Communication Design Quarterly

SIGDOC **Special Interest Group on Design of Communication**

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Advancing Computing as a Science & Profession

Communication Design Quarterly

ACM SIGDOC (Special Interest Group Design of Communication) seeks to be the premier information source for industry, management, and academia in the multidisciplinary field of the design and communication of information. It contains a mix of peer-reviewed articles, columns, experience reports, and brief summaries of interesting research results. *Communication Design Quarterly* (CDQ) is archived in the ACM Digital Library.

We invite you to contribute in any of the following areas:

- Peer-reviewed articles. Articles that cross discipline boundaries as they focus on the effective and efficient methods of designing and communicating information; disciplines will include technical communication, information design, information architecture, interaction design, and human-computer interaction.
- Experience reports. Experience reports present project- or workplace-focused summaries of important technologies, techniques, or product processes.
- Interesting research results. Short reports on interesting research or usability results that lack the rigor for a full article. For example, pilot studies, graduate student projects, or corporate usability studies where full details can't be released.

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Welcome to *Communication Design Quarterly* issue 3.2.

The highlight of this issue is a long interview with Ginny Redish by Sushil Oswal where they explore usability and accessibility.

It also contains a collection of commentaries on "Perspectives on the Future of Communication and Information Design." We sent invitations that asked people to provide commentary/position essays that seek to address one or more of the following questions related to current and future practices in communication design and information design:

- What skills are needed now, and what skills will be needed for the future?
- What topics should we be researching and why?
- What theories should guide our research and our practices and why?
- What topics should we be teaching students to prepare them for future success and why?

The essays are their response to these four prompts. They provide a wide range of views and opinions, highlighting the breath of the area encompassed by communication design. They also layout many factors we need to consider for the future health of the field in both the academic and corporate worlds.

Hope you enjoy this issue and thanks for reading *Communication Design Quarterly*.

Notes from the Chair

Liza Potts

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This month's Chair notes will focus on our upcoming conference in Limerick, Ireland. We are in the midst of locking down all of our events and finalizing our peer reviews. So many of you have stepped forward to volunteer—as program chairs, local coordinators, peer reviewers, or just lending an ear as we sort through our ideas. Thank you for making what will be a fantastic SIGDOC 2015 conference.

Schedule

The conference schedule is now live on our conference website: http://sigdoc.acm.org/conference/2015/attending-sigdoc-2015/. Note that the conference begins on the evening of 15 July with a happy hour at one of the conference hotels. We will wrap up by 5 pm on 17 July.

Peer Review Process

Your papers – whether they are research papers, experience reports, or posters – are all peer reviewed by our volunteer reviewers. Three reviewers are assigned per paper, with any tie-breaking handled by our Program Chair. When you submit your annual reports, be sure to mention this fact: SIGDOC proceedings are peer reviewed.

Ignite Talks

We will once again have Ignite Talks. This year, we plan on spreading them out throughout the day. That will help us keep the dynamic, fun energy of these talks firing us up all day long (yes, that was an awful pun). I am sending out invitations to give these

talks over the next month, so stay tuned to our website for an announcement soon.

Research Network

The research network at SIGDOC 2015 will host roundtable discussions allowing conference participants a chance to share their research-in-progress in a supportive setting with colleagues from academia and industry who share their similar interests. The network will take place from 9 am to noon on July 16, 2015 during the first day of the conference in Limerick, Ireland. We invite proposals to discuss research at any stage of completion—from conceptualization to publication—and the network is open to all registered conference participants.

The research network can help scholars plan their next research project, provide insight on methods and strategies, work through stalled projects, envision avenues for publication, and network with other researchers in the interdisciplinary fields that comprise communication design. A Call for Proposals will be sent out in April 2015 and participants will be grouped into discussion roundtables just prior to the network session in July.

Student Research Competition

The student research competition is new for us this year, and we are very excited to have Microsoft sponsorship for this program. Please take a look here for more information, and please encourage your undergraduate and graduate students to participate: http://sigdoc.acm.org/conference/2015/student-research-competition/.

Family-Friendly Conference

Given the distance you will be travelling and the opportunity to share your work in Europe, several of you mentioned to us that you were planning on bringing your family to Ireland. With that in mind, we consciously sought out venues, events, and lodging that would accommodate families. Please take a look at this page for

more details: http://sigdoc.acm.org/conference/2015/family-friendly-conference/.

Sponsorship

We are looking for sponsors for SIGDOC 2015. The more sponsors we have on board, the lower our costs (and the lower your fees!). Can your department or organization help sponsor a room, the banquet, or a break? I call dibs on the lanyards again, but I'd love to see someone else's name on our badges or bagels. More information is here: http://sigdoc.acm.org/conference/2015/conference-sponsorship/.

In sum, we are looking forward to seeing you in Limerick this July! If you have any questions, ideas, or concerns, please feel free to follow up with Kathie Gossett <kgossett@iastate.edu> (our Conference Chair), Dawn Armfield <dmarmfield@frostburg.edu> (our Program Chair), or Stephanie Vie <Stephanie.Vie@ucf.edu> (our Student Research Competition Chair).

Changing Times—Changing Skills

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It should be clear to anyone in technical information development that customers are changing, tools are changing, and the skill set must change as well. The results of our yearly Trends Survey clearly indicate that customers are asking for new kinds of content delivered in new ways.

Customers want content on mobile devices, videos and audio, topic-based content, embedded help, and animations and 3-D graphics. Sixty percent of respondents to the 2014 Industry Trends Survey told us that customers are demanding information in new ways—ways in which they may be ill equipped to produce.

At the same time, respondents told us that they find it difficult to develop and deliver content in new ways. One impediment appears to be the distributed nature of content development. Nearly half of all respondents in 2013 and 2014 pointed to the fact that multiple groups control content delivery. Even more told us that they lack the time and resources to manage a conversion project. They note that their content is specifically designed for print or PDF, they are writing books not topics, and they have no reuse mechanisms in place unless you include simple cut and paste.

Despite these impediments, respondents saw the need for new tools, additional staff, support from technology experts, and support and funding from senior management.

Managers faced with rapidly changing demands for content are looking both for additional staff to help meet the needs and encouraging existing staff to change their traditional practices. They report being discouraged, however, by the degree of resistance they face from existing teams. They point to the need for new behaviors and hope they can find these behaviors among young new hires.

Just what skills are managers hoping for from their new hires, especially new graduates? Here is my list, culled from hundreds of conversations and industry sources.

Ability to develop minimalist, topic-based content

Adapting to a minimalist, topic-based authoring environment is crucial for new information developers. Even tradition-bound organizations have begun to recognize that customers are not looking for books, but answers to questions and requests for information. Of course, minimalism assumes that authors know who their customers are and how they use information.

Knowledge of XML and HTML, especially the OASIS DITA standard

The OASIS DITA standard, based on XML, is progressing steadily into new areas of technology. It has assumed prominence in its original space of software products. We now see increased DITA adoption in the machine industry and medical devices. It is also progressing out of technical publications into diverse areas of content development in the corporations. Job offerings requiring DITA knowledge and experience have also steadily increased. In addition, knowing how to create and manage HTML output and source content helps extend information development into web delivery.

Skills in new delivery methods, including video and audio, micro-training, topic-based content, animations and 3-D graphics

Customers are increasingly demanding about information delivery. They want information available in all types of media. They want to watch very short videos or listen to webinar recordings. If they are working with equipment, they need animations and 3-D renderings that they can manipulate directly. They want short, quick learning opportunities rather than days or hours of product

training. Information developers of the future either need to gain expertise in new media or be prepared to identify and work closely with qualified vendors.

Experience with social media to gain customer information and lead customers to content that answers their questions

Social media has rapidly important in communicating with customers. Most of the focus initially was on marketing content, but the use of social media to communicate technical information is building. Microsoft introduced its Curah! website, inviting customers to contribute content. Nokia uses Twitter to communicate basic task content in response to customer inquiries. Leica answers technical questions on its FaceBook page. Knowing how to monitor and effectively use social media is a crucial skill for today's information developers.

Ability to gather customer feedback and understand the customer experience with content

Information developers must thoroughly understand what happens when a customer tries to find information about their products. Unfortunately, in far too many instances, no information developer has observed customers in action or even attempted to find content through a search process on the corporate website or even using an index in a book.

My camera manual is delivered as a PDF that does not display the Table of Contents in a separate pane, has no links from the TOC to the chapters, and has no links from the index to the rest of the manual. Even if one looks at the index or the TOC, it is necessary to scroll through the pages to find the content. I doubt if an information developer has tried to find the content.

Typically, maneuvering through a corporate website searching for content requires 6 to 10 clicks, a guessing game for finding needed information. On one site after 6 clicks, a form appears asking for

specifics about the content being searched. The specifics are virtually identical to the choices made through the clicks.

Yet, in so many cases, no one from information development has tested the search process. One group, when asked to find a particular piece of content, discovered that the installation guide for the product was missing.

It is crucial that information developers take responsibility for the customer's experience in finding and using content and then initiative a campaign to improve that experience, even when the details are the responsibility of another organization.

Willingness to challenge the assumed authority of product developers and others in the organization

Managers tell me that one of the most frustrating and critical challenges in their organizations is teaching information developers "push back" behavior. Too often, the information developers have become deferential to the product developers, the service and support staff, or to anyone else who has a strong opinion about the content. Too often, information developers view their roles to be the secretaries of the engineers, who decide what the content should include. Instead of taking responsibility for understanding the customer experience and making the decisions about what to provide, they become formatters and copy editors.

Perhaps the personality types of people who enjoy developing information have to change to respond to the need for individuals who will be firm and clear. Perhaps information developers need to spend time and effort understanding not only the customer but also the technology they are supporting.

I once argued that the most crucial course a student of information development should take at university is calculus, not because one needs to know how to parse equations, but because understanding mathematics gives one confidence about learning technology.

Understanding that content can be part of a strategic business initiative, and being able to speak the language of finance and profit

Sometimes information developers regard their corporations' need to earn money and make a profit to be the "dirty side" of the business. They object to tracking their own work so that managers will better understand what information development actually costs.

Of course, too often, senior management has regarded information development as a cost center, using funds that were better allocated to product development. But times are changing. Some of the most conservative business leaders in industries like telecommunications or semiconductors are beginning to understand that content is crucial to customer success. In fact, improving content and its delivery to customers is now part of the strategic business initiatives of many companies. The senior management has discovered that customers are happier and more loyal if they can find answers to their questions quickly and easily, in multiple media, and in forms that best meet their needs.

Companies that measure themselves using the Net Promoter Score, which asks customers if they would be willing to promote the companies' products to others, learn that poorly designed and inaccessible content makes customers less likely to buy more products or recommend the products to colleagues.

Information developers must be able to speak the language of business if they are to be heard by senior management. They need to find evidence for their argument that excellent content that is easy to find and use will increase profitability.

Being an agile content developer, which means speed, accuracy, and focus

One manager told us that he's been hiring journalists to write technical content because they know how to interview a developer, write quickly and accurately, and end up being much more productive than his traditional technical writers. The traditional

writers are too slow, waiting for engineers to give them text, and placing too high a value on formatting.

Information developers today cannot afford to be perceived as slow or reluctant to change. They must be quick to adopt new technology, to make time to better understand customers, to know when they are producing content that no one wants , and to stop letting others tell them what to write.

I hope that new information developers coming from our university degree programs will be confident enough to be aggressive in developing new initiatives and responding to change. Without that new personality type, we are likely to see a decline. Managers need innovative staff members. Corporations need people who want customers to succeed and know how to make that happen. Doing the same old thing just won't make it any longer.

So look at the list of new skills in response to changing times. Information development is an exciting place to be.

To what Extent Should We Re-examine Our Teaching?

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If ask whether we should adjust our teaching practices in the face of growing demands from Industry (e.g., complex information systems), I suggest the answer is "yes." I am tasked with tracking emerging technologies in technical communication and with teaching the relevant ones. The problem I find is that my graduate students are missing the basics, so when I teach the emerging technologies, they are unable to write within them. What is particularly disconcerting is we should keep in mind that they are all working technical writers, and virtually 100% consistently fail simple tests of such basic skills as evaluating content quality in digital media, and even more basic skills such as audience analysis.

Among other things, this is what they tend to do wrong:

1. When they recognize there are writing styles appropriate to digital media, they assume user-centric writing is their only choice.

2. They are unable to identify the many new and different genres they must use to write and evaluate writing in digital media.

3. They tend to describe their audiences in simplistic terms that lead to stereotyping.

4. They assume that they can discuss audiences in the absence of a full understanding of the purpose of the text.

The reason they make these mistakes is because they have been taught to make them by their teachers and the professional gurus in the tech comm. industry.

In *ReaderCentric Writing for Digital Media* I discuss a test where I ask working professional writers to evaluate quality of writing on a

simple website. The failure rate was virtually 100% (in the entire history of the test, four have recognized any of the problems).

User-centric writing problem

The UX analysts are correct that the approaches to reading and writing have changed as we have moved to reading online, but when they describe the changes, they make the mistake of assuming <u>all</u> new, digital writing must fit within the user-centric paradigm. In my research, I have identified at least two additional writing styles that are completely different and more common: (1) persuasion-centric and (2) quality-centric. Persuasion-centric writing (basically the sales pitch) needs to be however long it needs to be to get the job done – and if the idea or product or service is complicated or expensive, the reader might have to scroll down for 20 or more pages. Quality-centric writing includes complicated information and entertainment. An excellent example of quality-centric writing is found in the Amazon.com reviews. For complicated or expensive products, the most valued reviews are always pages long. Entertainment can include novels and movies served from the computer. In the cases of persuasion-centric and quality-centric writing, the defining characteristics are length (they are long) and quality of writing (they have to be well written to keep the attention of the readers).

Our students need to come to recognize there is no one writing style appropriate for all things Internet.

Product description is not about describing the product

On Amazon.com, the product description is typically a short and superficial description of the product. Often, the writers simply repeat the title of the page, but this is actually the only place they have to sell their products. They do not understand what the genre really is. Obviously, this is in large part because the very title of the genre is misnamed. On the other hand, if they understood the complexities of genres on the Internet, they might see past the "product description" title. In traditional, printed content, the

content will be made up of a single genre. On the Web, virtually no page is made up of one genre. For example, product descriptions and menus are completely different genres, yet they sit side by side on the page.

We need to teach our students how to identify the different genres they will write for the Web.

"Our audience is professional communicators."

Each year, in a class that includes audience analysis, I ask my grad students (remember—all working professional writers) who is the audience that might buy this camera (a $4,000 Canon D5 MARK III). Every year, the vast majority say "professional photographer," some say "advanced amateur," and a few say, "a rich person." They are all right (except the last one), but none of their descriptions provides meaningful information. Here is a list of potential audiences:

- Wildlife Photographers who need
    - Extremely fast shutter speeds – e.g., 8000ths of a second
    - Extremely long lenses -- 400, 500, 800mm
    - Large CMPS – for sharpness
    - Rugged, weather-proof cameras
    - 5+ frames/second for several seconds
    - Extremely fast focus – for fast moving animals
    - Extended, continuously changing focus – also for fast moving animals
    - High ISO, but with few stars
    - Cable of printing at 12X18" or more
- Sports photographers carry as many as 5 cameras with different lens capabilities. They need
    - Extremely fast shutter speeds
    - Large CMOS for magazine cover images
    - Weather resistance
    - 5+ frames per second

- o Extremely fast and fine-tuned focus – focus on one athlete in a group
- o Most photos are printed in magazines or newspapers
- Landscape photographers
  - o Slow shutter speeds (often two seconds or more)
  - o Broad spectrum CMOS – their golden hours are dawn and dusk
  - o High dynamic range capability
  - o Extremely good and light tripods – they hike great distances
  - o Lots of filters
  - o High-quality large photo capability
- Industrial photographers
  - o Heavy equipment large, medium, and 35mm formats
  - o Disposable cameras – they use them in adverse conditions.
  - o High-quality lenses, but not the extreme quality landscape photographers need
  - o Broad range of shutter speeds
  - o Many (often highly specialized) lenses
  - o Control over many strobes – they might need to light up a whole building
- Institutional photographers
  - o Fairly inexpensive (but still good) cameras to cover events
  - o Broad lens selection capable of shooting groups or portraits
  - o Quiet shutters
- Glamour and product photographers
  - o Large, medium, and 25mm formats
  - o Extremely high quality glass (Leica, Carl Zeiss)
  - o Can take their time with dozens of test shots
  - o Images are often printed wall-sized

- Wedding photographers (a cross between sports and glamour photographs)
    - Ability to shoot in low light
    - Quiet, unobtrusive camera
    - Broad range of shutter speeds
- Birders – Specialized group of wildlife photographers, mostly amateurs; most will buy the somewhat less expensive 7d or 70D, but some will go for the more professional 5D

This is by no means the complete list, but it covers the wildly different needs of the various audiences. My point is that *professional photographer* doesn't even begin to describe the audiences, but writers will write to their stereotype of the *professional photographer*, which does not exist.

Audiences on the Web are much more granular, but because of the nature of the web, we can still write to each of them.

After bringing students through the above exercise, I ask students to analyze the audiences for a website designed to teach specialized training skills. In this exercise they break the audiences into seven groups that they then subdivide into more than 40 sub-groups.

 In contrast, in *Letting Go of the Words*, Janice Redish does not use the term audience except to say she prefers the term "site visitors." In her book, she describes "site visitors" as *patients*, *health care professionals*, *researchers*, although they could be described differently as *experienced travelers*, *occasional travelers*, *local residents*, *tourists*, *lookers*, *bookers . . .* (p. 23) In these descriptions, Redish is literally inviting the authors to visualize stereotypes. Later, she continues the invitation as she suggests that personas are useful tools but never describes the process of coming to a persona. Instead, she encourages the author not to use real people, but to make up the persona.

Let us suppose for a moment that I encouraged my students to make up personas from the prompt, *professional photographer*. Students would produce stereotypical, imaginary audiences that do not exist and would try to write to them.

Audiences in the absence of the purpose of the text

For this essay, I looked at a random collection of tech comm. textbooks. Surprisingly few even mention audience analysis. Michael Markel does a good job of directing students toward recognizing the granularity of the audiences they will be writing for. In contrast to Redish, he recommends students do personas based on actual people. But after a detailed discussion of describing the audiences he moves to identifying the purpose of the text based on the analysis of the audiences. This raises a problem.

If we do a thought experiment the problem becomes apparent: I am writing for law students who are in the unimportant law schools, who recognize that law is a competitive field, and who are concerned that there will be no jobs available when they graduate. This is a pretty good description of the audience, but what is the purpose of the text? The problem is . . . there is no good way to derive the purpose of a text from an understanding of the audience. You always parse the audience out of the purpose of the text. And the better you know the purpose of the text, the better you can describe the audience. If we say, "The Army recruiter has been tasked with recruiting law students as officers into the Army JAG Corps," we know the audience I describe above is a clear target for the text, and we know the brilliant student being underwritten by a major law firm is probably not in the recruiter's audience.

My Takeaway

My research is to evaluate the quality of content in complex and complicated information systems. This is a complicated description for a pretty simple task. I look at online content in places like Amazon.com and evaluate its quality. I almost always find the quality lacking. When I look at even the simplest sites, however, I still find the quality lacking and always for the same reasons. When writing for the Web, writers do not know what they are looking at and so don't know how to compose it – they simply write well and assume that error free writing will do the job. The problem is even worse when they are evaluating texts others have written. They have no good tools for doing those evaluations. They do not know

the genres, they can only guess at the purpose of the texts. They follow prescriptions of UX analysts who describe effective writing for the web in terms of structures (e.g., short, chunked, bulleted).

There is one final, and often disastrous condition. It is nothing for an IT professional to lift whole segments out of one online document and paste them into another. The Internet is a pastiche of cut-and-pasted content that may or may not be relevant to its adjacent content, and our students have no idea how to evaluate it.

My recommendation

My recommendation for us as teachers who are trying to teach writing for the documents of the future is to reexamine our understandings of the fundamentals. Go all the way back to square 1 and reexamine everything – make sure what we think we know is really true, make sure we know what we don't know, make sure we have it right and we aren't just parroting what we have heard in the past.

The old rules of excellent writing we taught our students ten years ago no longer apply. Alien genres sit side-by-side on the page (e.g., banner, argument, menu, etc.). There may be five or six different genres on a page and the reader isn't bothered in the least by that confusion. There is much more persuasion-centric writing on the Internet than user-centric, and more quality-centric than both of the others combined.

Currently, the largest complex information systems run independently and unsupervised. If the writing works, that's good. If it doesn't work, too bad. Someday the developers of these systems will recognize how important excellent writing is for their information. When that happens, those of our students who can write and evaluate writing for these systems, will be in really great shape.

Are Personas Really Usable?

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In their article examining the 40-year history of IBM's involvement in user-centered design (UCD) practices, Mark Ominsky, Kenneth Stern, and James Rudd observed that one of the most significant obstacles they faced was communication on cross-functional teams. Before UCD could really have a significant impact on the design of interfaces and information, team members from different disciplines needed to find ways to communicate. As IBM sought to begin creating teams of software engineers, project managers, marketers, technical communicators and others to work on new products, they found that "Communicating techniques and approaches between consultants from other specialty areas was a serious problem, creating a veritable Tower of Babel, with each consulting practice having its own terminology, techniques, and activity descriptions" (2002, p. 353). Of course, this problem wasn't unique to IBM, and throughout the 90s the usability testing community experimented with a variety of tools and techniques which would allow user advocates to communicate with people from other disciplines.

We tried to find effective methods to explain our data on users' goals and needs to software engineers, graphic designers, and other members of the design team in a way which would enable them team to make actionable decisions about the product's design. This entry begins by examining the ways that personas were originally developed as a means of solving communication problems on development teams. Then it describes recent research which challenges the effectiveness of personas as communication tools in UCD practice.

Personas Explained

Beginning late 90s, a number of industry consultants began using a technique which Alan Cooper popularly labelled "personas" in his book *The Inmates Are Running the Asylum* (1999). Unfortunately, Cooper was ambiguous about how to create personas in his book. Yet, personas became hugely popular in the usability testing community because they appeared to solve the problem of how to communicate users' goals, task environments, and needs to people from other disciplines. Personas provided a psychologically compelling means of introducing complex data about users to members of a development team in a way that they could understand and *actually use* in order to make informed design choices.

For those not familiar with them, a persona is essentially a representation or life-like model of a targeted demographic in the broad range of users who may purchase the product being developed. In other words, a persona is a distillation of data which has been collected through a variety of ethnographic, survey, user testing, and other empirical research techniques to produce an "archetypal" image of a particular type of user (1999). Although a persona is not a "real person" and is a creation, I maintain that it is a mistake to say that a persona is a fictional character. Instead, a persona is an image created by UCD specialists to look like a real person with whom members of the design team can immediately identify and empathize, and that image is decidedly based on real information about real people. (For examples of personas, see http://www.usability.gov/how-to-and-tools/methods/personas.html or http://www.clemson.edu/caah/caah_mockups/personas.html.)

Although *The Inmates Are Running the Asylum* failed to make clear how to use data in order to produce useful personas, others have helped develop this idea in effective and actionable ways. Three publications are credited with advancing the idea of personas in the field: John Pruitt's and Jonathan Grudin's "Personas: Practice and Theory" in 2002, John Pruitt's and Tamara Adlin's *The Persona Lifecycle* in 2006, and Ginny Redish's *Letting Go of the Words* in 2007. These three publications helped put personas in the mainstream UCD toolbox by presenting them as a regular part of the audience

analysis, user experience, and design processes. Indeed, for the past decade now, developing personas as part of a UCD process is as commonplace as card sorts, think-aloud protocol analyses, and heuristic analyses.

Today, personas have virtually become an expected part of a UCD process because they sit comfortably alongside our traditional research tools such as context analyses and focus groups. As Pruitt and Grudin point out, personas alone:

> can be valuable, but they can be more powerful if used to *complement*, not replace, a full range of quantitative and qualitative usability methods. Personas amplify the effectiveness of other methods. [. . .] However, their greatest value is in providing a shared basis for communication (2002).

In fact, the persona method has become so popular in industry that it sometimes seems as though it has been accepted as the panacea for solving the problem of how to provide "a psychologically compelling approach to communicate information about users to development teams" (Chapman & Milham, 2006, p. 1).

New Challenges to Personas

Recently, significant empirical challenges to the real value of personas are beginning to emerge. Of course, there have always been practitioners who have offered conceptual reasons for questioning the value of personas. As far back as 2006—and before Pruitt and Adlin's *Persona Lifecycle* had been published— Christopher Chapman and Russell Milham objected to personas as there is no way to methodologically validate the accuracy of a persona. If the accuracy of the persona can be questioned they argued, then "Practical considerations suggest that persona use may involve teams in political conflicts about who better understands and represents customers" (2006, p. 4).

Nevertheless, it wasn't until Erin Friess presented the results of her study "Personas and decision-making in the design process" at the 2012 CHI conference that an empirical research study offered a significant challenge to the usefulness of personas as a

communication tool among members of a design team. The fact that Friess's study received the very exclusive "Best of CHI" award almost guaranteed that it had to be taken seriously. For her research, Friess used an ethnographic approach to examine how "a top tier design firm based in the United States" actually used personas to inform design decisions made by the team (2012, p. 1211). To do so, Friess audio-recorded all of the team's interactions and transcribed them. She then used discourse analysis techniques to review all uses of the 8 personas which 2 members of the team had produced for the whole group.

Reviewing Friess's Results

Friess's (2012) study found that personas were only "included in about 3% of the conversational turns within the decision-making meetings" where members collectively designed the product (p. 1216). She also found that, of the miniscule 3% of team's discussion, the 2 team members who had conducted the field research to produce the personas in the first place were the primary people using the personas. The 2 team members "were responsible for 82.1% of all the turns that invoked personas and for 85.3% of all the personas invoked during the decision-making process" (p. 1216). In other words, rather than serving as a communication tool which allowed the entire team to make design decisions based on user needs, it appears that—at least for the design team Friess studied— only the people who actually created the personas benefitted from their development.

Worse, Friess found that nearly half of the team's decision making conversations were informed by mere opinion even though data-based personas were readily available. Friess found that instead of personas, "designer opinion is used in approximately 25% of conversational turns, while non-persona related storytelling and role-playing is used in about 21% of the conversational turns" (p. 1216). This finding certainly makes one question whether the team received an adequate return on the investment in the time and resources required to develop the 8 personas available to the team if 46% of the time designer opinion, storytelling, and role playing were what the team was really discussing. If the team was only

using data-driven personas 3% of the time, then were the resources expended on personas wasted?

The study's findings certainly appear to lend credibility to Chapman's and Milham's observation that:

> Development teams receive information about users from many sources: self-observation, friends, technology media, marketing organizations, analyst reports, conferences, support cases, and so forth. They form impressions about customers and those naturally show variance from the precise data presented by personas (2006, p. 3).

Because members of a team are more likely to put more stock in information about which they have first-hand knowledge than "fictional" personas which they didn't develop themselves, Chapman and Milham were able to successfully predict that the outcomes were either "relegation of personas to a minor role; or individually idiosyncratic usage, in which the personas mean little as inferences and alternatives proliferate" (2006, p. 4).

Re-thinking Personas

So does this empirical challenge to the usability of personas mean that usability researchers should throw the persona baby out? Were all the claims from the past decade about the usefulness of the persona method as a communication tool wrong? Such a conclusion seems premature. In fact, even Friess observes that the major limitation of her study is that her ethnographic approach meant that she only examined a single development team.

Proponents of persona use have also been quick to point out that the team Friess studied appears to have failed to use their personas properly by not including the whole team in the persona development and by failing to obtain adequate buy-in from the group. Had other teams which used personas "properly" been studies, then the outcomes might have been quite different. Others, including Friess herself (2012, p. 1217), point out that the study only collected data on how personas were used in conversations between team members, but the actual impact of the personas on the final design may not be reflected in these data. For example,

team members may have internalized the persona data and made design decisions weren't captured in the team's conversations. Also, they may have assumed persona data was common knowledge and thus not worth mentioning, so that they used it later in prototyping or implementation choices they made where its influence on the final design went unrecorded.

In sum, it's premature to suggest that the persona method isn't wearing "new clothes" (Chapman & Milham 2006). But the debate which this empirical research has started is positive for our field, if only because it reminds us that we can't become complacent in our use of UCD tools. There are best practices and guidelines for personas, and this debate reminds us that we risk wasting our resources and shouldn't expect a significant ROI from any tool when we ignore them. For now, perhaps the best approach to take in relation to integrating personas into UCD practices is to make sure that every member of the development team always has direct access to the data used to develop the personas and to be sure that all of the members of the team are involved in the creation of the personas that the team ultimately uses. Leaving the development of the personas to a select few on the team seems likely to ensure that those few are the only members of your team who will benefit from the time and money invested in the personas development.

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Identifying New Topics in TC Curricula: Preparing Students for Success in a Changing World

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This entry discusses what topics TC programs could be teaching to technical communication (TC) students to prepare them for success in an increasingly complex world. People today are consumed with technology and its related artefacts, many of which technical communicators help create. Given the nature of these artifacts, the next generation of TC professionals in some regions may include user experience (UX) researchers and designers.

TC programs should continue to teach foundational TC topics such as rhetoric, writing, editing, and design. But to facilitate the changing nature of the TC profession, programs may need to incorporate additional topics in the areas of genres, management and collaboration, design, UX, methods, programming, and tools. Additionally, if programs have not already done so, they should consider integrating real-world projects into their students' educational experiences through internships, and client and service based learning. The addition of the suggested topics will depend on many factors and must be done on a program-by-program basis, guided by the values of program faculty and the climates in which the programs reside.

To investigate what topics could be taught, I reviewed discussions concerning TC program development, surveys of TC program curricula, TC job titles, and core competencies and related skill sets asked of TC graduates.

Discussions of Programmatic Development

In 2000, the Annual Meeting of the Council for Programs in Technical and Scientific Communication (CPTSC) focused on Models for Strategic Program Development. Many attendees at that meeting were prescient concerning what TC students should be studying. Johnson, van Oss, and Tews (2000) concluded that students needed to have expertise in subject matter and product knowledge, authoring tools, and information design, which they detailed to mean "writing, human factors, learning theory, audience analysis, UI design, and usability testing" (p. 5).

Others at the meeting discussed whether TC curricula should become specialized (e.g., LaGrandeur, 2000; Bernhardt, 2000; Rude, 2000). Bernhardt (2000) believed that TC programs should not specialize and "become the multimedia development program or the computer documentation program or the medical literacy program" (p. 7). Rude also noted that curricula were becoming increasingly interdisciplinary, stating that "the sophisticated communicator is able to integrate technology into the process of information management and not just the production process" (p. 14). Kitalong (2000) believed that a natural outgrowth of the TC emphasis on audience analysis and user advocacy was usability testing. Their positions perhaps helped guide some TC programs in the ensuing years as they updated their curricula and considered whether they would become specialized, interdisciplinary, or take on a focus on user advocacy.

Surveys of TC Program Curricula

Since the 2000 CPTSC meeting, two papers in *Technical Communication* (Harner & Rich, 2005; Meloncon & Henschel, 2013) presented the results of surveys of a large number of undergraduate degree programs in TC/TPC. Meloncon & Henschel surveyed 65 programs and found:

- 50 – 57% requiring courses in introduction to the field, basic technical writing, editing, capstone, and internship

- 45% requiring some kind of "web course," with the majority emphasizing web production vs. web writing, multimedia, or content management

- 40% requiring document design courses

- 40% requiring some kind of genre course (e.g., instructions, proposals)

- A very low percentage offering courses in usability (8 – 11%, elective vs. required, respectively) and research methods (15 – 23%, elective vs. required, respectively)

Given what Meloncon and Henschel found just a few years ago, I reviewed 15 TC undergraduate programs with a goal of identifying courses that seemed to be novel (i.e., courses offered by only a few programs). I wondered if novel courses might mean that some programs were in fact planning with foresight. Of course it might mean the opposite—they could be stuck in the past.

The 15 TC programs were offering foundational TC coursework (e.g., rhetoric, writing, editing, style, grammar, visual design). Some were offering tracks, many were offering client or service based learning opportunities (Bourelle, 2014; Youngblood & Mackiewicz, 2013; Weber & Spartz, 2014), and many were offering internship opportunities. But only a few were offering courses with titles not offered by other programs, e.g., in various genres, methods, design and UX, international communication, and ethics (see Table 1).

Technical Communicator Job Titles

To think about the topics that TC programs could be teaching technical communicators to prepare them for success, I next examined job titles of TC professionals. To do so, I went to the Society for Technical Communication (STC) website where I found a broad list: e.g., technical writers and editors, information architects, instructional designers, technical illustrators, visual designers, web designers and developers, usability and human factors professionals, globalization and localization specialists. Of interest, the STC web page listing these job titles ended with a note about users: "What all technical communicators have in common is

Table 1. Specific Courses Offered by a Few Programs

Category	Sample Courses
Genres	Writing for: Science; Nature, Environment and Travel; Science, Technology, Land and Environment; Biology; Medicine; Environment; Public Relations; Technical Marketing; News
Methods	Usability Testing
Design and UX	Visual and Verbal Communication; Information Design; Web Design; Advertising Design; Interaction Design
International Communication	Communicating in the Global Marketplace; International Business Communication; International Communication
Ethics	Ethics Proseminar

a user-centered approach to providing the right information. . . ." (STC, 2015). Once again, I was bumping into the focus on users. Getto, Potts, Salvo, and Gossett (2013) would argue that UX professionals should be added to the STC job list—they point out that some UX professionals are trained as technical communicators. The job titles listed here relate to the job ads to which TC students apply, and also to the core competencies and skill sets that industry expects of TC graduates

Core Competencies

Given the large list of job titles listed by STC, one might expect considerable breadth in the core competencies expected of TC graduates. In order to identify core competencies expected of TC graduates, Rainey, Turner, and Dayton (2005) surveyed 67 technical communication managers and analyzed the curricula of the 10 large technical communication undergraduate programs. They narrowed in on 63 core competencies and categorized them as most important, secondary, and tertiary competencies. Their most important competencies included skills such as ability to collaborate with subject-matter experts and co-workers, write

clearly, and analyze user needs. Secondary competencies included using "technologies to accomplish documentation work in various media and ability to write, edit, and test various…documents" (p. 323). Tertiary competencies included usability testing, content management, instructional design, budgeting, research, multimedia, cultural understanding. Further definition of some of the more nontraditional competencies include the ability to use web design software, database management programs, graphic and drawing packages; "the ability to field-test a manual"; "the ability to design an effective interface integrating color, sound, and graphics"; and "the ability to develop research questions and to collect data through primary research tools related to applied and basic communication research" (pp. 324-330). Many of Rainey et al.'s secondary and tertiary skills are currently in demand by industry, as shown in the list of job skills presented below.

Adding to Rainey et al.'s list, Carliner (2010) noted that by the late 1990s technical communicators were also designing web sites that provided user support, writing materials used in the web sites, assessing the user experience, and also doing rapid prototyping and usability testing.

More competencies and skill sets that industry expects of TC graduates can be found by examining job ads. I reviewed technical writer job ads, without regional restrictions, on Simplyhired.com (n = 22,224) and Indeed.com (n = 7,402) in February 2015 include the following skills that I have grouped into three categories:

Basic TC Skills

- Writing and editing proposals, reports, software documentation, technical procedure manuals, user manuals, programming manuals, service manuals, operational specifications, web content, clinical data reports

- Creating simple logic diagrams, drawings, graphs, and charts

- Facilitating meetings and collaborating with internal and external subject matter experts

- Managing projects

- Interviewing product developers

- Referring to technical specifications, blueprints, engineering illustrations, and trade journal

Tool Knowledge

- Possessing experience with Adobe Framemaker and Creative Suite, HTML, XML, MadCap Flare

- Understanding mechanisms for securing new technologies, and the impact of new and emerging technologies as well as tools and methods for mitigating risks

Programming, Web, and Mobile Development Knowledge

- Possessing experience in programming languages such as Java and C++, a strong background with HTML, CSS and JavaScript

- Having Web development and Android experience, and strong knowledge of Eclipse, IntelliJ or Visual Studio

The skills listed above agree with the competences listed by Ramey et al. (2005) but also expand on them. The job ads demand the TC basics of writing, editing, design, collaborating, and managing; they also show expectations of tool knowledge and ability to learn tools; and finally they show desire for programming knowledge and web and mobile app development experience. Some of these competencies and skill sets do start to move the TC professional closer to the UX arena.

It is interesting to note that, while my search, without regional restrictions, in Simplyhired.com elicited 22,224 technical writer job ads, it elicited four times more user researcher ads (n = 89,531) and 10 times more user designer ads (n = 247,025), some with skill sets extremely similar to the technical writer job ads—with the addition of skills in methods, design, and UX. Getto et al. (2013) make a strong statement about the relationship of User Experience Design (UXD) to TC:

> Over the past 10 years, User Experience design (UX) has emerged as a recognizable focus for a variety of related practices in technical communication. Understood broadly as a field that spans information architecture and information design; usability, user-centered design, and participatory design; document design, visual design, and

'big data' analysis; institutional and intra-office communication, team building, document and project management—UX as a central area of study informs the constantly evolving identity of the technical communicator (p. 65). [Note that Getto et al. use UX as an acronym for user experience design, not simply user experience.]

TC programs have an opportunity, if they choose, to expand the job opportunities for TC graduates by virtue of the topics that they choose to teach their students. Many of their students are indeed applying for some of the user researcher jobs; in some regions of the U.S., those jobs are considerably more abundant than technical writer jobs. It may be harder for students to apply for UXD jobs until programs teach more topics on design and UX.

Topics TC Programs Could be Teaching

This review brings me back to my initial goal: to discuss what topics TC Programs could be teaching the next generation of TC professionals. In some regions and for some programs, the next generation of TC professionals may include UX researchers and designers if the programs add more topics to their curricula that relate to these jobs (e.g., more topics about methods, design, and UX).

I must emphasize that if programs want to redesign or make major changes to the topics they teach and related curricula, they must think about the climate in which their programs exist, regionally, departmentally, unit-wise, and industry-wise. They must base their decisions on a variety of factors:

- What is academically and theoretically sound?

- What are the critical thinking skills that students most need to master?

- What are their alumni, current students, faculty, advisors, peers, and advisory board members telling them?

- What are the core competencies that local industry is demanding?

- Who are their competitors and what they are offering?

- Where do they want their program, faculty, and students to be in the next 10-15 years?

Carliner (2010) maintains that academic programs should teach durable skills and knowledge, reminding us that technology skills and knowledge become outdated very quickly, but that employers will expect students to have learned some current technologies while in school. Getto et al. (2013) agree with the need to teach durable skills: "rather than teaching a set of tools or products, learners need to gain an understanding of how to adapt, learn, grow, and most of all, embrace change" (p. 66).

Given the caveats described here, and the programmatic and curricular patterns, as well as the competencies and skills expected of TC graduates discussed earlier, TC programs should continue to teach TC fundamentals. Yet TC programs also have the opportunity to expand the topics they teach to meet new opportunities given the changing nature of the profession. Incorporating some of the suggested topics into TC programs might involve hiring new faculty or collaborating with faculty across disciplinary boundaries. Some of the topics are already taught in many TC programs but some are taught by only a few, if any, TC programs. The list presented here makes for a good beginning menu of topics to choose from that will help TC students succeed in industry and academia, today and in the future:

- Fundamentals: e.g., rhetoric, writing, editing, style, grammar, ethics

- Genres: e.g., writing for the web, social media, instructions, proposals (for more specialized genres, see Table 1)

- International communication

- Management and Collaboration: e.g., project management, content management, computer supported collaborative work

- Design: e.g., visual rhetoric or design, document design, information design, web design, graphic design, multimedia design, game design, information visualization

- User Experience (UX): e.g., UX design, interaction design, prototyping, information architecture, experience design

- Methods: e.g., quantitative and qualitative research methods, user research methods/usability evaluation, remote user assessment

- Programming and computation: e.g., introduction to programming, logic

- Tools: current tools to support learning topics described above

Beyond these topics and associated courses is the need for internships and client or service learning, in which students engage in projects and work with industry and nonprofit partners. In such real world activities, students are exposed to the workplace and its culture, and experience active, participatory, experiential learning, sometimes also working in teams, learning management and collaboration skills. Blakeslee (2001) discusses some thought provoking issues that faculty may want to consider when setting up client based projects, e.g., how to choose clients and projects, and the amount of structure and help that faculty should offer. Weber and Spartz (2014) discuss expanding the range of service-learning opportunities with a focus on adding entrepreneurship to client and service learning. Finally, students should be developing portfolios in which they exhibit and reflect on their work.

Conclusions

The choices that programs make about what topics to teach TC students and integrate into TC courses and curricula should be guided by the values of the faculty making program decisions. They may also need to be guided by the interdisciplinary curricular opportunities available on their campuses. As we have seen, the products that technical communication professionals create and work on continue to change from paper media to online media (with forms such as online help, websites, social media, and APIs) to interfaces to applications. The concept of who is using and interacting with the products that technical communicators create, and what those artefacts are, should influence what topics TC programs should be teaching and, in turn, how successful technical communicators will be in the future.

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Culture and the Contextualization of Care: A Prototype-Based Approach to Developing Health and Medical Visuals for International Audiences

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As recent media coverage of Ebola has demonstrated, there is a growing need to communicate health and medical information effectively on a global scale (Centre for Disease Control and Prevention, 2014). In fact, the ability to address a range of health and medical issues – such as the containment of infectious diseases – requires communication designers to provide information across countries and regions (Rimal & Lapinski, 2009). Doing so, however, involves more than just translating texts. Rather, it also requires creating visuals that effectively convey health and medical information to diverse audiences (e.g., healthcare providers and patients) in different cultures (Osborne, 2006; Quick Guide to Health Literacy, n.d.).

This situation requires communication designers to determine how the context in which information is presented affects what constitutes credible – or recognizable, acceptable, and believable – visual displays of information to cultural groups (Osborne, 2006; Quick Guide to Health Literacy, n.d.). This entry discusses how prototype theory can help communication designers address cultural expectations associated with visual design in health and medical contexts. The over-arching idea is to apply prototype theory to certain design areas associated with care giving. By doing so, communication designers can better contextualize visual information to meet the expectations of individuals from other cultures.

Context, Credibility, and Care

Cultures all have certain expectations of what constitutes an acceptable display of information in a given context (Hall, 1989; St.Amant, 2006). Materials that meet these expectations are generally viewed as "credible" or worth considering and using. Those that do not run the risk of being dismissed as lacking in credibility and deemed not worthy of consideration (Driskill, 1996; Woolever, 2001; St.Aamant, 2006). These expectations of credibility include the kinds of visuals used to convey information (Kostelnick, 1995; Qiuye, 2000; St.Amant, 2005). Moreover, such aspects can be particularly acute in relation to health and medical communication where visuals are often important to identifying needed items and performing specific processes in certain ways (Strategic and Proactive Communication Branch, 2009; Houts, Doak, Doak, & Loscalzo, 2006). As a result, communication designers need to develop visuals that a cultural audience considers credible if medical- and health-related information is to be accepted and acted upon as intended.

In many ways, medical and health information connects to one central principle: care. That is, such information is often used to determine how to best administer a particular kind of care – be it preventative, restorative, supportive, etc. – to a given individual (e.g., a patient). The challenge becomes determining what the context for administering care looks like (Bennett, Eglash, & Krishnamoorthy, 2011; Osborne, 2006). If health and medical content is presented in a context users recognize as legitimate, then individuals are more likely to view that content as credible or worth considering. Communication designers, therefore, need to take steps to contextualize information in a way that meets those expectations. In essence, communication designers must determine what the prototypical context for providing/receiving care looks like in different cultures.

Context, Expectations, and Credibility

The central issue here is expectations: Does something look like we expect it to? If so, we tend to consider it more credible; if not, less credible (Rosch, 1978; Aitchison, 1994; St.Amant, 2006). These

expectations, however, are not universal. Rather, they are based on exposure over time. The more you see something and are told it represents a credible depiction of a given person, object, or place, the more likely you are to assume that particular visual represents the most appropriate, or most credible, visual representation of that person, object, or place (Aitchison, 1994; St.Amant, 2006). This connection between exposure over time and credibility means cultures can have different expectations of what a credible – or *prototypical* – representation of something should look like in health and medical contexts (Kostelnick, 1995; Qiuye, 2000; St.Amant, 2006). Thus, the process of care giving (i.e., administering or providing care) must be contextualized to meet these prototype expectations.

The challenge becomes determining the contextual factors cultures associate with credible visual design related to care giving (Osborne, 2006; Quick Guide to Health Literacy, n.d.). Addressing this situation is no easy task, for such factors can be highly nuanced and involve multiple aspects (Qiuye, 2000; Bennett, Eglash, & Krishnamoorthy, 2011). One solution can be methods that allow communication designers to identify those aspects cultural audiences associate with credible visual displays in relation to medical and health contexts. Such a method, moreover, needs to be both analytical and generative. That is, it needs to allow for the kind of analysis that can provide insights on how to develop credible visuals for individuals from other cultures. Thus, the mechanism must offer insights on the context of care – or what care giving looks like in different cultural settings. Communication designers can then use such insights to develop visuals that contextualize care to meet the credibility expectations of a given cultural group. Prototype theory can serve as a mechanism for achieving this objective.

Prototype Theory, Credibility, and Culture

Prototype theory examines the connections between visual representations and cultural preferences. As such, it can help communication designers understand and address differences in visual expectations and credibility. According to prototype theory, we all have a prototypical – or *ideal* – visual representation of what

an acceptable (i.e., credible) example of an item should look like (Rosch, 1978; Aitchison, 1994; St.Amant, 2006). These ideals are not monolithic. Rather, they are made up of a collection of features, or *characteristics*.

Every time we encounter something new – be it a person, an object, or a location/setting – we compare the characteristics of that new item to those of the other ideals in our metal database of "what things should look like." The more characteristics that new item has in common with a particular ideal, the more likely we are to identify/classify that item as "a credible depiction" of the category of item represented by that ideal (Rosch, 1978; Aitchison, 1994; St.Amant, 2006). So, if our ideal representation of the mental category of "tool" is "hammer," the more characteristics a new item has in common with a hammer, the more likely we are to recognize that item as a "tool" and accept it as a "credible representation" of a tool.

But here's the catch: Not all cultures share a common set of expectations for what a credible example – or an ideal – of something is. Rather, credibility expectations associated with visual design can vary from culture to culture (Kostelnick, 1995; Qiuye, 2000; St.Amant, 2005). This variation can, in turn, affect the acceptance and the use of visual information. These expectations of credibility and visual representation can apply to persons (e.g., what does a teacher look like), objects (e.g., what does a physics textbook look like), or places/settings (e.g., what does a classroom look like). For this reason, communication designers cannot assume the ideal representation of an item in their own culture works with individuals from another culture (Woolever, 2001; Bennett, Eglash, & Krishnamoorthy, 2011). Doing so can create problems.

At issue is the connection between perceived credibility and use. If something doesn't look like I expect it to, I might not recognize what it is. This factor means I might not use a "non-credible" – or unrecognizable – item as intended, if at all. If, for example, an object doesn't look like a stethoscope, would I think of using it to check for a heartbeat? In terms of health and medical communication, if an informational item (e.g., a brochure) does not look like it is designed to convey health and medical content (i.e.,

the images it contains do no readily convey the message "health/medical information"), will I turn to it as a resource when seeking such information?

Moreover, even if I recognize what an object is, there is no guarantee I will consider it credible/acceptable enough to make use of it. For example, just because I recognize something as a medical device (e.g., it resembles one) does not mean I will consider it a credible/acceptable/legitimate one – or one that I would allow myself to be examined with. Likewise, I might be unwilling to consider health or medical documents that contain images of "questionable" or "non-credible" devices. Again, a failure to match my prototype/ideal expectations affects use – and affects the successful transmission of health and medical content.

The solution becomes identifying the characteristics a cultural audience associates with the credible depiction (i.e., ideal) of something (Aitchison, 1994; St.Amant, 2006). Once known, these characteristics can guide the process of developing more effective visuals for international audiences. By applying prototype theory in a particular way, communication designers can gain initial insights into what these prototype-related expectations are. These insights can then help with the creation of health- and medical-related visuals that more effectively meet the credibility expectations of a given culture.

Applying the Theory to Create Context

Prototype theory can help guide the audience analysis process when creating visuals for international contexts. The idea is to focus the analysis on identifying certain factors (i.e., characteristics) associated with credible visuals for audiences from another culture. Once identified, these factors can serve as a foundation communication designers can use to create more effective/credible health and medical visuals for the members of that culture.

The process works as follows: Communication designers would first review an initial example of an image the individuals from a given culture have designed for members of their same culture (St.Amant, 2006; Bennett, Eglash, & Krishnamoorthy, 2011). (Alternatively, communication designers could review a picture

showing what the members of a culture associate with visual representations of that item.) Next, communication designers should identify the different characteristics of the ideal depicted in the initial image. These characteristics would be put into a checklist of "features" to include when designing images of "X" for culture "Y."

Using this initial checklist, communication designers would review other representations of that item – images designed by members of the culture for members of that culture. The objective is to compare the features of the initial checklist against multiple examples of the same item as represented in the particular culture. The more often a characteristic appears, the more likely it is to stay on the checklist. The less often, the more likely it is to be removed from the checklist. The idea is to use this comparative approach to identify those characteristics most strongly associated with and expected in credible depictions of the related object. Through this approach, communication designers can better determine those features the ideal representation of an item should display to be considered recognizable and credible to a particular cultural group. In relation to health and medical communication, the central question becomes "What items should I focus on when doing this kind of analysis?"

Contextualizing Care for Cultures

Numerous factors can come into play in every health- and medical-communication situation. However, three kinds of visuals are often central to providing care effectively. They are those individuals who administer care (i.e., caregivers), those objects used to provide care (i.e., the materials of care giving), and those settings in which care is administered (i.e., settings of care giving).

Contextualizing Caregivers

The central question to answer is "Who is expected to provide health or medical care in this cultural context?" For many individuals, the default assumption is that a specific medical professional (e.g., a physician or a nurse) will administer/provide care. But that is not always the case. For this reason, communication designers first need to determine who tends to

provide the kind of care being documented in a particular cultural context. The next item to consider is what do the members of that culture expect that recognized caregiver to look like. In most situations, caregivers display certain characteristics that identify their status as "credible caregiver" (e.g., the white lab coat and stethoscope associated with physicians in many Western cultures). By reviewing multiple examples of recognized (i.e., credible) caregivers in a particular cultural context, communication designers can identify such characteristics. They can then use this information as a foundation for developing visual representations of caregivers that display these characteristics. In so doing, communication designers contextualize that visual within the expectations of a particular cultural group.

Contextualizing the Materials of Care Giving

The central question to consider is "What do the objects – or materials – associated with credible care giving look like?" These materials could range from tools used to perform different care giving activities (e.g., stethoscopes) to treatments (e.g., medications). The idea is that the materials used to provide care giving affect perceptions of how credible the related care is. Would one, for example, ingest a "medication" that did not mirror that person's expectations of what credible medication should look like? Similarly, would individuals willingly allow themselves to be probed by an item that was not recognized as a credible implement for performing such an action?

The challenge for communication designers becomes identifying those materials members of a culture expect to encounter when receiving certain kinds of care/treatment in a care-giving context. Once identified, the next factor to consider is what features – or characteristics – are associated with those credible materials of care. (For example, what characteristics does something need to have in order to be considered a credible medication for use?) Once known, communication designers can use this information to crate visual representations of credible care giving materials, implements, tools, etc. for individuals from another culture. In so doing, they further contextualize visual information to address the expectations of another culture.

Contextualizing Settings of Care Giving

The central question to address is "What does a credible setting for administering or receiving care look like?" We all expect legitimate – or credible – care to be administered in certain places or settings. And we often assume certain items, or features (i.e., characteristics), will be present in such settings. If asked, for example, many of us could easily list off the kinds of items – or features – we expect to encounter in an examining room (e.g., examination table, red box for disposing biomedical waste, jars of cotton swabs and tongue depressors, etc.). If we encounter a setting that lacks these features/characteristics, we might doubt the credibility of the care we are to receive in that environment. So, when creating images that depict individuals receiving health or medical care, communication designers need to contextualize this setting by giving it the features the related culture associates with a credible setting for administering/receiving care. Again, by reviewing multiple visual examples of the setting in which care is administered, communication designers can re-create contexts that meet the expectations of a cultural group.

The items noted here might seem self-obvious. However, it is often common to assume the context of credible care giving expected in our culture is universal (Woolever, 2001; Bennett, Eglash, & Krishnamoorthy, 2011). For this reason, communication designers need to understand what visual elements cultures associate with credible care giving. They can then use this knowledge to design health or medical visuals that contextualize that information to meet the expectations of audiences from other cultures.

Concluding Thoughts

Expectations associated with care giving are complex. This complexity only increases when health and medical information needs to be conveyed to individuals from a different culture. Yet understanding and addressing such expectations are essential to effective health and medical communication in global contexts. The prototype-based approach overviewed here represents an initial step toward understanding such factors. By employing it, communication designers can better contextualize health and

medical information to meet the communication – and the credibility – expectations of other cultural groups. In so doing, communication designers can increase the likelihood that this information is used in different cultural contexts.

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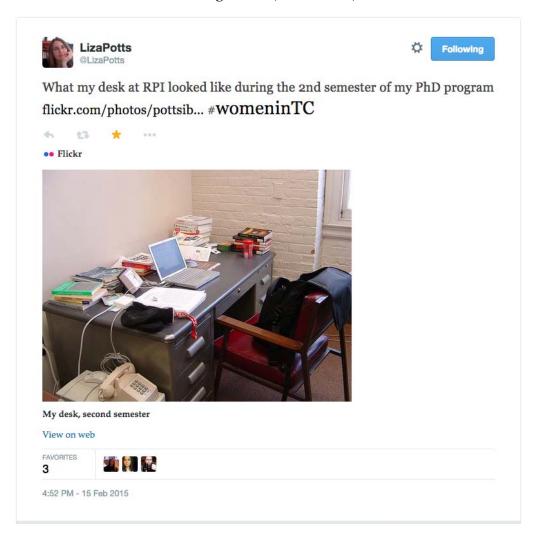# Taking Things Seriously with Visual Research

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Introduction: a Tweet, a Photo, a Bundle of Ideas

Liza Potts, current chair of SIGDOC's board, recently shared the following tweet (Potts, 2015):

This photo interests me for several reasons—as camaraderie with a colleague at another university, for nostalgia about my own workspaces from graduate school, as a comparison to current workspaces, and as example of outmoded technologies, to name a few. But even more important, Liza's photo interests me professionally, as a researcher of communication design and technical and professional writing. The image puts me in mind of methodologies and methods, and illustrates how visual research may be both ideographic and nomothetic simultaneously. By thinking about the things that mediate everyday work environments in creative ways—using visual methods of research—professionals in communication design may better realize insights about participants and make fruitful cross-case comparisons and generalized typologies of user experience.

The Setup: Taking Things Seriously

If one is willing to look, similar discussions and visualizations of everyday workspaces are easy to find on the web. The Setup (http://usesthis.com), for example, is a long-running site that asks people from a variety of professional backgrounds a simple question: "What do you use to get stuff done?" Recent profiles include details about the everyday tools and technologies used by a game developer, a cartoonist, a patent agent, an interactive story developer, and an environmental artist. As of this writing, there are an astounding *543* such profiles. It seems as though people like to talk about their workspaces and tools, and many more people like to learn about the setups of others. Basecamp, a company providing productivity and web development products and services recently profiled the everyday setups of many of its employees, visually (Kim, 2015). They called this "What our desks look like," and the post generated considerable buzz and discussion on several social media and aggregator sites.

Why do we care what others' desks look like? Why are we interested in the tools and technologies that support the work of people in fields other than our own? And what does all of this have to do with communication design, and with research methodologies and methods? There are likely many acceptable answers to these questions, but in general, the things near us and

with us matter to the work we do, to how we perceive that work, and to who we are. In other words, the systemic contexts of our everyday work environments are by no means trivial. Indeed, they participate in and shape our everyday experiences. We should take these things seriously in communication design.

Researching Things: Methodological Perspectives

Thankfully, some of our field's most prevalent framing theories and methodologies consider the things we embrace in our workspaces as meaningful participants in everyday epistemic and ontological processes. Such theories see our everyday setups as formidable constituents in what and how we know, and who and what we are or will be. As Clay Spinuzzi, Christa Teston, and I recently described, sociocultural and associative theories have attended to work contexts and the role of nonhuman tools and technologies in technical and professional communication (McNely, Spinuzzi, & Teston, 2015). And as Nathaniel Rivers and I argued at *SIGDOC* 2014, new materialist approaches to communication design significantly broaden the scope of potential actors and effects involved in everyday work (McNely & Rivers, 2014). In short, the mundane, systemic contexts of our workspaces matter to those doing the work, to many others in different professional environments, and most important, to communication design.

There are, then, two broad methodological considerations in play when viewing Liza's tweet, at least for me: things matter to our work, and making such things *visible* has palpable affects for many. Over the last few years, I've spent most of my research time thinking about these two considerations together (for an overview, see McNely, 2013). We need methodologies that account for how users actually interact with their ambient environs. Communication design has them—in the form of sociocultural, associative, and new materialist perspectives.

Approaches to Visual Research

Working with such methodologies frames our empirical practices and helps us attend rigorously to the many things that matter to users as they "get stuff done" (http://usesthis.com). But the methods we've used within this approach overwhelmingly tend to end up, at least in our published scholarship, as discursive constructions. We interview, collect artifacts, ask users to show us their setups, perform usability tests and task analyses with specific tools, and occasionally snap a photo or shoot a video for documentation purposes. But how much more could we learn about users and what they do by constructing and disseminating more robust *visual* typologies?

Carefully crafted photographs and videos of research environments (to the extent to which it is ethically viable to do so) perform potentially significant kinds of work for communication designers. For example, the photograph of Liza's desk during graduate school provides us with granular particularity about a specific time, place, and professional situation. In methodological terms, these kinds of photos are *ideographic*—they provide rich textures and details about a specific case that may aid analysis and understanding in a variety of ways.

One of the key benefits of qualitative fieldwork is its ability to provide such ideographic accounts. We can develop an "insider's view" of a particular participant or organization, and we can provide rich details about how an individual or group uses communication in everyday contexts. But while such particularity is a tremendous strength, it is also seen as one of the primary limitations of traditional qualitative research. In-depth interviews may tell us much about how a small group of users behave, but generalizing to other organizations or research sites is problematic. Visual methods, however, may also foster cross-case comparisons. In methodological terms, they may help us develop *nomothetic* insights—visual typologies with generalizable claims.

Frog Design, for example, uses an approach that they call "frogMob" (http://frogmob.frogdesign.com/). For Frog, this is crowdsourced research that relies on digital contributions from individuals around the world to explore a given design issue—

what water and gas valves look like in your home or building, how your cooking spaces are arranged, how your home sound system is arranged, etc. This is a fairly straightforward visual method of data collection: identify a design problem, generate a workable, preferably diverse corpus of visual data in a relatively short period of time, and analyze *across instances* to generate insights about practices and preferences with respect to the design problem.

A recent frogMob project exploring cooking spaces ("what appliances fill your up countertops?") generated over 70 photographs from more than 20 locations—from Beijing to Mexico City (http://frogmob.frogdesign.com/mob/cooking-spaces). While 70 photographs across 20 worldwide locations is too small to foster meaningful generalizability, frogMob can develop rich forms of cross-case comparison that would be difficult without visual methods and similar time frames. Consider, for example, the benefit of running this study three more times, with different sets of participants, and comparing across cases.

The Potential of Visual Research Methods in Communication Design

Visual methods can help us "scale-up" qualitative approaches that are attentive to how and why things matter to users. When Liza posted the photo of her desk, she used the #womeninTC hashtag. In doing so, she explicitly connected her workspace to that of many other women in technical communication. And she provided an ideographic glimpse into her professional life as a graduate student. If we were so inclined, we could do some crowdsourcing of our own, asking for everyone who identifies as a woman in technical communication to post photos from their own graduate school workspaces (past or present). We could honor particularity while also making fruitful comparisons of the tools, arrangements, and habitual practices shaping the workspaces of #womeninTC.

We needn't stop there. With the availability of high quality digital photography and expansive and persistent digital storage, we could easily expand our approach. What kinds of typologies might we build if we collected workspace photos of current doctoral students in technical communication? Or the workspaces of 1,000

technical writers based in North America? And how might these forms of data help us triangulate the more traditional (discursive) products of qualitative inquiry? At the least, we'd have a significant overview of the communicative environments shaping everyday technical communication across a variety of demographics. We could itemize systemic contexts (by literally counting what kinds of things inhabit each workspace and comparing them across cases), formulate typologies based on arrangement, gain insights into the recurring kinds of "non-work" items that show up in work environments, and settle the Mac vs. PC issue in technical communication once and for all.

Concluding Thoughts

We've always assumed that things matter to communication design. Nathaniel Rivers and I have discussed how these things matter in ways we may not have realized (McNely & Rivers, 2014). Making these things visible in systematic ways through forms of visual research may help communication designers better shape documents and applications for environments as used, rather than as idealized.

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Understanding Microinteractions as Applied Research Opportunities for Information Designers

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Designers and communicators who work in computational spaces often consider the "big picture" of information design. This approach requires researchers to scrutinize the complex nature of human discourse. They must also study the interactions with, and relationships to, technology as people speak with and write to one another. Humans communicate and computers operate within multilayered organizations or inside other complex information environments, so it is not surprising that these investigations of communication are frequently multifaceted.

Big picture research is characterized by various research methodologies. One popular example is the case study model of organizational knowledge management and communication practices that include thoughtful considerations of designers, products, audiences, and sociopolitical contexts. Such case studies may be designed to catalyze practical improvements within an organization as well as generate new ideas and theories about information design. While useful in many ways, this popular, expansive category of applied research has led to a gap in knowledge and an opportunity for additional focusing. This gap has emerged because more narrowly focused design details within these environments are left unconsidered or are insufficiently analyzed.

Details like these are important since they generate insights into particular patterns of user activity. These insights add to a comprehensive understanding of the holistic experience of users as they interact with products and software. For example, applied research studying information communication practices as they

exist in organizational ecosystems (e.g., Davenport & Prusak, 1997) is necessary and important, but this type of broad investigation may sacrifice analysis of very specific interactions that occur within those products in tightly defined boundaries. These low level features are useful in describing how audiences interact with information and information systems.

The purpose of this paper is to explore more narrowly focused units of inquiry within information design and to suggest one strategy for methodically discussing these issues using microinteractions as natural boundaries for investigating user experience. This approach suggests a new area of opportunity for applied research with the potential to contribute fresh ideas of practical value for use in the study and design of information systems.

Microinteractions Explained

The microinteraction is an area of opportunity for information designers to consider as a framing tool for naturally bounding user experience in applied research studies. Applied research in this context means systematic inquiry designed to generate practical outcomes in information communication practices. A microinteraction is a small function within a larger system or product that is dedicated to a single task and only does one thing (Saffer, 2014). Examples of microinteractions in which users frequently participate include silencing a phone using the mute button, completing a signup form on a web site, typing into a form field that evaluates the password's security strength, or posting an entry on Facebook. Microinteractions are useful for many informational tasks such as accomplishing a focused objective, connecting information and devices, displaying small units of data, adjusting settings, or turning features on and off.

Triggers, rules, feedback, and loops/modes are the components that make microinteractions work (Saffer, 2014). Triggers are actions that signal the start of a microinteraction. In a mute microinteraction, the trigger is the button, switch, or rocker panel on a user's mobile device that activates the muting feature. Although many triggers are physically or virtually initiated by

humans, a system can also activate a trigger by automatically responding to behaviors or data within the system. Automatic triggers are activated according to internal or external events. Such events may be connected to any number of things such as the event handling state of a software program, the time of day on a local PC, the proximity of a mobile device to predetermined GPS coordinates, or the current weather conditions near a sensor array.

Rules are logical parameters that specify the mechanics of a microinteraction. Rules establish boundaries for functionality and describe the behavior of a microinteraction. When a trigger is activated, the system enacts these rules so that appropriate and expected responses are provided to the user. When a mobile device is muted, for example, the rules specify the electronic procedures that are activated to physically mute the device. Rules also display the feedback provided to the user to demonstrate that the muting feature is initiated. Such feedback may convey visual (e.g., showing an icon badge), haptic (e.g., starting vibration), or auditory (e.g., sounding a beep or tone) information in discrete or combined forms. Rules can be complicated, however, in that there are often exceptions or irregularities within the system that must be considered and accounted for.

For example, Apple's decision to allow external alarms to bypass the mute state provided for an interesting anecdote, and an infuriated audience, when a New York Philharmonic orchestra was interrupted by an executive's iPhone alarm (Saffer, 2014). However, not including this rule would mean that individuals who accidentally left their device in the mute state at night would not be awoken by their alarms, leading to frustrated users. Apple engineers decided that despite being muted, the rules of the iPhone mute microinteraction should allow external alarms to play audio. As this example illustrates, rules within microinteractions deserve careful consideration and may present conundrums in which designers must choose between two or more imperfect solutions to design challenges. Feedback can be useful in these situations to signal the current state of rules and use information design to better communicate the affordances of microinteractions to users.

Feedback occurs when microinteractions provide information back to the user in response to a trigger. In a metaphoric sense, if good

interactivity is comparable to good conversation (Crawford, 2002; Garritt, 2006), then feedback allows a microinteraction to *speak* after a period of *listening*, or waiting for a user-generated or automatic trigger to occur, then *thinking*, or applying its rules based on the state of the system. The purpose of feedback is to illuminate or clarify the rules of a device or system for its users (Saffer, 2014). A basic form of microinteraction feedback, provided when muting a mobile device, is displaying a colored band. This visual cue provides confirmation that the mode is activated and the rules associated with that state are now expected by users. This example illustrates why feedback is useful in already designed products, but feedback is also critical in the design of microinteractions. It can provide useful data suggesting directions for revision during iterative design cycles (Brown, 2009). For example, if user testing reveals that users are not able to easily identify feedback when triggers are activated, that is likely a problem that needs addressing in future versions of the product.

Loops and modes are used to customize the rules within microinteractions. Such customization creates additional flexibility through programmatic means such as conditional logic or repetition. Modes customize microinteractions by allowing them to focus on specific types of data. A hypothetical example is an embedded feature within a more complex vehicle-based application. The feature contains a mode that allows a user to enter a specific highway. The microinteraction then uses that single data point to provide an alert when traffic congestion is detected. Loops provide the ability to run microinteractions over and over again for some length of time or for a certain number of iterations. They also run infinitely or end only when a user shuts down a device. Loops are interesting within the context of microinteractions because they allow systems to adapt to the expertise of users. This can be accomplished by reducing the amount of contextual information provided to users as they become more familiar with a system. This is a strategic technique in information design known as progressive reduction (Saffer, 2014). Identifying the components and functions of microinteractions in a formalized, strategic way proves useful for applied researchers. For example, as the looping scenario above demonstrates, such an approach is useful to help researchers to

better understand progressive reduction and other tactics for information shaping that are of practical use to designers.

Strategies for Applied Research

What makes microinteractions particularly interesting from an applied research perspective is their fine degree of granularity. For example, microinteractions can be used as framing devices for focusing research questions. Consider a common type of microinteraction: the text box used to post data to an interactive web site. Rather than crafting a broad hypothesis that is difficult to evaluate, such as perhaps "Using collaborative Wiki documentation makes engineering groups more productive," considering the system's microinteractions might suggest more focused hypotheses that are easier to evaluate using tighter boundaries. Continuing the Wiki example, a reformulated research hypothesis based on a microinteraction might read "Engineers who post regularly to the group wall in the Wiki perform better in collaborative project work as evidenced by the length and quality of their postmortem technical reports." While this may or may not be a good hypothesis, the simple act of focusing attention to a focused area of the overall information system (the group wall postings) makes it easier to clarify and specify the way in which that claim will be evaluated.

Another area of opportunity in evaluating microinteractions from an applied professional communication perspective lies in identifying particular types of microinteractions that interact with other system components in interesting ways. Research in information architecture presents different heuristics with which to evaluate information systems. For example, web sites are analyzed and refined using strategies concerned with the grouping, labeling, navigating, and searching of information (Morville & Rosenfeld, 2007). Microinteractions can be clustered together according to a set of categories developed for context-specific purposes. The identified role of those types of microinteractions within information systems then suggests labels for the groups. If an information designer doing applied research were evaluating microinteractions within an online information environment, for instance, she might label and define groups such as these:

- **Dead-end microinteractions** are ineffective or poorly designed interactive elements that prevent users from moving into subsequent areas of an information system. An example is a password form field that is broken or disconnected. Locating and improving upon dead-end microinteractions means improving the overall usability and efficiency of an information system.

- **Bottleneck microinteractions** are small interactive elements within the environment that routinely frustrate users or prohibit them from progressing through an information system in a reasonable amount of time. The identification and correction of bottleneck microinteractions can be used as a means of quality improvement within the system. A CAPTCHA identification system which uses illegible characters that are frequently misidentified by users can be a bottleneck microinteraction. It might eventually develop into a dead-end microinteraction, if frustrating enough for users. Removing bottleneck microinteractions increases the speed at which information can be transmitted and received, thus creating positive changes within a designed system.

- **Gateway microinteractions** are interactions that must be completed before access to other areas of the information system is provided. A login page that is both a gateway and a dead-end microinteraction is particularly troublesome as it means a user would never be able to experience a system fully, since she could never progress past the login screen. Analyzing data from gateway microinteractions and using that data to improve designed entry points will likely lead to improved user retention and the recruitment of new users.

- **Springboard microinteractions** are small interactions that propel users into larger or more complex interactions, thus prolonging the virtual experience. Identifying springboard microinteractions provides opportunities for tweaking areas of an information system with the greatest potential for return on investment. A fun widget to change the hairstyle of an avatar in an online game is a springboard microinteraction that compels young players to spend additional time playing an online game. This data focuses designers and developers on product features

with a high return on investment. This return on investment can be measured quantitatively in terms of user experience satisfaction ratings, numbers of impressions (i.e., "hits"), or the duration of user engagement sessions.

This section demonstrated some potential areas of applied research that map well to existing strategies used in information architecture. However, there are also additional areas of potential for research using microinteractions that are also deserving of study. For instance, the boundaries suggested by microinteractions can be usefully combined with other design strategies in interesting ways. A technique such as journey mapping, which provides graphical representations of user experience over time (Howard, 2014), already captures microinteractions that are part of a user's session with a product. Considering microinteractions within this context does not mean developing a new product or strategy, but rather considering small subsets of information and experience with which to do data analysis. In this way, aggregate trends and themes can be identified that help a designer identify the types of productive or destructive microinteractions described here.

Conclusion

Sometimes, in order to understand big picture communication design, it is necessary to reframe large information scenarios into a collection of smaller units with more manageable and clear boundaries. Microinteractions provide one opportunity for this type of focused analysis. They are useful for highlighting clearly defined interactions within an information system and suggesting specific research questions that focus on those interactions. The resulting research that investigates those questions then generates ideas for the design of new products or the refinement of existing ones.

By evaluating a system in terms of its most basic features using microinteractions, researchers in information and communication design can drill down into system aspects that may be overlooked in more broadly scoped considerations. This technique creates new opportunities for applied research and suggests new ideas for

making practical refinements to existing information architecture products.

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A Conversation on Usability and Accessibility with Janice (Ginny) Redish

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Janice (Ginny) Redish, recipient of many awards, including the Lifetime Achievement Award from the User Experience Professionals' Association (2013), Ken R. Rainey Award for Excellence in Research from the Society for Technical Communication (2008), Alfred N. Goldsmith Award from the IEEE Professional Communication Society (2001), and the Rigo Award from the ACM Special Interest Group on Design of Communication (1995), is often described as the mother of Usability Studies whose career has spanned from the Plain Language initiatives of the U.S. government in the 1970s to the usability and accessibility concerns originating from the proliferation of personal computers and World-Wide-Web in the 1980s and 1990s respectively. Ginny's *A Practical Guide to Usability Testing* (with Joseph Dumas, 1993 and 1999) and *User and Task Analysis for Interface Design* (with JoAnn Hackos, 1998) were influential in the professionalization of the usability field, and are now considered the classics of Usability Studies. She spoke to Sushil Oswal on the Tacoma Campus of the University of Washington.

Oswal: It is a great pleasure to talk to you here on the campus of the University of Washington Tacoma as we launch our new undergraduate program in Technical Communication later this evening.

Redish: Yes. I'm very happy to be here to participate in these events and speak this evening.

Oswal: Your bio lists that you hold a Ph.D. in Linguistics from Harvard University. What made you cross over from Linguistics to documentation design and usability early in your career?

Redish: Yes, I am a linguist by training. My doctorate is in linguistics, but I ended up in the Washington, DC area for personal reasons, and I could not find an academic home. I had married a graduate student who became a professor, and who still is a professor. At that time, it was very hard to find two academic jobs at the same time. He became the academic, and I became the practitioner. Fortunately, in the Washington, D.C., area, there are many firms who make a living doing projects the government wants done, and I joined one of them.

Oswal: When you started, technical writing was a fairly standard label for this field of technical communication, and that meant different things to different people anywhere from talking about commas and periods to writing engineering manuals. Before we get into specific questions about usability and accessibility, could you talk about the development of this field for those of us who joined it after it had come into itself and about the trajectory of your long career in technical communication?

Redish: I'm happy to talk to younger people and those who don't know me. I have actually been in the field for about four decades. My career does cover a large part of what is now technical communication. I was in the right place at the right time. I was working for a not-for-profit think tank, called American Institutes for Research (AIR), when Jimmy Carter became president. He believed that the government should communicate with people in language that the people understood. The major question people were asking about writing even back then was, "Why are government documents so difficult for so many people?" When the government put out a request for a group to study this question, AIR went after it, and we got to do the project.

Oswal: Could you describe the specific goals of your organization's project?

Redish: Let me trackback a bit. Originally, my career in Washington, DC was not in technical communication. It was really to help the government write in less gobbledygook. Our project's whole emphasis was on getting rid of gobbledygook and helping government writers use what we call "plain language" today. That work goes on in the government. I still actually do that. That's one

of the reasons I am here in Washington state and also talking to you here in Tacoma. And, let me also mention that Washington state is at the forefront of the states in terms of getting government material to be understandable to people.

So, you see that I was not in technical communication and I was not in STC, the Society for Technical Communication, at the very beginning of my career. That started after the three years of this wonderful government-focused project, which we did at the American Institutes for Research in partnership with Carnegie Mellon University. By the way, the government-focused project was also the start of the graduate program at Carnegie Mellon where you can now get a Ph.D. in document design and rhetoric.

Oswal: I am also curious about how the American Institutes for Research came about.   And, what was the scope of this institute's overall work?

Redish: AIR started just after the Second World War. It was started by a man named John Flanagan. It's really about human-computer interaction. The people who started it—John Flanagan and the people who were part of the early AIR—in the 1940s, 1950s, before my time there—were psychologists who were interested in what was originally called man-machine interface. We now call it human-computer interaction.

They were very involved in test design for many years. A group at AIR wrote all the questions for the medical college admissions test. They were very involved in training, very involved in instructional systems design. The instructional systems design model was created at AIR in the 1950s. They were doing lots of things that were to become common later, and you can also see a path from that early point to being very interested in clear communications in the context of human-machine interface.

Oswal: You have elsewhere commented that the interdisciplinary nature of document design was of great interest to you when you first engaged yourself with your staff with terminal degrees in psychology, English, anthropology, philosophy, education, and other fields at AIR back in the 1980s. Could you further expand

upon the relevance of interdisciplinarity to the burgeoning field of Usability Studies today?

Redish: Most work in technical communication—in any field of communication—is interdisciplinary. Technical communicators must be adept at working with subject matter experts whose work they are explaining. They must work with—often negotiate with—reviewers about technical, scientific, and sometimes, legal, issues. They may have to work with illustrators, graphic designers, interaction designers, marketing staff, and other specialists. In the 21st century, almost all work requires being part of a team, working well within a team.

Furthermore, technical communicators advocate for users—and to do that, they have to understand the product's users. So many technical communicators also become usability and accessibility specialists—or they work with those specialists. The team may need expertise in anthropology, ethnography, psychology. To me, one of the most interesting and exciting aspects of technical communication, usability, and accessibility is the opportunity to work with and learn from people who specialize in these related fields.

Oswal: How does the institute sustain itself in terms of funding?

Redish: AIR is a not-for-profit, sustaining itself with funded projects. It has grown tremendously over the last couple of decades. I left AIR in 1992. I was, at the time, a Vice President and an institute director of the Document Design Center. Susan Kleimann took it over and ran it for some years, renaming it to the Information Design Center. It had about a 20-year life at AIR. AIR keeps going, but it is not involved in document design now. It's still a major not-for-profit think tank that does government grant work and foundation grant work.

Oswal: Going back to your own project during the Carter administration, what work did you do in the plain language area? Were there other people already working in the plain language area with the US government, or it was just beginning?

Redish: It's very interesting in that the whole idea of plain language has been very cyclical. I'm sure that centuries ago there were plain language movements. There was activity for plain language just after the Second World War. Then, in 1966, John O'Hayre of the U.S. Bureau of Land Management wrote a book called *Gobbledygook Has Got to Go.* You can read that entire book online at https://openlibrary.org/books/OL25516869M/Gobbledygook_has_gotta_go.

So, yes, there had been action before the cycle I was involved with in the late 1970s under President Jimmy Carter. Government interest in plain language lessened in the 1980s under President Ronald Reagan. Then, it came back again in President Bill Clinton's administration. That is when a government expert named Annetta Cheek was asked to form a task force for Vice President Al Gore on plain language.

That group still exists today. Most of the people, including Dr. Cheek, have retired, but there is still a group called the Plain Language Action and Information Network (PLAIN). They do the government website www.PlainLanguage.gov.

I was a major force in one of the resurrections of this movement; but, yes, it had existed before me.

Oswal: I'm sure that every time this language matter came back, it wasn't the same plain language, because there were different people involved in it and also in terms of how people within the government saw the problems that mattered. Could you talk a little bit about how you defined plain language? Also, a little bit of inside view of how does government really incorporate something like plain language in its day-to-day work? Where do they start? Where did <u>you</u> start, particularly, with Jimmy Carter's language initiative?

Redish: That's a very interesting question because, as you know, there are many definitions of plain language. Mine has always been that a document is in plain language only if the people who must or should use that can in the first place, find what they need, in the second place, understand what they find, and in the third place, be

able to use what they find, what they understand, to act appropriately in the time and effort that they think it is worth.

That, in fact, was our original definition in the Document Design Center of what we called document design. We didn't have the word "usability" at the time, but it really was what I would now call usability. My definitions of usability, of document design, of plain language are all the same. It's all about behavior. It's not a readability formula number. It's about whether or not people can actually use whatever you are creating or writing.

It was very easy for me to move from plain language to usability because I was actually doing it.

We also always had usability testing. One of the requirements that the government put on the people submitting proposals for the Document Design Project, back in 1978, was to write a plain language lease for public housing.

We rewrote the document, and then we usability tested our draft document. I don't think most people in the writing world at that time had understood that you should have people try to use what you've created before you make it final.

Oswal: Who were the testers for your rewritten lease document?

Redish: We went to a community center in the inner city in Washington, DC, and we stopped people who were coming in for whatever they needed. We said, "We will give you this amount of money if you can help us. We're trying to create a lease to rent an apartment, and we would like to try it out with you." We did pay them, as we pay usability test participants today.

Let me clarify that we never used the word "testing." We never used the word "evaluation." I always say, "Try it." I call it "usability testing," of course, but only with other technical communicators and usability specialists. To other people, we always say, "Try it out." We were using a paraphrase technique, because it was a single page document. We would say to our participants, "Please read this and tell us what it means in your own words."

Yes, we did choose appropriate people, and we learned a great deal from them.

Oswal: As I understand, you took your users from the neighborhood and had them read it because the sample government lease document was meant for them.

Redish: Yes, exactly.

Oswal: You mentioned the documentation center and document design. That phrase was back there in Carter's time, I assume. But, did it mean the same thing that it later meant in the 80s?

Redish: Interestingly enough, it was the group in the Carter government that used the phrase. When they were putting out the request for proposal, they called it the Document Design Project. What's interesting is that they were an academic group—this was the Department of Education's research arm, which, at the time, was called the National Institute of Education. They were a group of reading specialists, linguists, etc. Larry Frase from AT&T Bell Labs was also there on sabbatical.

These were people who had done research in reading and writing. They used that term "document design," and they meant it in a very broad sense, the broad sense in which we interpret it. One of the things to think about is that even though we talk about plain language, for many of us, that has always included information design. I know that there are other groups who separate those two.

Oswal: So, the ideas about document design and information design were already in the air in the 1970s.

Redish: Yes! The way something looks, the format, the design of it, can really help or hinder people. You can't just have a text. Creating a successful communication requires many things, and each of those have many aspects. Well, it's all about usability, right? It's understanding what you're trying to achieve, understanding who is going to use it and lots of things about those people, understanding the context in which it's going to be used. Then writing and designing it together so that you create a good user

experience. Again, we didn't have the phrase "user experience" at the time. But that's what we were talking about.

Oswal: What term did you use back then? What did you call it?

Redish: Because we were given the term, "document design," by the government's request for proposal, we named our AIR group the Document Design Center. In a very broad sense, it really was an information design project. Let me also mention our collaborators. The project for the government included AIR, Carnegie Mellon University, and a New York design firm, Siegel + Gale, which had been in existence before us–and still is, still does wonderful work in creating clear communications.

So, we named our center at AIR the "Document Design Center." Carnegie Mellon also created a center of its own, and they called it the Communication Design Center. Karen Schriver, whose name is often mentioned in the information design field, was part of the Carnegie Mellon Communication Design Center.

Oswal: Yes.

Redish: Again, design has always been as important as language to us. Together they make usability.

Oswal: Thank you. What were those users called at that time? Were they called, "readers," "customers," or did they have no name?

Redish: That's a very good question, Sushil, because I still have that issue. What do you call those people? Now that we're in the web world, I call them "site visitors. "In the documentation world of the 80s, they were often called "users." I understand that that's a problem. Some people have a very negative take on the word "users," but that's what they were. They were using the software and hardware. In the technical communication of the 1980s, "users" was the commonly used term.

Before that, when we're talking about plain language, we were probably saying "readers." The problem is we know that people don't read everything. If you hear the word "readers," and it makes you think, "Well, they're going to read every word I write," then it's a problem.

We also used the word "audience." English teachers very often talk about audience. The problem, of course, is that the etymology of audience is hearing, not seeing. Of course, there are people who read by hearing. But, for many people, "audience' "isn't the right word, either.

I'm never quite sure what the right word is. As I say, today in the web world, it's nice to be able to say "site visitors."

Oswal: Just for one other detail, in case someone in the future is interested in the history of all this. In some ways, It precedes or overlaps with some of the academic technical communication history. The documentation department that you mentioned within the U.S. Department of Education, is that work still going on under a different name?

Redish: The Document Design Project was funded for three years from 1978 to 1981. After that, the government funded a center for writing that was based at the University of California at Berkeley and Carnegie Mellon. There has also been a long running Center for Writing Studies at the University of Illinois at Urbana-Champaign.

Oswal: Were Linda Flower and John Hayes involved?

Redish: Yes. Linda Flower and John Hayes were both involved in the Document Design Project at Carnegie Mellon. Then they went on to be involved with Berkeley. I was not involved in that in the 1980s. You know that there's lots of academic work that has gone on in writing since then.

Oswal: I also wanted to ask you another quick question about the U.S. government's plain language initiatives. Was that mostly limited to written documents or did it also encompass the oral messages, for example, the public announcements that the U.S. government made on TV or radio at that time? What was the reach of that language program, and where does it stand in recent governments?

Redish: I'm sure that President Carter would have applied clear communications to everything; but at the Document Design Center, we were primarily looking at the written word. We were not

looking at public announcements or TV, but there must have been other projects going on at the same time.

When Annetta Cheek retired from the government—the person I spoke of before who had been Vice President Gore's major plain language person—we started a not-for-profit outside of the government called the Center for Plain Language. That still exists. See more at www.centerforplainlanguage.gov.

The current situation with the United States government is that we have a law, the Plain Writing Act of 2010. Congressman Bruce Braley of Iowa sponsored a bill requiring people in U.S. federal agencies to write everything in plain language. That law passed in 2010. President Obama signed it.

Writers in the federal government must put everything that goes to the public in plain language, with the exception of regulations. We're trying to get a new bill—a new law—that will cover regulations. There is an executive order from President Obama that covers regulations.

The Plain Writing Act went into force a few years ago. The Center for Plain Language does a report card every year on government agencies as to how well they are doing. I will tell you that there's lots happening; but, of course, there's lots more that needs to happen.

Oswal: Could we now talk about your formal move into the usability field. What project brought you over to usability?

Redish: When Ronald Reagan became president, the government became much less interested in clear writing. But that was also the time when the personal computer (PC) arrived. We're talking now in the early 1980s. It was also the time when great change happened in technical writing, Until the early 1980s, technical writing is what STC people did even though it was even earlier called the Society for Technical Communication. But still, until the mid-1980s, most of the people in the field were men who had been engineers and who happened to be good at writing. As you said earlier, Sushil, they were writing technical manuals, engineering manuals, and so on.

With personal computers coming to the market in the 1980s, suddenly there was a great need to explain how to use computer programs to business people, not just to computer experts. That's really when technical writing became technical communication. It was also the time when STC expanded to include many more women. STC members were now mostly writing user-friendly, user-oriented, task-oriented computer manuals, online help, and that sort of communication.

Oswal: So, you entered this documentation field through PCs.

Redish: I turned my career from plain language to more technical communication when I was still at AIR. I will give credit to a vice president of IBM, who called me up at the Document Design Center, which was this group at AIR that I was leading. He said something like this: "We're going to put a computer on the desk of every executive in America, and we have no idea how to write for those people."

I already had a team of experts in clear writing, so we turned our attention to computer documentation. We discovered STC, which already existed. I became active in STC. That's my early life into the 1980s when the main aspect of technical communication really was documentation for software and hardware.

Oswal: Could you talk about the work you did with IBM?

Redish: We wrote manuals and online help for software.

The first project we did was IBM PROFS—an early email system. Then we worked on an IBM product that would do everything from manage your contacts to manage your accounting, I take some credit that my group helped to invent the user-oriented, task-oriented manual. You may not know that in the 1960s and 1970s a computer manual was almost always strictly a glossary of commands. You had to know all the commands to make the software work. When you wanted to look up something in the manual, you would have to look it up under the command name.

We said, "No, no. That's not going to work for users. Users won't know that command. They will have a task that they want to

accomplish. We have to rename things by the tasks people want to do." We wrote manuals for system administrators. We wrote getting started manuals. We wrote the manual called Using whatever it was, the end user's manual.

My group did work for IBM, for Hewlett-Packard, for various other computer companies at the time.

Others were also doing similar work—for example, Stephanie Rosenbaum of TecEd and JoAnn Hackos of Comtech Services. Both are contemporaries and close friends. Sometimes, we were business competitors, but there was always so much work to do that we felt we could be very close friends. JoAnn and I ended up writing a book together on user and task analysis.

I should mention that I've actually published an article on some of this history in the *Journal of Usability Studies* (JUS), which you know is the flagship publication of what was originally the Usability Professionals' Association (UPA), now the User Experience Professionals' Association (UXPA). I wrote that article because other people who came into usability from other fields, from psychology and software development, had written about the history of usability from those perspectives. My invited essay was saying, "Hey, hey, a lot of people in usability came from technical communication." Carol Barnum co-authored the JUS article with me. http://uxpajournal.org/overlap-influence-intertwining-the-interplay-of-ux-and-technical-communication/

Oswal: You were saying, "No, usability existed long before this in Technical Communication, even before this usability organization came about."

Redish: Yes, the history that we are discussing at this time is a great deal more extensive than many people in the usability profession remember.

Oswal: Maybe at this point, we can move to the next question about Usability Studies. Feel free to shape the discussion the way you want. We can learn a great deal from your early experiences in the field of usability. If you could specifically speak about the usability field coming of age during the past two decades beyond the role

	UPA (now the Usability Experience Professionals' Association—UXPA) played in it. *Communication Design Quarterly* readers will really appreciate your speaking more personally about the rise of this field in the wake of everything else in communication and design going digital.
Redish:	Like many others, I started with usability testing. We were doing computer documentation for IBM in the early to mid-1980s. IBM did usability testing on our documents and then also asked us to have a usability laboratory. So we built a lab at AIR. We tested primarily documentation for IBM, Hewlett-Packard, Sony, and other clients. We very quickly discovered, not surprisingly, that testing a manual gives you a lot of information also about the software. I was being told, "We're the communications people. We own the documentation. We're asking you to test the documentation. We're not the people who develop the software, so that's not what you're testing." Well, you can't do that, because—right?—you learn so much about the software. We quickly realized that we should be testing not just the communication but the whole experience. I really, at that point, got into usability.
Oswal:	In this usability work, You tell us that originally you did testing work with IBM in their own facilities but then very quickly you set up your own lab with projects from IBM, SAP, and Sony. I believe that it would have been one of the earliest independent labs for usability in this country. Could you please talk about this move and how it came about?
Redish:	IBM had usability labs already, but they asked me to set up a lab as an independent vendor so that they could say they had taken their documentation outside of IBM to be tested. Of course, we were able to work with many other companies in our lab.
Redish:	Let me just say a few words here about Joe Dumas and our collaboration. Joe Dumas, who is now, in fact, the editor of the *Journal of Usability Studies*, was also at the American Institutes for Research at that time. I was in the Washington, DC, office. Joe was part of the New England office, which was much more of a real human factors, ergonomics group, even than we were in Washington. Joe got very interested not only in the ergonomics of products, but in the usability, the communication aspect, so our

groups started to collaborate. He and I wrote what I think is the first book, at least the first book in America, on how to do usability testing. That was in 1993.

After we had been doing quite a bit of usability testing, we realized that a lot of other people were interested in the technique. So we wrote it up. We wrote it up largely from workshops that we had been doing with a woman named Janice James.

She started out as a technical communicator, a graduate with a degree in technical communication from Bowling Green State University. But by the late 1980s, Janice had already moved from technical communication into usability. She was running usability labs and a usability group for American Airlines in Dallas, Texas.

Joe Dumas and I were doing workshops for her to train lots of people there in how to do usability testing. And that's the origin of the Usability Professionals' Association, because Janice's boss at the time came through her beautiful lab and said, "Is this a profession? Are there other companies that do this? Are there other people that do this?" She felt pressured to find all those people and create an organization. That was the start of the Usability Professionals' Organization, now the User Experience Professionals' Association. www.uxpa.org.Our first meeting was in '92, so it's 23 years old now.

Also, at the time, Tharon Howard, a Professor of Professional Communication at Clemson University, got interested in online communities and wanted to start an online community so people who were doing usability research and teaching could talk to each other. He started a small online community, and I was one of the people he invited to be part of it.

Tharon blames me for a lot of the online community's growth. I said, "This is wonderful. There are lots more people who should be part of this." And what Tharon meant to be a very small community has grown into a quite large community.

So, we now have an online community, a professional organization, the journal that Joe Dumas edits. That was really where usability came together and people from all these different fields came

	together to be a community of usability professionals. It has expanded far beyond usability testing. Of course, now it's the whole toolkit of the user experience.
Oswal:	So, we have people in the technical communication field who were already doing usability work but now under this umbrella organization they are officially recognized as professionals in that area. You earlier also mentioned that there were these other people who were doing human-computer interaction work from the perspective of ergonomics , engineering, or psychology. Have any of those groups coalesced into this recent usability and user experience movement?
Redish:	You know that there are professional societies in human-computer interaction that are much older. There is the Human Factor Society, which is now the Human Factors and Ergonomic Society, because there have always been people who have worried about the ergonomics, for example, of the chair you're sitting in. That organization still exists.
	In the early 1980s, a group of people started a special interest group of ACM on computer-human interaction. That still exists, SIGCHI. www.sigchi.org One of the reasons that Janice and others started UPA (now UXPA) is that in its early days, SIGCHI was very academically oriented and was not very interested in the application to practice.
	Since UPA started and the whole profession of usability practice has grown so much, SIGCHI has become more interested in practice. Originally, I think that was the distinction between SIGCHI and UPA. SIGCHI was much more for academic researchers than for practitioners.
Oswal:	Were those CHI members mostly computer scientists or did they have anybody else in that group at that time?
Redish:	They're mostly computer scientists and psychologists.
Oswal:	From the perspective of technical communication practice, what did academia look like back in the 1970 and 80s?

Redish: Well, I've never made that distinction. I see myself as someone who reads the academic literature and can help to translate it and bring it to practitioners. For a while, in the 1980s, I was the STC board member in charge of all the committees about relationships between academics and practice and research. There's always been some tension there. Practitioners wanting academics to speak more to practitioners and to do more research that is directly relevant to practitioners. Academics wanting the practitioners to help them know what to study. I think that today there are more academics who do practice.

Here, in University of Washington in Tacoma, I think you're doing very interesting things in that it's a relatively new group with people who have come from industry to teach. There's probably greater understanding in technical communication departments that your students are going to go out and be practitioners, than perhaps in some other fields, like psychology.

My sense is that there's still not nearly enough thought about usability in many computer science departments. It's more about algorithms and programming than it is about users and usability. In technical communication, I think there has always been an understanding that you're teaching for practice.

Technical communication is a very broad field. I believe that you and I and most of the people who read *Communication Design Quarterly* see technical communication as tightly linked to usability. It's not just about writing the manual. It's about thinking about users and the user experience that whatever you're doing is part of. Therefore, it's very broad. There are people who focus on a particular domain or a particular kind of documentation or a particular medium. There are people who cross all of that. I, myself, being a linguist by training, am much more comfortable with the word part of it than with the illustration and images part of it. I always work with a graphic designer and illustrator, and those people should also be part of our technical communication community.

Oswal: In the technical communication area, people are doing usability work. On the ACM side also, there is a lot more interest in usability. Is there a place where these two connect?

Redish:	It's mostly people who connect. A lot of people are members of more than one professional group. I'm a member of SIGCHI, SIGDOC, the IEEE Professional Communication Society, STC, UXPA. There are also now lots of other organizations and conferences in related fields, like information architecture. I've spoken at many content strategy meetings. There's lots of overlap. I think that's the way this field is spread out.
Oswal:	That's an aspect of these developments I'm interested in. What is this overlap doing? How is it helping the field? How is it expanding? Or how is it maybe creating some tensions based on the fact that the ACM organizations arose out of computer science, mostly software- and hardware-oriented fields? Then, on the other hand, STC groups are coming out of a lot of people who are language oriented.
Redish:	There are historical reasons for these organizations to have been started by different people in different locations. While there's overlap for some of us between an ACM group and technical communication groups, other people in these ACM groups probably overlap with people in yet other organizations. That's good networking to spread around. I think that students coming up have to find which of these are good homes for themselves. As they grow, as they go into their careers, as they move around within their careers, they might be more or less attracted to one or the other or to some small subset of them at different times in their careers. There's also going to be lots of new things—and possibly yet more new organizations.

The digital world that we live in today didn't even exist when I started my career. Now, I'm deeply involved in that.

In fact, I don't do what you might call traditional technical communication anymore. Of course, a lot of people still make their careers writing documentation, online help, and other materials for software and hardware. But I now work entirely in the information-rich web world.

The most important point to teach your students, from my point of view, is how to think about purposes, users, clear writing, and good information design— because what they're going to apply |

that thinking to when they're in the middle of their career is something we don't even know about today.

Oswal: Do you take a specific stance on content strategy in the context of web design? Could you share with our readers the particular framework or frameworks that shape your thinking about content in your book, *Letting Go of the Words*?

Redish: "Content strategy" is a phrase that Kristina Halvorson brought to us only about five years ago. But most technical communicators have been doing content strategy forever. It's thinking about how what we're writing affects the user's experience.

Basically, content strategy is thinking strategically about your content. Thinking about it from a business point of view, not just, "Oh, I'm writing this little manual, and I don't have to think about the world in which it fits." No. You have to think about the world in which it fits, because context is very important.

"Content strategy" is a term that's really come up both in the technical communication world and in the web marketing world. Ann Rockley, Rachel Bailie, Scott Abel—people who are very involved in STC—have been thinking about content strategy in terms of large-scale documentation. A bank, for example, has just tons of written information. How do you make that work well?

Then there are people like Kristina Halvorson who came out of the marketing world, not so much the technical communication world, and who primarily work on web content. To them, content strategy is thinking about how your message has to be the same or at least in sync across all your media.

Oswal: Technology does come in there.

Redish: Definitely. To me, we have to think about both of these, because documentation is part of the overall content strategy of the business. It's really a message to organizations that users don't care where in the organization the information comes from. They just want to get their work done or get their question answered

Oswal: Now, here we are talking about the user and how we want to strategize that content. There has been, particularly in the last 10 or

	12 years, single sourcing and any number of other efforts at maximizing the utility of any information—organizational information. Could you also make some connections with those efforts?
Redish:	Oh, absolutely. They are connected. For example, JoAnn Hackos was one of the first people to focus on single sourcing, and that is definitely part of content strategy.
	You want to think about your content from a business point of view. You want to also think about it from a technology point of view. It's all trying to achieve the same thing, being economically efficient for the company, but also providing that uniform user experience.
Oswal:	How do we show that there is a benefit for the user in all this strategizing of the content?
Redish:	I think there are two very important aspects of this for the user. One, that no matter what device you are on, you can get the same information. That's really the point of my talk tonight, because people expect to be able to use whatever device they want and get access to the same information.
	The other is the consistency of the message. I'm not arguing consistency to the point of being ridiculous, but I will tell you of a story of a product that we worked on in the Document Design Center.
	This would be in the 1980s, before graphical user interfaces, when to use software, you had to use commands. And often there would be shortcuts to the commands on the screen. We were asked to write the documentation for a program in which different developers had developed different screens, all of which were part of the same software product.
	We discovered that on one screen the developer had set the shortcut key, K, to mean **keep** my file. On another screen for the same product, another software developer had decided that the shortcut key, K, would mean **kill** my file.

You can imagine that was going to be a problem for users. And no one had noticed it before we started to document both screens in the user manual.

Consistency there was really important. That's what we're talking about with our content and our messages—not causing people frustration or confusion by having contradictory information.

If I can tell another story: I was helping a major organization that I will not name, but that you would all recognize, deal with the very early digital space. These were people who had always communicated with their readers in print and were now going to start communicating through a website. It was the early web time, probably very early in the 1990s.

I was brought in to facilitate a meeting in which the heads of all the different divisions in the organization would discuss the future of communicating in print and online. Again, for the young people who are digital natives, this is pre-history. But it was very difficult at the time for people who had been working in print forever to start thinking about digital communications.

One of the people at the table made one of the most insightful comments I have ever heard. She said to her colleagues, "In the print world in which we've lived, I send my newsletter to a group of people, and you over there send your newsletter to a different group of people. Those two audiences are very different. They really never see each other's print material. On the website, it's all going to be there. My people are going to be able to see your work. They might be curious and go look at your stuff. Your people might be curious and go look at my stuff. If we're sending different messages, we're going to be confusing the people whom we want to be part of this same community."

To me, that's also an issue of content strategy. Those two heads of different divisions in the organization have to now talk to each other and agree that they are being consistent in their messages. This organization has become very good at that over the last 20 years. But there are organizations that still aren't very good at consistent messaging. That's part of what content strategy is all about.

Oswal:	I wonder if you could also describe to us how content as conversation is a rhetorical strategy. Is it primarily suitable for the web? How would you imagine it being implemented in the design of a chemistry or economics textbook?
Redish:	I have come to believe that content as conversation is a way to think about everything we write. Everything that we write is part of a conversation. Even an annual report is a conversation between the company and all the people who are interested--the shareholders, the customers, the government regulators. Whenever you have an audience, you have a conversation.

Of course, if we combine my definition of usability, which is that people should be able to find, understand, and use what they read, with the notion of content as conversation, we realize that we can have different conversations with different people in different contexts. Linguists call this "register." We speak (and write) differently in different contexts. But we can speak and write well in all contexts if we think of all these interactions as conversations.

In fact, I have suggested in many talks that writing conversationally has been the major contribution of technical communicators. When we changed examples like this:

> Issuance of a TOP command results in a line zero condition.

> to

> To get to the beginning of your file, type TOP and press Enter.

we were writing content as conversation.

I think you can write conversations even in textbooks. My book, *Letting Go of the Words*, is very much a conversation—and many technical communication programs use it as a textbook.

Oswal:	How would you put some structure to our thinking about content in the context of the World Wide Web before a novice designer starts implementing your thinking.
Redish:	The most important message that I would give to a young web person is design and content must go together. They support each

other. You have to think about them together. You don't design first and pour the content in. You don't write pages and pages and then have someone figure out how to design them. You have to work on both together.

Oswal: Could we now talk about usability and accessibility or usability versus accessibility? How do these two get taken up in our practice for information design?

Redish: I've always believed that everything should be usable by everybody. Part of our user focus very early on was always on everybody. One of the reasons that AIR was very interested in the document design project is because the organization as a whole always felt it had a social mission of being there for everybody. Even though, again, I don't think we had the word "accessibility" in its modern interpretation as a word then, it was always part of the thinking with which I grew up in my career.

You say here usability and accessibility or usability versus accessibility. I am definitely in the "and'" camp, absolutely. I had the opportunity in the early 2000s to work on issues of accessibility of web sites.

I was doing a lot of work with a usability group at the U.S. National Cancer Institute. The group was led by Janice Nall. Mary Theofanos was in charge of their usability lab.

The U.S. Department of Health and Human Services asked this group to look at the question of what problems typical web sites posed for people with disabilities. Mary and I, with the help of some other people, did a study in which we watched 16 blind users. They turned out to be people who either worked with JAWS or with Window-Eyes (two screen-readers). We simply were watching them as they used the web. We wrote up an article about that.

Then we did a similar study the following year with low-vision users—people whose vision was poor enough that they needed assistive software. We wrote that up and published it in *Technical Communication*, the STC journal. I feel very privileged to have been able to do that research and understand those access issues.

That's my own work with Mary Theofanos in issues of accessibility. Since then, I have talked to others about accessibility, but I have not myself worked directly in the field of accessibility. The community of people who do focus very heavily on that include the World Wide Web accessibility group (WAI), Shawn Lawton Henry, and the people from the Trace Center at the University of Wisconsin.

To answer your question about what we should do about accessibility, I'll talk about the point that Mary Theofanos and I make at the end of our *Technical Communication* article: We should have systems in which anybody can set their computer to meet their needs and any website that they then come to will adjust itself to meet their needs.

We are talking about a paradigm shift in which people could set up their profiles, especially people who have some sight but need to adjust what it looks like on the web, to adjust it for themselves. Then every website would look good in that way. Unfortunately, for all the reasons that you've mentioned in your several papers, it's very hard to get people to do what they need to make the web accessible for everyone.

Oswal: Yes. At the same time, we have seen that Apple has been successful in putting accessibility in their operating system. They are able to come out with products which are ready for a variety of users. They are someone who had totally inaccessible hardware and software back in the 90s. Now they have come around with these accessible designs, and they actually underscore the accessibility features of their products in public media.

Redish: Yes, that's going to be the successful model. Because we really should talk about universal usability. It shouldn't be, "Let's make special accommodations for this person, that person, the other person." It should be that everybody can use it. We know so much from what's happened over the years with the physical requirements of the Americans with Disabilities Act, requirements like curb cuts. So many more people are helped by things that were originally developed for this special group. It turned out everybody benefits.

Well, it's the same way when you can listen to your mobile phone read you things. It's going to be beneficial to so many more people than the small market that people worried about when they said, "We don't need to do this because the market is too small." No, it's everybody.

The same thing, if I may say so, is true about plain language. Plain language helps everybody. I'm going to be saying that and showing that tonight.

The provisions of the original Section 508, the United States law that requires accessibility in any website that uses federal government money, were primarily for people with vision problems. There was a task force a few years ago that was rethinking Section 508, and I don't know why that redo has not ever come out. One of the people on that task force was Clayton Lewis from the University of Colorado, who's very concerned, and quite rightly so, with the issue of cognitive disabilities.

The plain language that I focus a lot of my work on would be of great benefit to many people who have difficulties in reading or understanding. That is another area I have been involved with. Another name I should mention here is Caroline Jarrett, a usability consultant in the UK. Caroline started a project called "Design to Read." The idea is to bring together people who worry about many different issues from dyslexia to cognitive problems to low-literacy.

Caroline, Kathryn Summers—a professor at the University of Baltimore who studies issues of low literacy—and I have a chapter on "Design to Read" in the same book that your chapter is in. (*Rhetorical Accessability*).

One of our points is that high literacy people who have good vision and high cognitive ability sometimes also have problems reading. They may be tired. They may have an anxiety problem over some particular issue. They may be in a context with low light where it's hard to physically see what they are trying to read. Everybody gets into a situation where it's difficult to read. Making information easy to read can help everyone.

Oswal: The range of intellectual disabilities is really wide. Can one single solution really serve those?

Redish: It's very difficult. You ask a very difficult question to which I clearly do not have the answer. The answer is "No." There will never be one solution that fits all.

But there are solutions that fit many. Plain language is such as solution.

The argument that Mary Theofanos and I make at the end of our *Technical Communication* article for people to be able to arrange color and type size and other design features for themselves primarily helps people with vision problems.

When we think about intellectual disabilities, we have to face the question whether there's an extreme type of need for which even the level of plain language and good information design that I like to produce isn't enough to help. Other people have been working on that issue.

Oswal: There are pathways to solving these access problems but probably not to the same extent.

Redish: It needs work, but there are pathways. There are people who are thinking about it. In Europe, there are several projects going on. In Britain, there is a group that typically will make a much easier to read version of some articles on the web. Sweden also has a government project that does similar things.

That's not a universal solution, because it does require somebody to make a second version of the writing. Again, my bottom line or point here is we can go quite far with our solution of plain language and clear information design; but, yes, we don't yet have solutions for universal usability, particularly for the cognitive situations.

Oswal: Yes. We are talking about second solutions, separate solutions in very challenging contexts where it's not easy to come up with a single answer. I just want to be clear here for our readers that we are not talking about some corporation not willing to make its website accessible by simply saying, "We'll make a separate web

site for blind folks which will be just text." We are not talking about that type of separate solution.

Redish: We are definitely not talking about that. That was one of the clearest results of our research a decade ago—that a separate site for blind users is not a satisfactory answer. You've written this many times in your papers, Sushil, and you're absolutely right, separate but equal is not equal. It just never is.

I have to say, I would love for someone to repeat the research that Mary and I did. We were doing that research in 2002 to 2004. It's now a decade later, and I wonder if somebody repeated that research, what difference it would make.

Some of the findings and guidelines in our articles are still valid. Again, "separate but equal is not equal" was one of them. Another was "meeting the letter of the 508 law does not make a usable, accessible website." I think you said it in many of your papers: A web site can be accessible and not be usable. We must achieve both.

Many of our guidelines were attempts to go beyond the letter of the law. We were saying, "Here's what you need to do in addition to just getting a good score on a test like Bobby, which just checks off that you have tags." That's necessary, but it's not sufficient. We also had some guidelines that really had to do with what JAWS was capable of at the time. A decade later, I'm assuming JAWS is a much different product.

Oswal: Yes. It has come a long way, but screen readers can only access accessible websites. They are meant for processing text and many of our new problems come from the mouse-oriented multimodal bells and whistles which are being added without consideration for keyboard users.

Redish: Probably, the limits of the mobile devices will make us more aware of these problems.

Oswal: Yes, the band-width issues might force people to rethink their extravagant designs. In your presentation this evening, you offer three versions of a web message in your PowerPoint slides. The

version you recommend for today's mobile screens after cuts, and more cuts gets reduced to the size of personal notes or talking points to meet the demands of the shrinking real estate of the personal devices. Likewise, in the 2nd edition of *Letting Go of the Words*, you tie the concepts of access and usability directly to this recent shift to mobile devices by citing national data and market trends. If the messages in this digital era have to consistently mold themselves to the shape and size of delivery systems, what do you think is the future of text from here onwards and what is the rhetoric of this text?

Redish: I'll come back to my basic message of content as conversation. The act of writing is not in itself communication. Leaving aside writing for oneself as audience, communication only happens when someone else "gets" the communication. We can call that someone else reader / audience / site visitor / user / customer / student / colleague…. What matters is that we have to think about that other person to have a successful conversation—to communicate successfully.

Rhetoric teaches us to focus on purposes and audiences. That's essential for successful communication as conversation. So rhetoric is absolutely still an essential part of what we should be teaching.

By "gets" I mean both physically receives it and cognitively understands it. That brings me back to my definition of plain language, usability, information design: You communicate successfully only when the people who need your communication can *find* what they need, *understand* what they find, and *act* appropriately based on their understanding—in the time and effort that they think it is worth.

Of course, writing is only one medium in which we communicate. But text is not going away. In fact, many young people text rather than talk, even on their phones. We only have to realize that they aren't interested in *documents*; they are interested in *information* and that we are all bombarded with more information than we can take in. That's why I think that Version C of the three slides below is likely to be more successful as communication than either Version A or B.

A

Major updates with Release 1.5 include the implementation of Phase 1 of a new historical reporting function (Archiving) which allows users to efficiently query records that are older than 18 months from the current system date. This new feature allows users to run Historical Reports in the system background while performing other activities on the application. Previously Generated Reports are also retained in the system for continued access for seven days.

71 words

B

What's new in Release 1.5?
You can run historical reports in the background while you are doing other tasks with the application.

You can ask for records that are older than 18 months.

After you generate a report, the system keeps it available to you for 7 days.

48 words

What's new in Release 1.5?

C

✓ Run historical reports while doing other tasks.

✓ Ask for records older than 18 months.

✓ See reports for 7 days after you run them.

28 words

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Oswal: Thank you.

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Book reviews

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Implementing Responsive Design: Building Sites for an Anywhere, Everywhere Web **by Tim Kadlec. New Riders, 2013. ISBN#: 978-0-321-82168-3**

Web designers are at a distinct disadvantage when it comes to creating media-rich web content that attracts and retains visitors. The primary problem is that designers must account for countless devices and users along with multiple network connections in their designs. The need for media-rich sites has shifted from a nicety to a demand, while the range of devices and network technologies users can access to experience those sites has exploded. Every user has the potential to use multiple devices to access web content, from desktop to e-reader, and those devices can access that content using high-speed fiber optics, wi-fi, multiple bandwidths of cellular data, and even modems.

Further complicating the problem is that designers have long relied on desktop publishing as a model for designing websites, optimized for a relatively homogenized user profile using broadband on a high-resolution, high-bandwidth desktop to access content. The variety of devices able to access web content has made print models obsolete. Designers must develop content that responds to users' technology and bandwidth access and preferences as well as browsing habits. This focus on responding to users' technology habits is at the heart of Tim Kadlec's (2013) *Implementing Responsive Design: Building Sites for an Anywhere, Everywhere Web*. The text engages experienced "designers and developers who want to start creating sites that display and function well on a myriad of devices" (p. 18) who also have a clear understanding of the way CSS, HTML, and JavaScript work together with content to provide users the best experience for the device they're using.

Kadlec begins the text by asking where web designers went wrong, reinforcing the underlying assumption that designers have erred in relying on desktop publishing models for web design. Kadlec's answer to this question sets up the text's primary theme: "We've done everything we can to put ourselves in control, but the fact remains that we were *never* in control: on the Web, *users are in the driver's seat*" (p. 3, emphasis original). Rather than designing web content for a single platform — a mobile site for mobile users, a desktop site for desktop users — Kadlec encourages device-agnostic design in response to users' choices and preferences. Not only does such a design strategy address existing platforms, it also represents a future-friendly approach that can "survive the upcoming swarm of devices" (p. 11). Kadlec takes the term "responsive web design" from the title of Ethan Marcotte's 2010 *A List Apart* blog entry.

In this entry, Marcotte describes designs that are flexible and adaptive to the media. Kadlec's approach appears to be a nuanced variant of Marcotte's: where Marcotte sees design as "adaptive to the media that renders them," Kadlec sees design as responsive to the choices and preferences users make in the multiple devices they use to access those sites. Kadlec considers responsive design to be about privileging user agency, at this time and in the future, in design decisions.

To accomplish such responsiveness is not only about coding and media techniques, but rather about understanding users and planning carefully for the wide range of choices available to them. This focus on users is reflected in the text's organization and content: the text contains nine chapters including the introduction, but only three of them are focused directly on coding a responsive website. The rest are about "how responsive design impacts the rest of the web design process" (p. 18), including researching, understanding, and planning the user experience.

The book is an instruction manual for designing a responsive website wrapped in a practical handbook of web design and interspersed with actual use cases by design experts representing a wide range of design strategies and firms. The text offers a useful (and responsive) companion website at implementingresponsivedesign.com that links to resources

mentioned in each chapter and provides the code sampled and described in the text. The foreword is written warmly by Aaron Gustafson, a web designer who introduced "progressive enhancement," a design strategy that paved the way for the concept and principles of responsive design. Chapters two, three, and four comprise the instruction manual for responsive design. Chapter two covers fluid layouts and presents strategies for shifting from fixed width, fixed typography designs to fluid, grid-based layouts and fluid typography. Chapter three covers media queries, providing tips for defining media queries and breakpoints for various platforms including CSS and JavaScript code samples to illustrate these methods. Chapter four delves into responsive media, tackling the problem of incorporating fixed-width media (like images, video, and advertisements) into fluid layouts using a variety of scripting and styling techniques.

Each of these chapters identifies a problem, then provides strategies, illustrations, and sample code to solve it. Chapters five through nine comprise the handbook of web design that recommends practical ways to incorporate responsive design into the more general web design process. Chapter five covers planning for a responsive site; chapter six recommends workflow for including responsive design in web design workflows; and chapter seven covers the necessity of planning, creating, and displaying responsive content in a design strategy. Chapter eight addresses the limitations of client-side responsive design, limitations that often result in loading media and data that is ultimately not used in optimizing content for the user's specific device and network. Kadlec proposes Luke Wroblewski's Responsive Design and Server-Side (RESS) components as a solution that marries features of client-side and server-side detection to deliver an optimized experience to the user's device of choice. Chapter nine returns the text's focus squarely on users in what resembles an analysis of the rhetorical situation of a user's web browsing experience, including audience analysis, mediation, context, and personalization.

Kadlec's afterword looks forward to the "upcoming swarm of devices" referenced in the introduction. In these three short pages, the book emphasizes the importance of responsive design strategies by illustrating the expanding ways users may choose to access and

interact with web content through what we now call the Internet of Things (IOT). Confirming the speed of technological change, Kadlec didn't have the luxury of describing "connected devices such as vacuum cleaners, windowpanes, and yes, refrigerators" (p. 256) as IOT — the term had not achieved sufficient currency to be understood by his audience by its 2013 release date. This surprisingly anachronistic limitation in Kadlec's diction reinforces the book's primary purpose: to prepare web designers to address the inevitable proliferation of web-connected devices and the rapidly expanding choices users will have to access web content. *Implementing Responsive Design* is likely an opening salvo in designers' ongoing attempts to match user preferences with designs optimized for the devices users prefer to access online content. It's a text whose value is seen in the range of interspersed designer voices successfully implementing responsive design strategies in their users' — and their own — contexts.

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Book reviews

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Mining the Social Web **by Matthew A. Russell. Second edition. O'Reilly, 2013. ISBN: 978-1-4493-6761-9**

The prevalence of social media allows us to spread and gather data, and to perceive others' thoughts and actions, more quickly than ever before. Parsing through the data on social networks can still be challenging, however, and quantifying such data and using the results to discover more about the world around us are even more difficult tasks. If you're mining social-web data for business purposes or simply looking at these data for your own enjoyment, Matthew A. Russell's *Mining the Social Web* can help. This book contains information on how to acquire and analyze data from the APIs, or application programming interfaces, of prominent social websites like GitHub and Google+, and even digital mailboxes.

Russell describes the hypothetical reader as "a data scientist, analyst, visionary thinker, or curious reader." In other words, the target audience of the book ranges from those who solely want to learn methods of data mining out of their own curiosity, to those who want to use these methods in a professional setting. The book encourages readers to make use of the Python programming language and, consequently, its compatibility with IPython Notebook. In fact, Russell recommends reading the extensively hyperlinked text in an electronic format and downloading a virtual machine to use as you go along. Even in print, the book frequently links to web pages and refers to other portions of the book that will prove useful in carrying out tasks related to data mining.

Part I makes up the bulk of the book and touches on different social networks and how readers can mine data from them. Each chapter therein (save for the last) provides an overview of a particular social network that combines relevant statistics, capabilities of general users, and information about the API. These chapters also

compare and contrast the setups of social networks, as these have clear, direct effects on the APIs and how users can manipulate them. For instance, the book juxtaposes Twitter's asymmetric setup with Facebook's symmetric setup; readers will mine data through these networks' APIs in different ways. The chapters then detail the processes involved in data mining, separating each specific task into different sub-sections that come complete with context and coding for readers. Each chapter concludes with closing thoughts and additional online resources for readers.

The first chapter of Part 1 discusses how users can mine data from Twitter - data related to trending topics, hashtags, tweets, and retweets. The book continues with a discussion of Facebook, providing tools for analyzing "likes" from Facebook pages and Facebook friends – popularity, how much other users are engaged, and topics discussed therein. A discussion of LinkedIn follows. The setup and API here differ from those of Facebook and Twitter - you do not "friend" or "follow" but "make connections" - so the available data necessitates different questions. The tools provided here allow readers to find information about colleagues - more specifically, similarities between connections based on a particular criterion, connections that have worked for particular companies, and the geographical locations of connections. The book then arrives at Google+, whose capabilities like activities, comments, and moments make mining data more complicated but nonetheless valuable.

The next chapter of Part 1 discusses web pages – retrieving them and extracting human language data from them. Next is a chapter about mailboxes – digital mailboxes, of course. The tools in the book allow readers to investigate who converses with whom, the subjects of messages, frequency of message sending, and peak times of message sending; users can also condense such data into a convenient, portable format. A discussion of GitHub – a social network for developers – follows. Developers can host software projects with Git, "an open source distributed version control […] system." The tools allow users to incorporate data from GitHub into an interest graph. The last chapter of Part I involves the semantic web, in which machines can make decisions upon extracting reason from information. This chapter deals heavily with

microformats, which deal with web-page data for automated reasoning, and provides tools for manipulating microformats.

Part II includes a Twitter Cookbook, which guides readers in very specific tasks in mining data from Twitter, such as discovering trending topics and searching for tweets. These recipes are "designed to be as simple and atomic as possible." Indeed, each recipe comes with the problem, the solution, and a detailed discussion of the solution.

Part III houses Appendixes A, B, and C, which detail the data-mining technologies that readers will need to carry out the tasks and activities described. Appendix A provides information (and links to information) about the virtual machine recommended at the beginning of the book. Appendix B discusses OAuth, which "provides a means for users to *authorize* an application to access their account data through an API without the users needing to hand over sensitive credentials." Appendix C contains links to tips that readers can use with IPython Notebook.

The book provides useful tools for those seeking to mine data from the social web - not only the technologies and codes themselves, but also the all-important contexts for these materials. As such, the information is easy to digest and easy to follow. More often than not, the aforementioned social networks allow users to search for specific data. But the tools provided here allow for more sets of data and more specific sets of data. Those who rely on data mining for business purposes should find the technologies and coding valuable. But those who are simply curious about data mining will be able to play along, too: the chapters' introductions provide enough context to set users up for the data mining to come. *Mining the Social Web* provides valuable information, tools, and contextualization for those seeking to mine data from the social web.

Book reviews

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Playful Design: Creating Game Experiences in Everyday Interfaces.
**John Ferrara. Brooklyn, NY: Rosenfeld Media. 2012. ISBN: 978-
1933820149**

John Ferrara's *Playful Design* is about showing user experience (UX) designers the potential for using games in their work. The book opens with a word of caution, however, a concern that the trend of gamification circa 2008-2009 had muddied the waters of reception for a book entirely about game design and UX design. The inclination for brands across the globe to entice with rewards cards, point systems, advert-games on their websites, and other gamified customer retention programs worried Ferrara that there would no longer be an audience interested in a more refined approach to UX and game design. However, Ferrara's background as a UX designer serves his central thesis well: people play games for the sake of the experience. Any goals external to the game that the designer may have had (advocating for a particular political party, solving world hunger, etc.) are secondary to the enjoyment of playing the game itself. He encourages UX designers to "reconceive applications first and foremost as true games that are enjoyed for their game-ness, but that also happen to have effects in the real world" (10).

Ferrara's work is directed at "designers of conventional software and Web user experiences," urging them to "incorporate video game design into our tool kit and learn how to appropriately apply game solutions to real problems of design" (3). In appealing to UX designers, Ferrara describes how their skills and competencies lead to better player experiences. He also contends that they are uniquely situated to attend to many of the more complex problems that games can tackle. While he does not believe the UX community is ready to sit down and begin making games, the guiding principles of UX design can be readily transferred to game design.

The greatest strength of the work lies in its utilitarian slant. Ferrara's chapters are structured to guide the reader through the constraints and expectations that define the experience of a game before moving into explicit instructions regarding developing game concepts, playtesting, and guiding player behavior. The text shares a functional epistemological approach within the medium for which it advocates. For example, in Chapter 3 Ferrara details a framework for player experiences similar to Jesse James Garrett's *Elements of User experience*. In this way, Ferrara offers clarity to Jame Paul Gee's notion of "good games" (Gee 2003). While Gee praised good games and their potential in his work, Ferrara answers the question of what exactly *makes* a good game. Qualities such as aesthetics, usability, balance, meaningful choices, and motivation act as building blocks towards the elusive and essential element of fun in a game. With that said, Ferrara reminds us that "games are about more than just having fun" (47). Players play games for a multitude of reasons: social interaction, accomplishment, autonomy, competence, and catharsis, to name a few. Players arrive at a game without knowing what the experience will give them. While fun is the complex cultural intersection at the center of the game experience, it is the higher order motivations that will keep players returning to the game.

These central, manual-style chapters are offset by the latter chapters that describe contexts and applied examples of earlier concepts. Ferrara discusses how games function in educational settings (drawing heavily from Gee's work) and cites Ian Bogost in his chapter about games as tools of persuasion. Each of these chapters is best supplemented by reading the cited works, as *Playful Design*'s emphasis on UX design means that much of the theory behind the application is sparingly detailed.

It is in this discussion of theory that the book finds its greatest limitations. Ferrara's approach to games suffers from much of the same positivism of the authors he frequently cites (Gee; Bogost; McGonigal). While he offers a word of caution that the UX design community is not presently ready to engage with game design (10), the book's emphasis on procedural processes in game design leave little room for the discussion of some of the more troubling aspects

of engaging with simulative experiences. These include addressing questions such as:

- As a game designer, what ideological assumptions and values am I asking my users to agree to when participating in this system?

- Are the actions the player goes through and the end goals of the game ethically sound?

I argue that Ferrara's discussions would benefit from the work of thinkers like Judd Ruggill and Ken MacAllister. Their book *Gaming Matters* address a number of the complexities tied up within the computer game medium. Since Ferrara is writing for an audience in the nascent stages of their game development careers, sound criticism insists that he call attention to some of the more problematic issues of games in addition to the positive.

Additionally, while Ferrara is drawn to discussing how games might encourage people to act or think differently, he does not address the possibility that people may be drawn to games because games may *not* have any consequences or connections to the outside world. At the end of Chapter 2, he describes how tests exhibit many game-like qualities, yet they fill people with dread and anxiety. Meanwhile, people are drawn to games like the *Professor Layton* series, which feature questions similar to those found on the SAT. Ferrara suggests that restructuring tests to take advantage of their "innate gameness" could reduce the stress associated with them. However, no one is using their score in *Professor Layton* to determine whether or not the make the cut for a particular college or distinguish between a B and C in a class. It is not the format of the test that causes anxiety; it's the fact that it *matters*.

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