviance (as learned through social institutions such as schools) as well as to control exerted by the state. (On a first visit, library patrons are offered a tour in which the library's organization is outlined; one can think of this tour as yet another in a set of texts that make up the total experience of the library and provide another avenue for voice to be expressed.) Other examples abound. The Gardens category is next to Cemeteries. That they are both parts of the urban landscape is, I think, the main connection, as the surrounding categories relate to urban services. But gardens and cemeteries also both feature lawns and flowers, and may be quite similar on a structural level, if not in their overall purpose. This connection accentuates the wry tone that the Prelinger embodies. Secondary meanings with droll undertones are

sprinkled throughout the category structure. The categories for sexuality and sex shade into hygiene; while one can certainly see a sober, factual connection to public health and sexually transmitted diseases, in the context of the Prelinger, one is almost impelled to look for a sardonic comment on American repression and fetishization of cleanliness, the clinical orientation of modern healthcare, and so on. One might not feel such a temptation to look underneath the category structure in a Borders bookstore or other institutional environment; again, it is proof of the Prelinger's success at conveying its voice that one anticipates such moves.

5. The rhetorical devices of identification and courtship

According to the literary critic Kenneth Burke (1969), identification represents the primary mechanism of rhetoric, the means by which the author ensures the cooperation of the audience, as well as the goal of rhetoric (identification is both means and ends). When identification has been achieved, the audience feels as if it is collaborating in the opinion voiced by the rhetor, that audience and rhetor are working for the same goal; they are, in a sense, 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).

Consider Mark Antony's speech in Shakespeare's *Julius Caesar*. The Roman people have just voiced their agreement with Brutus that Caesar was too close to becoming a despot, and that his killing was justified. The Roman street, in other words, is initially in a state of identifying with Caesar's killers as preservers of Roman liberty and defenders of the welfare of the people. Antony, though, adopts the clever strategy of maintaining the identification with liberty and citizens' wellbeing but shifting its object from Brutus and his co-conspirators to Caesar. The people, according to Antony, are both figuratively and literally the heirs of Caesar: Caesar has left his property to the people, as well as the more symbolic legacy of his dedication to the state and its citizens. In accepting this identification with Caesar, as his heirs, the Romans are bound to avenge his death, as Antony would have them do.

While essentially a simple concept, identification can manifest itself in complex ways. Multiple identifications, representing a variety of motives, may be at work in a single example of rhetoric. For example, science is commonly identified with both truth and progress. Research into the human genome may be characterized with both the abstract pursuit of knowledge (truth) and the eradication of medical conditions, leading to a longer and better life for everyone (progress). And yet progress may also be aligned with motives of profit and social control. One may be persuaded to support research on the human genome through an identification with the progressive goal of eradicating disease and then find this identification with progress also being used to make controversial applications of genome research, such as cloning and eugenics (as in the aborting of girl fetuses), seem more palatable.

Burke additionally claims that imagination, which we might also associate with voice, creates possibilities that, as led through identification, an audience may desire to enact or avoid. When Burke contends that "the *poetic* house is built of identifications," he is noting how a skilled writer can evoke a cluster of associations with a single well-chosen

image (Burke, 1969, p. 85). Depending on how it is invoked, the poetic image of a house can produce identifications with childhood, security, prosperity, and so forth, often all at once. Although the poetic house does not actually exist, the audience, identified with its images of security and prosperity, may then become the speaker's ally in supporting the future represented by the image. The image thus works on a variety of levels simultaneously to bring the author and audience closer together.

Identification, and rhetoric itself, are necessary processes in communication because, as individuals, we are always on some level divided. Identification thus, in a sense, depends on division and on the tension between working for our own motives as well as communal motives. As an example of the play between identification and division, nineteenth century American slave narratives and public lectures by former slaves, a key rhetorical tool of Northern abolitionists, relied on both an initial sense of division to draw white audiences (the freed slave had markedly different life experiences than the audience, as well as the obvious difference of skin color) and then an identification to enlist them in the abolitionist cause (as people, the freed slaves and the audience equally deserve liberty and dignity).

Burke refines the necessary relationship between identification and division through a metaphor of courtship. According to Burke's courtship model, the author first entices the audience by emphasizing essential differences between author and audience (heightening the "mystery") and then, as the audience's attention is engaged, by showing how the audience and author, despite their divisions, also share deep similarities (such as working for the same goal or other characteristics), resulting in the identification between author and audience. As Burke says, "In mystery there must be *strangeness;* but the estranged must also be thought of as in some way capable of communion. There is mystery in an animal's eyes when a man feels that he and the animal understand each other in some inexpressible fashion" (Burke, 1969, p. 115).

6. Voice, via courtship, as a means to identification in the Prelinger Library

In the case of the Prelinger Library, "mystery" is initially evoked through significant deviations from a typical library experience. The Prelinger is only regularly open on Wednesday afternoons, but may be open other days: one has to check the Web site. It is located in an industrial building in at Folsom and 8th Street, a gritty area of San Francisco, across the street from a leather store (the kind where you can obtain bondage paraphernalia in addition to jackets; Folsom is the site of an annual S&M fair). The building does not have a sign for the library; to obtain entrance, one has to look for the proper code in the building directory, itself not easy to locate, and then buzz up. When one's ring is answered, the typical response is a terse "Library!" and nothing more. The library's space itself is bare bones, warehouse-like and musty, chilly in the winter. There is a single table with a few mismatched chairs to sit at, if one finds a document that seems interesting.

This initial strangeness is compounded by seeing thousands upon thousands of overtly mundane publications within the seemingly familiar structure of library shelves, then further intensified through the unusual organization of these seemingly oddly chosen resources. The initial presentation of these "useless" items in their atypical setting puzzles the user and sets up the sense of division. This is a library?

Upon entrance, however, one is typically greeted and offered assistance, or a tour if it is one's first visit. Either the tour or a systematic browse through the linear order of the

shelves makes it apparent that a specific intelligence is at work here. This is not one's local branch, but it is not haphazard, either. The authorial voice, as manifested in the selection, description, and arrangement, begins to assert itself. These "mundane" items, in being housed together in this setting, and arranged in this way, constitute a particular vision, a carefully worded document that, it seems clear, has been painstakingly put together. The quality of difference in the library experience, as represented by voice, suggests that this stockpile of items that, on their own might seem completely worthless, on the contrary, is in this configuration a set of lost treasures that deserve reconsideration. These items have not merely been randomly warehoused, as they might be in a used bookstore or library deaccessioning sale; they have been consciously gathered and painstakingly arranged for a very particular experience of access. In the context of the organized collection, the worth of each individual item within it seems to rise. That which one might pass by in another library (perhaps the official gazette of the US patent and trademark office – 125 years' worth) becomes something to explore and appreciate. On one level, each of the Prelinger Library's items provides evidence of the quite particular sensibility that aggregated all this together, and has interest for that. But on another level, the sensibility that gathered them insists that all these resources have value on their own and should be not merely preserved, but cared for.

This sense of care provides the pivot point for an identification to emerge. The visitor to the Prelinger, even if not charmed by 1950s etiquette manuals for American teenagers and other gems that the library contains, is able to identify with the affection and effort lavished by the Prelingers on their collection. Together, the collection and its classification begin to suggest that all information, however negligible as it may seem at first, deserves preservation, and that through the act of curatorship, greater value can be found in what might initially, and individually, seem worthless. This identification is imaginatively reinforced by the infrastructure emphasis in the library's collection mentioned previously in this article: the idea that products (such as the books, maps, and other publications in the library) depend themselves on often-ignored infrastructure (not merely a place to be stored but a system of organization and overall experience that enables the resources to be appreciated). Information requires infrastructure for both preservation and access; the library provides this infrastructure. Think globally: preserve information. Act locally: with care, the trash around you can become a treasure.

In this example, we can see how voice in the Prelinger Library works as a specific communicative mechanism, how it endows the library with persuasive power. The various devices manifested through selection of resources, their description, and their arrangement, are not merely stylistic tics, entertaining but ultimately empty. Instead, the way in which the Prelinger Library constructs its authorial voice serves, through the process of courtship and multiple identifications, to persuasively advance a position. Through the Prelinger Library's imaginative, distinctive, and yet thematically coherent voice, the library indicates how the concepts of preservation and access might be extended to encompass a wide variety of infrastructure elements, expressing how, for example, the library's organization is an instrument of user experience, and how that user experience is an integral component of access infrastructure. Moreover, the voice serves to both intrigue the audience and provide a sense of connection between the audience and the articulated position. Voice not only expresses a point of view, therefore, it supports that perspective.

7. A serious rebellion: voice and identification in the DrugSense newsbot concept dictionary

The DrugSense newsbot concept dictionary provides the semantic infrastructure to automatically classify Web-based news articles on drug-related subjects. A "bot," or program that operates as a user agent, uses the concept dictionary to summarize articles and route them into specialized RSS feeds, which may be subscribed to by anyone interested in the concept dictionary's topics. The concept dictionary is similar to a thesaurus in that it defines concepts, sets lexical equivalents (synonyms) for those concepts, and relates concepts. The creators of the concept dictionary and bot present themselves as drug policy reformers who take issue with the current status of some drugs as illegal or controlled. The selection, arrangement, description, and presentation of concepts in the dictionary work to convey authorial voice, and this voice, as with the Prelinger Library, functions as a persuasive, communicative design element through the mechanism of identification.

In portraying themselves as an oppositional group, the concept dictionary's creators, DrugSense, initially combines a sense of ragtag, underdog cheekiness with a measure of righteous anger. The web site that describes the bot is amateurishly designed, with the kinds of graphic elements, such as borders in clashing shades of blue, that announces "I know nothing of graphic design, nor do I really care to; such niceties are not important to my mission." The bot is described as "bot!:-]" with exclamation point and crude emoticon (Figure 1).

The dictionary itself begins with a set of concepts designated as "drugwar_propaganda," which encapsulates eight separate themes through which
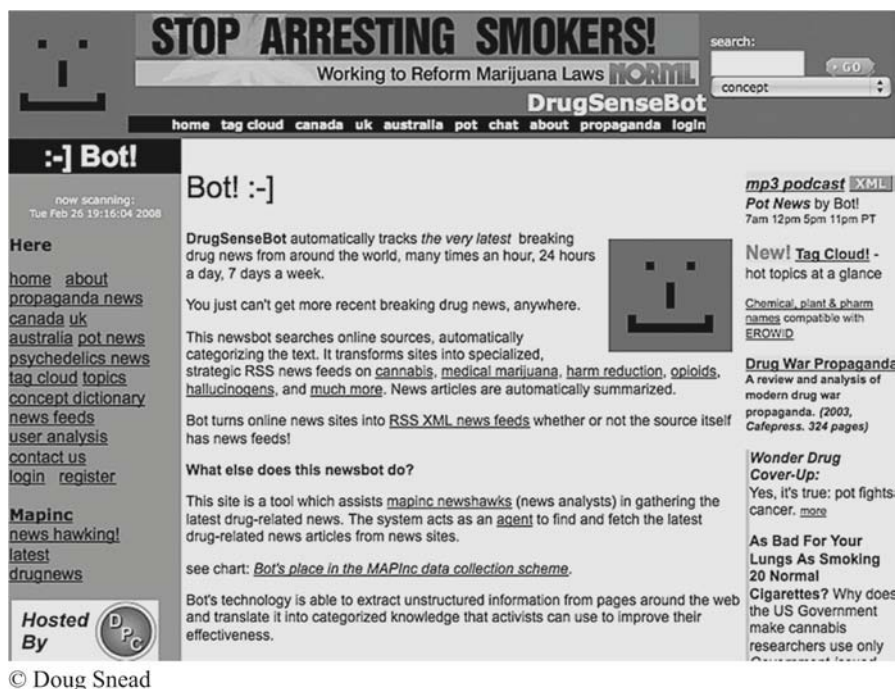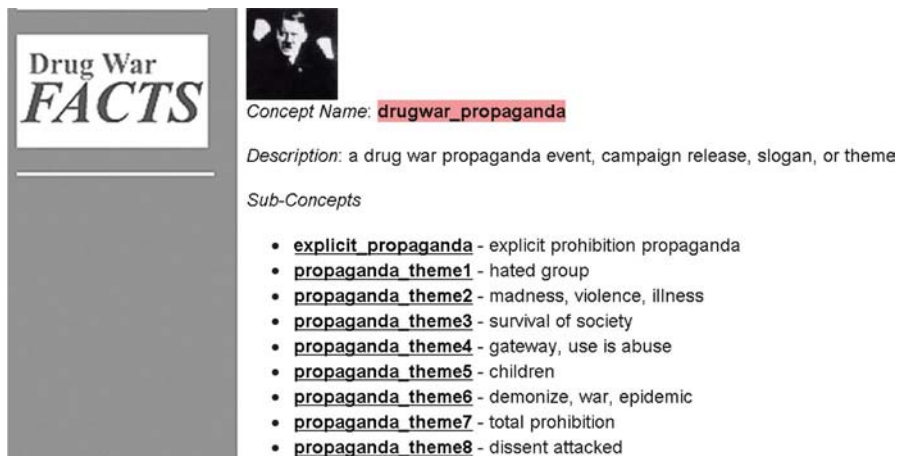

Figure 1.
DrugSense newsbot description page (© Doug Snead)

the DrugSense reformers see themselves as being attacked. The drugwar_propaganda concept entry is decorated with an image of Hitler, arms raised (Figure 2).

A separate page on the site justifies the decision to identify proponents of drug control with Hitler: both Hitler and "prohibitionist drug warriors" advocate the use of propaganda, and both seem "unashamed to use force and coercion to make others follow their ideas of purity." Images associated with specific propaganda themes satirize the position of the prohibitionists: the concept "propaganda_theme1," defined as associating drugs with "hated groups," shows a picture of a jovial hippie flashing a peace sign. The concept "propaganda_theme2," defined as illness, madness, and violence associated with drug use, is introduced with a black and white image of a starkly lit, 1950s-era gentleman with wild eyes, perhaps from a vintage horror movie. Terms associated with this concept include such lurid characterizations as "drug-fueled mayhem," "drug-ravage," "violence," "kill," and "torture." While a variety of extreme mental health effects are also included (such as "psychosis," "schizophrenia," "delusion," and "aggression"), it is interesting that more terms for the effects of addiction are not represented (although "addiction" and "addictive" are). The term selection makes it seem like primarily sensationalistic articles will be selected by the newsbot, as far as the various propaganda themes are concerned, and not so many articles that deal more soberly with possible bad effects of drug use. The nomenclature throughout the propaganda concepts tends toward the extreme: organizations that distribute medical marijuana are called "compassion clubs," for example.

For those outside the drug reform movement, all this sets up a sense of division and mystery. Are they really serious about that Hitler comparison? DrugSense might believe in its cause strongly, but the voice that it projects, through selection, arrangement, description, and presentation of concepts, makes it seem like a negligible fringe group, not a serious movement. Still, there is a sense of sincerity about DrugSense: the rudimentary site design, inelegant nomenclature (propaganda themes 1 to X), crude graphics, and overall sloppy display can be seen as oppositional tactics toward slick, government-supported drug czars and the like.

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Figure 2.
Drug_war propaganda
concept from DrugSense
newsbot concept
dictionary (© Doug Snead)

But there's more to the concept dictionary than propaganda themes. Most of the dictionary is given to an encyclopedic array of specific drugs and drug families, in broad categories of chemicals, pharmaceuticals, and plants, from antitussives ("cough suppressant") to piperazines ("a broad class" which includes stimulants, anti-vertigo medications, and sildenafil [Viagra]) and leonotus lenorus, a shrub with a history of use in South Africa as an intoxicant. This part of the dictionary forgoes the excessive language of the propaganda concepts and is excessively detailed, mentioning dangers associated with various drugs as well as describing their overall effects. For example, PMA (para-methoxy-amphetamine) is noted as "a strong psychedelic which may cause dangerous overheating of the body. PMA has been sold in ecstasy [sic] tablets, and has lead [sic] to dangerous and fatal hyperthermia is some users." The entire class of inhalants is described as being unsafe and likely to cause medical harm. Far from the vituperative nature of the propaganda comments, these descriptions and warnings appear both knowledgeable and humane. The dictionary expresses an awareness that some drug use is problematic, and it aims to enable reasoned and informed decisions regarding such use.

The information contained in this portion of the dictionary goes beyond common knowledge. For example, here is a brief selection of lesser known substances described by the dictionary:

- Ibogaine (12-methoxyibogamine) "is the active chemical in the African Tabernanthe iboga root. It is a strong, long-lasting psychedelic used traditionally in a coming of age ritual but also known for its modern use in treating opiate addiction."
- Clonidine (2-(2,6-dichlorophenylamino)-2-imidazoline hydrochloride) "is used primarily as an antihypertensive in the treatment of high blood pressure but is also used in the treatment of migraine headaches, depression, menopausal flushing, as a pre-operative sedative in children (unusual), alcohol, opiate and nicotine withdrawal, and a variety of other disorders."

It is through the methodical, painstaking work in selecting and describing the multitude of drug concepts that identification can emerge for those not already allied with the drug reformers. The dictionary may have an excessively showy exterior with a few too many rants, but it also displays a seriousness in its position, as evidenced by painstaking detail and the shift in selection and description tactics from propaganda material to the actual drug-related material. This aspect of the authorial voice, the sense of significance and gravity gained from the scope of the project (not just in the scope of the concept dictionary but also in the creation of the newsbot and the site to disseminate it) leads into the identification, not necessarily as agreement with the position that drug policy should be reformed, but in acknowledgement that this is a real opposition group whose opinions deserve consideration. The audience may not be identified with the DrugSense persona as co-policy reformers, but they are identified with DrugSense as rational citizens who have a right to protest against established social and legal programs and to have their objections heard.

As with the Prelinger Library, the construct of authorial voice works on multiple levels, through the combination of selecting, describing, and labeling concepts, and through the integration of concepts with presentation elements. As the quality of difference between one expression of a position and another, within the same genre

structure, the voice shapes the nature of the use experience as it both conveys a message and encourages the audience to accept, or at least to be receptive to, the message.

8. Missed connections: voice and identification in the Warburg Institute classification

The classification of London's Warburg Institute is designed to reflect the historical imperative that drives the collection: to show how traditions and themes from ancient civilizations have both survived in and been transformed by current Western culture. Although this unique vision is clearly articulated in a variety of supporting texts, authorial voice in the Warburg represents this vision only partially, highlighting the allure of a shadowy, almost mystical past without a sense of how these older ideas have continued or been transformed over time. This results in an incoherent and ultimately unpersuasive construct that does not effectively support the intended thesis.

The notion of the far past is evoked in a variety of ways throughout the online implementation of the Warburg classification, in particular through the extensive use of images. In the Gateway portion of the Warburg's web site, where subject access through the classification system is enabled, even the background is used for this purpose, with a yellowish color suggesting old parchment and a background pattern of rules to suggest handwriting guides, as scribes once used. Additionally, the Warburg Institute as an organization represents itself through an emblem taken from a sixth-century woodcut that shows the relationships between the four ancient "elements" of earth, water, air, and fire, and this emblem appears throughout the site, often ghosted, or set with muted colors so that it fades a little into the background (Figure 3).

According to the Warburg web site, this emblem appears above the institute's door and on all its publications, in addition to its presence on the site itself. The text of the emblem is in Latin, and, unless one seeks out the explanation of its meaning, found by clicking the emblem image itself on the Index page (clicking the ghosted image that often appears elsewhere on the site leads to the Index page, not the emblem explanation), one has no idea its purpose is to represent ancient ideas about cosmic harmonies and the deep relationships that were once thought to obtain between substances. It merely seems obscure, mysterious, and old, even more so in its ghosted form. However, although the emblem connects the Warburg to the far past, and in particular references an enigmatic, mystic sense of the past where connections, as between the fundamental elements, have profound significance (as in the idea of correspondences described in detail in Foucault's *The Order of Things)*, the institute's use of the emblem does not clarify how this past carries forward into the present, the ultimate stated goal of the institute's scholarly activities. In the language of Burke, use of the emblem on the Warburg web site evokes mystery, but the manner of its use does not successfully engineer a transition from division to identification.

The institute's emblem is mirrored in an image that represents the Warburg classification system. In the classification image, the four main classes, Action, Orientation, Word, and Image, take the place of the four elements in the emblem, but the form of the design, with its concentric circles and the single, sinuous line that forms the main graphic element, is the same (Figure 4).

Figure 3.
Warburg Institute emblem

© The Warburg Institute, University of London

Although the text in the classification image is in English, and each main class is further elucidated by a brief description (such as "politics and cultural history" to clarify the meaning of Action), the sense of obscurity and mysteriousness is maintained through both the unusual and striking nomenclature and the continued, unexplained use of the symbol from the emblem. A few sentences of explanatory text tie the classification's divisions to the scholarly goals of the institute, but they do not disentangle the symbol nor refine the individual character and connections between the "elements" or main classes. Water, fire, air, and earth are clearly delineated, in the least, and certain basic relationships between them are apparent (water and earth quench fire, while air is necessary for ignition, for example). Action, Orientation, Image, and Word are not so neatly circumscribed. Why is "culture" a type of history, or action, and not part of orientation, as religion is? More generally, what are the qualities that both define Orientation and Action and that connect them to each other? The explanatory text for Image and Word does provide a sense of chronology, from past into present, but does not provide a sense of what the substance of any continuing threads from the past to present might be (for example, recurring ideas or symbols). Although it might be possible to interpret the Orientation class as describing a progression of thought about a set of similar problems over time as shading from religion to science, it's unclear how philosophy fits into that pattern, or how current studies of religion might then be placed. The mystery sparked by the image and unusual categories entices, but the identification is not apparent, and the energy inspired by mystery's intrigue dissipates.

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In a few areas, the Warburg classification scheme is more successful at articulating a more complete, sustained vision and facilitating the journey from mystery to identification. For example, the arrangement of categories in some cases shows a consistent viewpoint that in the classification's interpretation of the ancient world, places or peoples (for example, France or the Chaldeans) are prime differentiators of culture, but in the modern world, time is a more important distinction, at least in the West (the extent of the institute's purview for the modern world). A section of classes from the astrology portion of Orientation, for example, divides up material by either by place or peoples prior to the medieval era, and by time after that:

- FAG – Primitives.
- 58 – Mexico.
- 70 – China.
- 100 – India.
- 150 – Babylon.
- 200 – Egypt.
- 350 – Iran.
- FAK – Greece & Rome.
- 330 – Byzantium.

- FAA – Old Testament.
- 50 – New Testament.
- 125 – Nabateans.
- 150 – Harran.
- 200 – Arabs.
- FAB – Middle Ages.
- 20 – Occidental Translations from Arabic.
- 50 – twelfth-thirteenth century.
- FAC – fourteenth-sixteenth century.
- 387 – seventeenth century.
- FAM – seventeenth-twentieth century.

"Primitives" represents a wide variety of locations across the globe, from South Asia to South America, while Greece and Rome and Old Testament concentrate on areas more familiarly associated with the heritage of the West. However, with the puzzling exception of "New Testament," all three of these classes are described by places (Egypt, Harran) or peoples (Arabs, Nabateans). As time shifts into the middle ages, however, place becomes unimportant, and time is the primary means of division. One could see this method of grouping and arrangement as an attempt to show how ideas that emanated from various "cradles of civilization," which are, in a sense, timeless, were assimilated into Western civilizations and carried forward through history. This trope appears several times throughout Action and Orientation, as in the classes for Alchemy, which begin with general topics, progress to ancient places and peoples, and then move into Western eras:

- FGH – Sources.
- FGF – Studies General.
- FGD – Oriental.
- FGK – Greek & Roman.
- FGG – Arabic & Jewish.
- FGB – Middle Ages.
- FGM – Modern Times.

However, this potential theme of place and peoples transitioning to eras is not consistently carried through the classification. The classes for religion, for example, proceed as follows:

- Comparative Religion.
- Teutonic & Slavonic Religion.
- Greco-Roman Religion.
- Christianity.
- Oriental Religions.
- Egypt.
- Assyria & Babylonia.

- Judaism.
- Islam.
- India.
- China.
- Japan.

Here we have mostly places, some religions without reference to place, and no eras. The principle of order in this array seems to be West to East, which is not apparent in other such arrays, and which does not seem to have a connection to the institute's goal of seeing how older traditions affect current Western culture (which would imply an East to West ordering; more commonly in the Warburg classification, Middle Eastern and Mediterranean "cradles of civilization" [such as Egypt, Greece, Rome] are separated out, and other societies are grouped together, for example as "oriental" or "primitive"; you see this in the astrology and alchemy examples). Philosophy, however, which follows religion, has a structure similar to that for alchemy:

- Greek & Roman Philosophy.
- Arabic & Jewish Philosophy.
- Medieval Philosophy.
- Renaissance Philosophy.
- Modern Philosophy.

Unlike the inconsistencies noted between the propaganda and drug information sections of the DrugSense concept dictionary, these inconsistencies do not seem motivated by a deeper purpose. In the DrugSense dictionary, a perceived inconsistency provides a means for initial mystery to be transformed into identification. Although the Warburg classification has both an articulated vision (the continuance of past into present) and some type of mystery (a sense of the past as having hidden significance), there is no mechanism of identification to lead from the mystery to acceptance of the vision. Whereas, in the Prelinger Library, the sense of active intelligence as manifested through the library's authorial voice makes one more likely to perceive possible connections between both categories and resources, the more superficial voice employed in the Warburg does not have the same effect.

This description of how the authorial voice generated by the Warburg classification scheme is less successful in advancing rhetorical goals provides additional evidence for the ultimate complexity of what seems to be simple and intuitive mechanism. In a manner perhaps more commonly associated with artistic objects, what appears to be easy and effortless (and indeed, as a result of serendipity or inveterate skill, may be subconsciously engineered; it seems unlikely that the DrugSense crew were actively plotting their voice-related persuasive strategy) is actually difficult to orchestrate in a way that both accomplishes its persuasive ends and feels organic and authentic. But if we can develop the vocabulary and analytical tools to dissect the work that voice performs in information systems, as I have tried to do in this article, then we do not need to rely solely on the grace of designerly fortune to formulate a persuasive, memorable, and fitting voice: we can begin to think about voice as a design element that needs shape and attention, and we can approach it purposefully and systematically.

9. Discussion: rhetoric, information systems, and participatory culture

This article has taken a closer look at the generally accepted idea that information systems communicate a point of view on the material that they collect, organize, and make accessible, exploring in some depth one rhetorical mechanism, that of authorial voice, and showing how that mechanism works to express ideas more and less effectively in several existing information systems. This study complements and extends several previous analyses of additional rhetorical mechanisms: these include logical argument in the rhetorical mode (Feinberg, 2010), ethos (Feinberg, 2009b), and genre adaptation (Feinberg, 2009a). Authorial voice was shown to function as a persuasive element by enabling identification, the rhetorical construct defined by the literary critic Kenneth Burke.

While the basic outcome of this study has been to advance conceptual understanding of how information systems communicate to achieve persuasive impact, the larger goal of this broader research program is to support the systematic, purposeful design of information systems that forthrightly assert a specific interpretation of their subject matter. This orientation accepts the conclusion, as suggested by myriad analyses of bias in information systems (as an example, see Olson and Schlegl's, 2001 review of library-focused subject-access critiques), that neutrality is an untenable design goal. If information systems inevitably impose a particular perspective on their contents, then one response is to expose, clarify, and defend that position, instead of obscuring it (Feinberg, 2007).

Continuing in this vein, information systems can be viewed as a means of creative, original expression similar to any form of document or artistic work (Andersen, 2008). The emergent popularity of social software environments emphasizes the potential importance of information systems for their expressive power, as it becomes easier for people to create and share their own collections of organized resources (Jenkins, 2008). Systems such as Flickr, Delicious, and Facebook do not merely aggregate submitted materials for uniform modes of retrieval but enable the exploration of document subsets selected, arranged, and made available for access in specific ways by particular users. The experience of such "expressive bibliographies" relies on the unique interpretive frame with which an individual might endow a particular collection of resources and associated metadata. An information system's usefulness and interest, in this view, is located partly in its ability to illuminate perspectives that differ from a user's current way of thinking and that challenge existing ideas and expectations regarding the collection's subject matter, exploiting the "recipe nature" of information systems to an extent much greater than is currently typical.

Approaching information system design in this way, as, in essence, a form of writing, may necessitate a coordinated, cohesive and controlled design approach, in which all system elements are considered in terms of how they contribute to rhetorical goals. In this study, certainly, the idea of coherence emerged as a key element in considering the relative success of identification, as facilitated by voice, in the different examples. To be persuasive, the perceived authorial voice needed to betray aspects of a larger motivating position on the collected material. Moreover, in successful examples, the sensation of voice emanated consistently from various aspects of the system, including resource selection, the underlying organizational structure, and the means through which users access resources (encompassing visual elements, information design, and interface composition). The challenge here may be similar to that described by Bakhtin (1981) for

the novel: within the form of the novel, the dialogic effects of language inevitably emerge, and the author of a novel must recognize the dialogic features in order to construct a unifying authorial voice that harnesses these elements to the author's narrative goals. Similarly, the information systems designer must recognize the array of elements that can either strengthen or dilute a unifying voice, and decide how those elements can best serve the specific design situation. Accordingly, a design process that emphasizes the communicative functions of information systems will need to take an expansive view of the design problem, linking together the positions to be expressed, the communicative mechanisms, such as authorial voice, that might be manipulated to support the chosen positions, and the wide array of system elements (resource selection, metadata infrastructure, visual design and interface arrangement) through which the communicative mechanisms might be implemented.

For existing institutions, adopting such a design perspective would be a significant shift. Certainly many designers of existing information systems, particularly those involved with immense, complex collections that are managed by large organizations, may find such a prospect infeasible, and may decide that surfacing and emphasizing their systems' "recipe nature," or status as a communicative artifact, is not appropriate to their organizational goals. I am not suggesting that all information systems should focus on achieving coherence as rhetorical documents; this will be a design decision to consider along with many others. However, whether they are meant to or not, all collections of information resources function themselves as texts and present themselves to be read. Whether a designer decides to attempt purposefully manipulating the expressive properties of information systems or not, selection, description, arrangement, and access decisions will combine to produce communicative effects.

Additionally, foregrounding the expressive potential of information systems shows the utility of critical inquiry, as performed in the humanities disciplines, as both a research method for information science and as a technique for system evaluation. To show the operation of authorial voice within information systems and its function as a rhetorical mechanism, this study used humanistic techniques of close reading and textual analysis, selecting and analyzing key examples from each system to provide evidence for a specific, critical interpretation. In terms of system evaluation, informed, systematic critique can form a powerful complement to existing evaluative methods, such as the compilation of precision and recall measures or the results of user testing procedures. Just as, for example, a building can be variously evaluated for its structural integrity, for how it accommodates user space requirements, and for how it fits within and extends architectural traditions, an information system can be examined for its retrieval efficiency, ability to respond to user-generated requests, and its communicative expression. The scholarly critique, as practiced within the humanities disciplines, is a time-tested means for considered reflection of such properties. Researchers in human-computer interaction have been grappling with similar issues regarding the limitations of conventional evaluation procedures and have also begun to explore the applicability of informed criticism as a valuable addition to experimental techniques (Lowgren and Stolterman, 2004; Bertelsen and Pold, 2004; Bardzell and Bardzell, 2008). Continued exploration of critical interpretation as practiced in the humanities will increase the interdisciplinary strength of information studies, enabling more diverse and robust means of approaching both conceptual and design-oriented research problems.

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Corresponding author
Melanie Feinberg can be contacted at: feinberg@ischool.utexas.edu