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Document Design Myths

Many myths permeate technical communication document design, some false some true. For the purpose of this assignment, I focused on the following myths:

- In text, Western readers favor deductive reasoning while Asian readers favor inductive reasoning
- Mathematicians, scientists, and engineers are not interested in good writing
- Graphics never lie

Of these, after evaluating both technical communication research and research within related fields, I found the first to be uncertain and the others to be false.

Myth 1: Western readers favor deductive reasoning in text; Asian readers favor inductive reasoning

Verifying the truth or falseness of a myth is not always easy. In the case of this particular myth, while it seems that Asian readers prefer a more holistic reasoning in text, it is hard to decide whether that is a conscious preference or simply something they are more comfortable with. Also, it is not immediately clear if Western readers prefer deductive reasoning versus inductive, though Wang and Wang are the most explicit.

Ding, Daniel D. “When Traditional Chinese Culture Meets a Technical Communication Program in a Chinese University: Report on Teaching Technical Communication in China.”

Technical Communication 58.1 (2011): 34-51. *Academic Search Complete*. Web. 22 Mar. 2012.

Daniel Ding examines the technical communication program at Zhengzhou University, paying particular attention to generalizations made by previous texts on the topic. He discovers that Chinese thought is highly influenced by Confucianism, from the way the Chinese teach to the way they learn. In general, he notices that they focused on the big picture rather than specific details, something that they were encouraged to do from a young age (Ding 47). While Ding goes into great depth about how Chinese students learn to think from a big-picture perspective (with emphasis on patriotism), he does not specify if that is through personal preference or by force of cultural habit.

Spyridakis, J.H., and W. Fukuoka. "The Effect of Inductively Versus Deductively Organized Text on American and Japanese Readers." *IEEE Transactions on Professional Communication* 45.2 (2002): 99-114. *Academic Search Complete.* Web. 26 Mar. 2012.

J.H. Spyridakis and W. Fukuoka examine American and Japanese readers' level of comprehension and preference for inductively and deductively organized texts. They discovered that Japanese readers remembered information better with inductive text organizations, though American readers showed no difference between the two styles. This indicates that, at least as far as the Japanese are concerned, that Asian readers learn better with inductive reasoning, though it does not prove one way or the other that they prefer it. It also does not prove whether or not Westerners prefer one style over another. However, it does seem to demonstrate that there exists a difference in thought patterns between Asian and Western readers.

Wang, Yiqin, and Dan Wang. "Cultural Contexts in Technical Communication: A Study of Chinese and German Automobile Literature." *Technical Communication* 56.1 (2009): 39-50. *Academic Search Complete*. Web. 22 Mar. 2012.

Yiqin Wang and Dan Wang analyze how German and Chinese mechanics present and perceive technical material, paying particular attention the differences in perception. Concerning Asian and Western thought pattern differences, the authors discover that the Chinese focused on the big picture (holistic thinking) while the Germans preferred to break things into categories and analyze things based on the individual parts (Wang and Wang 47). These thought patterns were reflected in their mechanical documentation. That said, while their habitual thought patterns were revealed, the study is not conclusive about whether those patterns were the result of habit or preference.

Western readers favor deductive reasoning in text; Asian readers favor inductive reasoning: True or false?

Hard to say. While some of the articles attempt to come to a conclusion on this myth, the most they can say is "it depends." The research reveals some preference within each group for one reasoning over the other, but does not come to a complete conclusion. Likely, more research is necessary to gain a more thorough perspective on this.

Myth 2: Mathematicians/Scientists/Engineers Aren't Interested in Good Writing

Mathematicians, scientists, and engineers all rely on clear communication to express the results of their research. As the following articles attest, without clear communication in the form of good writing, professional success in the form of publication of other forms of conveying information would not be possible. Each of these articles addresses a different aspect of their respective fields.

Mathematics

Burton, Leone, and Candia Morgan. "Mathematicians Writing." *Journal for Research in Mathematics Education* 31.4 (2000): 429-543. *Academic Search Complete*. Web. 22 Mar. 2012.

Leone Burton and Candia Morgan study the research writing habits and techniques of mathematical researchers. They say that, "For research mathematicians, writing (and, more important, being published) is a critical activity" (Burton and Morgan 450). In their research, they analyze 53 published research papers to see what kinds of writing styles most often result in publication and what that means for students and researchers in the field. They reveal that while the styles within the papers vary widely, quality writing is essential to getting published in their field (430). However, despite the agreement within the mathematical field that writing is important, the authors note that little guidance is provided for writers and students within the field (448).

Mahon, B.H. "Statistics and Decisions: The Importance of Communication and the Power of Graphical Presentation." *Journal of the Royal Statistical Society* 140.3 (1977): 298-323. *Academic Search Complete*. Web. 22 Mar. 2012.

B.H. Mahon, a statistician, explores the use of graphs, charts, etc. in statistics to convey information to decision makers. In particular, he focuses on the cumulative sum chart. While he spends most of the time focusing on the use of charts themselves, elaborating on the theme "the power of the picture," he emphasizes as one of his main themes the "importance of getting the message across" (Mahon 298). In other words, he recognizes that one can produce brilliant data that is entirely useless if no one understands it. To this effect, he also points out that one should take into account his or her audience as well as to make sure that any data is in the relevant place

in the text (298). While Mahon focuses primarily on graphs and charts, he also points out the importance of clear communication, further providing (even in the 70s) that mathematicians cared about writing as applicable to their field.

Engineering

Davis, Marjorie T. "Assessing Technical Communication within Engineering Contexts Tutorial." *IEEE Transactions on Professional Communication* 53.1 (2010): 33-45. *Academic Search Complete*. Web. 22 Mar. 2012.

Marjorie Davis describes how the engineering school at Mercer University incorporated technical communication into its engineering program in response to the need for engineers who can communicate clearly as well as collaborate on diverse teams on potentially virtual projects, writing for multiple audiences. Mercer University uses real-world projects to test student communication ability, focusing on projects related to their area of study (Davis 33). Davis describes the methodology of this program as well as explores a few teaching challenges. She also goes into depth concerning the classes within the program as well as assessment issues. This article underscores how much thought engineers put into the importance of effective communication within their profession, especially since engineering requires such a large amount of collaboration.

Science

Toft, Catherine A., and Robert G. Jaeger. "Writing for Scientific Journals I: The Manuscript." *Points of View on Contemporary Education in Herpetology* Supplement for *Herpetologica* 54 (1998): S42-S54.

Catherine Toft and Robert Jaeger explicitly state that "Publication is essential to science" (Toft and Jaeger S42). In their article, they not only emphasize the importance of writing to their

field, but acknowledge the lack of guidance graduate students receive and provide some publication process advice (ranging from first manuscripts though eventual publication). In later articles, Toft and Jaegar go into greater depth with specific aspects of the publication process. The sheer number of articles on how to write proper scientific research papers and articles illustrates the level of importance intellectuals within the field associate with writing.

Weiss, Martin, and Alexandra M. Newman. "A Guide to Writing Articles in Energy Science." *Applied Energy* 88.11 (2011): 3941-3948. *Science Direct*. Web. 22 Mar. 2012.

Martin Weiss and Alexandra Newman agree with the rest of the articles that scientists, particularly energy scientists (their field), need to be able to communicate clearly via writing with the scientific community and lay people, a weakness in the field. They propose a "top-down approach to writing" that divides the article into parts (3941). This approach includes making the information as clear and concise as possible, focusing specifically on the needs of the readers. Additionally, the authors not only focus on larger picture items such as essay organization but also smaller picture ones such as verb usage and clauses.

Mathematicians/Scientists/Engineers Aren't Interested in Good Writing: True or False?

False. Though the amount of support and guidance students and researchers receive within each field varies significantly, intellectuals in the fields of math, engineering, and science collectively agree that clear, well-written communication is vital to their fields, whether it be due to publication requirements or professional requirements. These articles and others attest to this fact. However, based on these articles, formal writing education within these fields still seem to be in its early stages within these fields, particularly in the math and engineering fields.

Myth 3: Graphics Never Lie

While graphics do not necessarily outright lie, they can be manipulated to alter how readers interpret data. Though this manipulation could potentially be accidental, it results in the dishonest representation of data. The following articles explore some of the potential ways for graphics to "lie" and how to correct such lies.

Amer, T.S., and Sury Ravindran. "The Effect of Visual Illusions on the Graphical Display of Information." *Journal of Information Systems* 24.1 (2010): 23-42. *Academic Search Complete*. Web. 22 Mar. 2012.

T.S. Amer and Sury Ravindran examine business and accounting information graphics in the context of decision aids. More specifically, they look at the results of a study exploring how formatting graphs in certain ways can cause "two-dimensional and three-dimensional visual illusions" which "cause viewers to make biased comparison judgements" (Amer and Ravindran 23). These illusions include "projected angle misperception" and "projected size misperception" (24). They go on to explore some ways to get rid of such visual illusions so as to reduce decision bias, focusing in particular on adding gridlines to two- and three-dimensional graphs. While the creators of such graphs may not necessarily be trying to manipulate their readers, by incorrectly formatting graphs, they can cause the graphics to essentially "lie" to the readers by presenting the information in a misleading fashion.

Johnson, Walter L., and Judith K. Welch. "Using Graphical Presentations In Government Financial Reports." *Government Finance Review* 23.2 (2007): 24-32. *Academic Search Complete*. Web. 22 Mar. 2012.

Walter Johnson and Judith Welch analyzes how graphics are included in government budget documents as well as explores some examples of poor graphic presentations and how to improve them (25). Some examples of poor graphics the authors explore include using pie charts

with too many slices (more than six), misrepresenting the data via visual relationships, using formatting which obscures data relationships, and using multiple scales too freely (27-28). While these graphics do not necessarily lie, poorly done graphics serve to "distract readers from seeing the very relationships the graphics are meant to represent" (25).

Raschke, Robyn L., and Paul John Steinbart. "Mitigating the Effects of Misleading Graphs on Decisions by Educating Users about the Principles of Graph Design." *Journal of Information Systems* 22.2 (2008): 23-52. *Academic Search Complete*. Web. 22 Mar. 2012.

Robyn Raschke and Paul John Steinbart study how educating users on graph design principles helps mitigate the impact of misleading graphs on their decisions. To this end, they test the effects of good graph design knowledge, knowledge acquired from prior task experience, and education on reducing the influence of misleading graphs. The authors conclude that teaching users about good graph design principles reduces the effect of misleading graphs, though they also conclude that it does not completely eliminate the problem (Raschke and Steinbart 23). That, they say, requires organizations taking steps to prevent misleading graphs from being created and distributed (23).

Graphics Never Lie: True or False?

False. Graphs might not outright lie, but they can often mislead if they are not formatted properly and clearly. Misleading graphs can have an especially harmful effect on decision making, the main concern of the aforementioned articles. Therefore, careful attention needs to be paid to the format of graphs in order to avoid misleading readers into making ill-informed decisions.

Conclusion

While many document design myths exist in technical communication document design, not all of them are true. Two out of three of the myths I explored turned out to be outright false. That said, kernels of truth exist in all of them. For example, while scientists, mathematicians, and engineers do consider good writing important, their fields have yet to provide sufficient training on that note. Also, graphics rarely lie outright, though they can be misleading. However, researching not only technical communication but sources outside of the field as well can reveal the truth.