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Drop, Cover, and Hold On: Analyzing FEMA's Risk Communication through Visual Rhetoric

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by

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DEDICATION

I would like to dedicate my work to my family and my partner, who have always been a driving force in my success. My mother Silvia, who supported every decision I ever made. My father Jerry, who made sure I never forgot my goals. My two brothers Chris and Justin, who have always been my motivation in life. And my better half, Jan: Du bist mein Licht. Thank you all for helping me achieve my dreams and loving me every step of the way. I truly could not have done this without you.

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ABSTRACT

This project seeks to understand the relationship between visual rhetoric and power structure between FEMA's Earthquake publications and their audience. Research shows images leave a longer impression on readers than text, causing more studies to focus on visuals rather than just text in technical communication. Author uses Critical Discourse Analysis to analyze the images in relation to text, design, and intended audience to determine what information is being privileged. It is determined that homeowners are being privileged with information over non-homeowners, established through a collection of images and image types. The lack of information for non-homeowners could result in injury or death of potential disaster victims, making it crucial for technical document revision.

ANALYZING RISK COMMUNICATION THROUGH VISUAL RHETORIC

This study analyzes the discursive situation of a selection of the Federal Emergency Management Agency's (FEMA) earthquake publications though visual rhetoric. The analysis helps the field understand how risk is constructed by FEMA in documents that are distributed both online and on paper. I use Critical Discourse Analysis to conduct my analysis. I consider the power and expertise relations in terms of what type of citizen is being represented and constructed in these documents, specifically analyzing the visuals within publications to understand the relationships between power and visual communication. Ultimately, I argue that FEMA is privileging homeowners over non-homeowners, and the imbalance needs to be addressed in current and future distribution of information.

This thesis examines images within FEMA's earthquake disaster publications to afford the field a deeper understanding of the function of visual representations within risk communication. If risk is not communicated successfully because of the ideology of the organization determining what is identified as risk, there can be real physical consequences—making FEMA's work extremely important to the safety of citizens. In order to understand the relationship between reader, visual, and FEMA, I analyze a selection of images based on document design principles in the field of visual rhetoric. More specifically, I employ Critical Discourse Analysis to study the visual representations in FEMA's earthquake publications geared towards categories of audience.

The goal of much research in the field is to view cases in which technical communication failed, and the considerations we must take to remedy these instances in the future (Sauer, 1993;

Grabill and Simmons, 1998; Blythe, Grabill, and Riley, 2008; Dragga and Gong, 2014). Nations around the world have seen instances in which disaster has struck and resources were unavailable to victims for various reasons. Perhaps the most well-known example in relation to FEMA is the 2005 disaster of Hurricane Katrina. This hurricane left damage all along the Southern United States, particularly in Louisiana. The incident is notorious for a lack of relief to hurricane victims because of FEMA's response time and ability to provide resources. In her examination of the marginalization of impoverished citizens when distributing post-disaster aid, Reid (2013) observed that citizens with less money were waiting longer for relief than those with better finances. Although she was not able to determine if FEMA had purposefully caused this discrimination, her work is still useful in understanding how to prevent similar situations in the future. By analyzing and reconstructing visuals within publications before disaster occurs, technical communicators might be able to lessen potential damage that may occur or even save lives by eliminating unbalanced power across readership.

The insights from this study might assist those at government or private organizations doing technical design or analysis. The method used to analyze the designs could apply to natural disasters as well as risk communication as a whole. Examining these visual texts through the lens of Critical Discourse Analysis provides new insight into evaluating the power/knowledge balance in risk communication documents within Professional and Technical Communication. This project extends research already being done in the field by drawing a deeper connection between risk communication and visual rhetoric in terms of audience and how the power dynamic between technical communicator and the public can be influenced by design.

FEMA: ITS HISTORY AND PURPOSE

The Federal Emergency Management Agency (FEMA) is a United States government organization responsible for a variety of tasks within disaster prevention and loss recovery. These tasks include things such as disbursing information to citizens and assisting survivors in recovering after an event has occurred. FEMA provides relief for victims of disasters such as tornadoes, hurricanes, floods, etc. FEMA's purview encompasses both natural and human constructed disasters, including acts of terrorism. Although most well-known for these relief efforts, FEMA's website promotes a mission that includes prevention as well: "to lead America to prepare for, prevent, respond to and recover from disasters with a vision of 'A Nation Prepared'" (http://www.fema.gov/about-agency). As an organization officially established over 35 years ago, FEMA has a rich history that has undoubtedly influenced the citizens of the United States and their understanding of disaster preparedness and relief.

Throughout the years, FEMA has been reorganized multiple times, resulting in changes in agenda and purpose. According to FEMA's website, the agency was established in 1979 when President Jimmy Carter signed an executive order that merged several smaller disaster groups into what is now known as the Federal Emergency Management Agency (FEMA). By 1988, the Robert T. Stafford Disaster Relief and Emergency Assistance Act was put into law, and FEMA was given responsibility for coordinating government-wide relief efforts. Since this time FEMA has provided funding for those in need pre- and post-disaster, nationwide. On March 1 2003, FEMA became a part of the United States Department of Homeland Security. The agency now has a total of ten offices that are each responsible for different regions of the country.

Interestingly, many of FEMA's earthquake publications—the focus of this project—were published or updated around the date FEMA was absorbed and are likely a result of the

restructuring. Some of the previous documents were as dated as early as the 1980s or 1990s—a twenty to thirty year gap (gpo.gov). For example, the US Government Publishing Office's website, a database of all current and past publications by the government including FEMA, contains information about a previous Earthquake Safety Checklist that was originally published in 1983. It was updated once in 1985 but was not updated again until 2005—only two years after the Department of Homeland Security took control of FEMA. Other earthquake publications were updated during a similar time period.

Based on the Technocratic Model of risk communication, FEMA is attempting to convey information to the public without any discussion or conversation about science or culture. The Technocratic Model suggests knowledge is produced based on scientific information before communication occurs, and the communication happens as a result of this assessment. Some scholars argue risk is constructed on more than scientific "fact," instead considering how the perception of individuals also impacts notions of risk (Grabill and Simmons, 1998; Youngblood, 2012). Publications consistently invite an approach to risk assessed "solely on a defined set of principles and scientific norms independent of cultural values," a concept stemming from Grabill and Simmons (1998, pp. 422). This is shown through their top-down communication: FEMA's website does not promote direct response or feedback, such as commenting or discussion forums. Instead, the website lists facts and training information presenting knowledge *to* the participant instead of creating knowledge *with* the participant.

To conduct my visual analysis, I focus on the design principles of Kress and van Leeuwen (1996) as well as Schriver (1997) to understand the stickiness of visuals and their intended meanings by design. It is important to consider the incorporation of images and how they are often remembered longer than the actual text. I found it necessary to consider Schriver's

work as she analyzes the overall design which is as important as the images themselves. I also use the reading strategies of Kress and van Leeuwen to investigate who made the images, what their intended meanings might be, and how potential audiences might view them. These reading strategies, which will be described in more detail in my methods, are some of the most foundational texts for my interest in visual rhetoric.

ADDRESSING POWER AND POPULATION

In my study, I attempt to understand power distribution among readers and identify vulnerable populations based on my analysis. Oftentimes populations are left out of knowledge making by technical communicators because of their perceived level of expertise or because of their socioeconomic backgrounds (Sauer, 1993; Reid, 2013; Dragga and Gong, 2014). Sauer's (1993) examination of miners in Knott County, Kentucky gives us a clearer picture of how a failure to consider risk from multiple perspectives can cost lives. In her case study, Sauer observed that miners' wives' insights about mine safety conditions, gleaned from amount of coal on their clothes, were discounted by scientists from the Adkins Coal Company, who believed the mines were safe. The assumption that these wives would not have information relevant to safety conditions resulted in an explosion in the mines, killing several workers. (1993, pp. 66).Often times the most vulnerable of these populations is somehow ignored (see examples in Dragga and Gong, 2014; Reid, 2013).

Expertise in risk communication sometimes privileges "experts" rather than "laymen" in both knowledge making and distribution, which can lead to a disadvantaged public. I would like to see technical communicators better facilitate risk communication between the "experts" to the "non-experts," such as other scholars in the field have already emphasized. Dragga and Gong's (2014) examination of the citizens of Port Chicago showed they were left out of technical communication between the military (experts) and local community (laymen). These citizens were not involved in cooperative risk communication and suffered the loss of their homes

because of it. It is the exclusion of citizens from government information that directly impacts their living conditions. By examining the visuals provided in categories related to individual safety (laymen) over technical diagrams on building safety (experts), I am able to assess any distribution of power that may be a result of FEMA's publications.

Understanding previous occurrences of marginalization before, during, or after a crisis provides consideration for how to prevent future discrimination (whether intentional or not). Those who rely on technical documents to interpret their safety measures and precautions includes anyone living in a risk area, meaning a potentially large population must be addressed. While Dragga and Gong (2014), Reids (2013), and Sauer (1993) all focus on vulnerable populations and the outcome of excluding them from knowledge making. Like the Mine Safety and Health Administration and the military in Port Chicago, populations designated with lower levels of expertise are not being considered in knowledge making. Although Reid (2013)'s research may seem most relevant to my own interests, all four scholars address the consequences of marginalizing groups that are considered "non-experts." FEMA's "experts" determine what knowledge to provide to their audience, a one-way communication. Situations such as the ones these scholars address can be avoided with engagement between citizens and technical communicators.

IDENTIFYING ACCESSIBILITY OF INFORMATION

With types of publications growing with newer technologies, it becomes increasingly important to consider the accessibility of information to populations. Identifying the types of populations with limited accessibility to technical documents led to new concepts of access to be considered the future of technical writing (Blythe, Grabill, and Riley, 2008; Youngblood, 2009; Boyle and Rivers, 2016). Finding different versions of access for these populations is important

in relaying information (Youngblood, 2009; Boyles and Rivers, 2016). Accessibility helps consider the audience's ability to participate in knowledge making. Accessibility is defined here as addressing groups of people with varied levels of internet literacy as well as those who do not have access to a computer. If a member of a community is unable to access information, they will not be able to participate in communication of risk.

Recent research in Professional and Technical Communication emphasizes the need to consider the accessibility of information. Focusing primarily on textual evidence as well as audience participation, scholars identify the difficulties groups have in communicating risk. Technical communication fails when populations are unable to contribute to risk communication cannot access information on potential disasters. This is a claim of Bythe, Grabill, and Riley (2008), who use the specific example of the U.S. Army Corps of Engineers and their dredging project, located within 800 yards of two schools (p. 273). In my own research on FEMA, the population of citizens with limited access to risk publications can be considered especially vulnerable, particularly if they are non-homeowners because of the lack of control they have over the environment in which they are surrounded.

My study will address issues of accessibility in terms of digital and textual literacies as well as other instances of vulnerability. For example, the general population is less likely to be able to access these documents in a crisis (Power outages, etc.). To address different forms of accessibility, I use Boyle and Rivers (2016) as an introduction to new concepts of access in terms of ability instead of disability. By focusing on what a person can do, such as their level of internet or reading literacy, technical communicators are more able to provide new versions of access for these populations. In addition, the citizens most vulnerable to earthquakes could

potentially lose their homes and lives if they do not receive accurate and reliable information before disaster strikes.

UNDERSTANDING RHETORIC OF DESIGN

When analyzing FEMA documents, it is important to remember that the user brings their experiences along with their interpretation along with the designer. Since the 1980's, scholars have been analyzing the rhetoric of design as a means of communicating with audiences (Buchanan, 1985; Kinross, 1989; Kress and van Leeuwen, 1996). Design is always rhetorical (never neutral), whether it is done purposefully by the designer or not (Kinross, Buchanan). This applies to technical communication as well. Any visual created or distributed by FEMA is a representation of risk that will be interpreted differently depending on the reader. Although I will not be surveying readers, I will be able to analyze the types of images used and what their intended meaning is.

I use the foundation of Buchanan and Kinross as well as the work of Kress and van Leeuwen to rhetorically analyze FEMA's publications and their intended meaning. Kress and van Leeuwen push the analysis of images and textual design together to better understand how images affect the user. The purpose of some images are direct, such as an advertisement serving as a persuasive tactic to sell a product. However, all images have implicitly rhetorical dimensions that have an impact on audience perception (Kinross, 1989).These documents are meant to communicate technical information to users in the most effective means possible. Any images used are meant to complement the text and provide additional insight into the concepts of the material.

INTERACTING WITH THE INTERNET

With an increasing reliance on internet technologies, the types of designs created and their effect on the use is crucial to understand. FEMA's documents are primarily available online, with some available in print upon request. As technology provides advances in internet capabilities, design can be arranged to better address and interact with users. There is a push in Professional and Technical Communication for the consideration of design and how it impacts both the user and creator (Arola, 2010; Schriver, 1997). According to Schriver (1997), document design "discover[s] how documents can be employed in order to carry out particular purposes and goals (thus supporting readers and their use of texts)," meaning the design should revolve around the needs of the user (1997, pp. 11). While Schriver (1997) puts design principles into practice, Arola (2010) places more emphasis on online design principles specifically. FEMA's publications have a mix of image types, particularly in their earthquake documents. In my study, I consider how stylistic design choice might impact preparedness before, during, and after an earthquake.

METHOD

Research Questions

- Are groups of readers being privileged over others in FEMA earthquake visuals?
- If so, who is being left out? Who is given power through privilege?

Using Critical Discourse Analysis in Risk Communication

To answer these questions, I use Critical Discourse Analysis to identify the power dynamic between FEMA and its audience. Discourse Analysis is a term drawn from the ideals of Foucault—a philosopher who believed that "power and knowledge directly imply one another" (qtd. in Rose, 2012, pp. 193). As Gillian Rose details, Foucault's concepts of power and knowledge specifically address institutional power structures through discourse analysis. This means examining discourse by means of visuals, etc. Rose specifically cites labels and captions as a means of analysis—sources I am working with in my own research (2012, pp. 245). This method of analysis is appropriate for my work because I am examining FEMA as an institution creating knowledge and power. The results of my analysis will determine if any group is privileged over another.

I define knowledge in the same terms in my study, meaning there is a distribution of power between FEMA and citizens that is impacting how knowledge is created. I explore the power/knowledge dynamic through CDA because of the connections to Foucault's own research in institutional critique. According to Foucault, power is seen through discourse because of the ability to produce. The ability to produce relates to being able to inspire action or ways of

thinking. He does not claim that power is top-down, but rather, everywhere around us. It coincides with the creation of knowledge—with both power and knowledge relying on each other for meaning (Rose, 2012, pp. 192-193).

To determine the power dynamic between FEMA and its audience, I use approaches from several scholars, such as Foucault, Fairclough, Dragga and Voss, Kress and van Leeuwen, and others. Their own work and theories have influenced my understanding of design principles and institutional power structures. I also draw from scholars (Bowker and Star, etc.) concerning classification systems after relying on Critical Discourse Analysis and a close reading of my sampling to better understand how the FEMA website is constructed around the publications . I use Critical Discourse Analysis (CDA) as influenced by Foucault and Fairclough (Miles, 2010). Foucault, according to Rose, has particularly critical interpretations of power within institutions, based on the three levels of discourse: The text, the discursive practice, and the sociocultural practice.

USING THE THREE LEVEL OF DISCOURSE TO CONDUCT A VISUAL ANALYSIS

While conducting a close reading of a set of images from FEMA earthquake publications, I consider the three areas of discourse and draw conclusions based on research done within each level. According to the *Encyclopedia of Research Design*, CDA looks at three levels of discourse: the text, the discursive practice, and the sociocultural practice (Miles, 2010, pp. 7). These levels are examined in order to understand the power dynamic within institutions through the way documents interact with their audience. The following are my interpretations of each of the levels of discourse being examined.

THE TEXT

The first level of discourse I analyze is the text, or content, of the publications. The text refers to any form of written or visual communication that occurs within the discourse (Miles, 2010). For this context, the texts being used are FEMA publications that are related to earthquakes. Any publications used are found directly on FEMA's web page for earthquake safety information. Although these documents are primarily accessible online, they are also available via the FEMA Distribution Warehouse which provides free copies of any document they still publish. All aspects of the text, including images, are crucial in conducting a critical discourse analysis of the material.

I pay particular attention to documents that repeat between audience categories (as assigned and described by FEMA) because the repetition suggests importance and broader distribution. I also focus on what audience each repeated publication is designated for based on FEMA's predetermined categories. For example, if a publication occurred both in the "Individuals and Families" section as well as "Teachers and Kids," I make special note of its occurrence. The types of documents that are repeated, along with their content and location on the website, reveals who the institution privileges with information and who is being left out of the conversation.

THE DISCURSIVE PRACTICE

I observe the social roles and identities within the situated context by identifying the discursive practice. The discursive situation can be identified by assessing who is involved in creating and distributing the documents (FEMA), as well as who they are intended for. This can be difficult to determine because FEMA has such a wide audience (specifically for US citizens, but any person with internet access can view the information). However, I can interpret what type of citizen is

being addressed based on FEMA's own categories and what audience they describe for each publication. For example, "Individuals and Families" are identified as "how you can prepare yourself, your family, and your home" (http://www.fema.gov/earthquake-publications). These descriptions give means to assess FEMA's identity as well as the identity of the audience they are trying to reach.

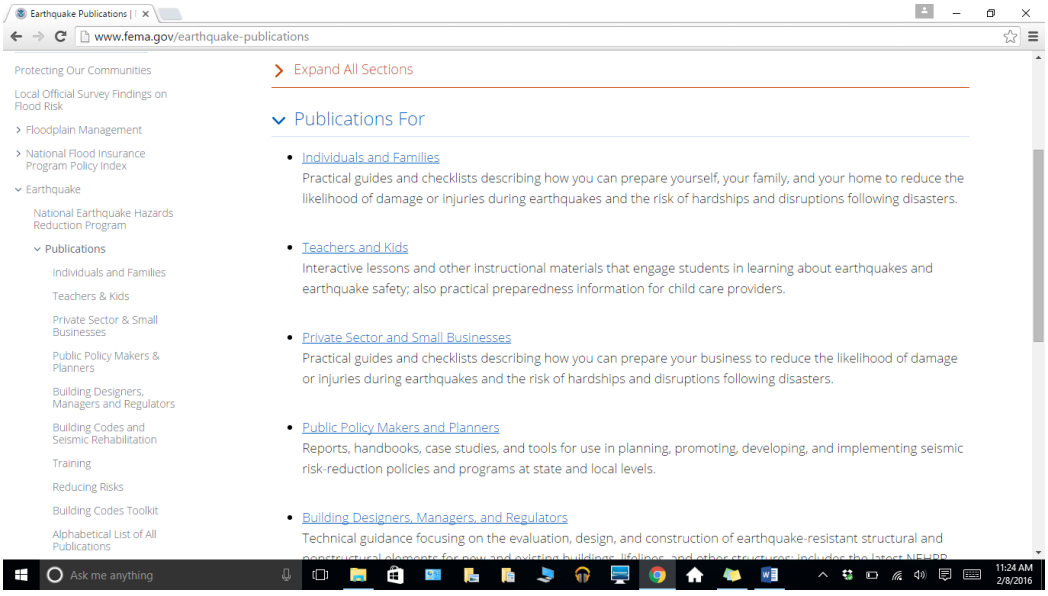


Figure 1. FEMA's List of Earthquake Publications via Categories

THE SOCIOCULTURAL PRACTICE

The sociocultural practice is the overall context of the information presented, going along with the previous levels of discourse. The overall context goes beyond the written and discursive practices by addressing the meaning and value within the culture. The level of sociocultural practice is the most directly related to who the audience is for the publications and how it affects the society in which it is contained. For example, if a certain group is not considered when making the documents, they will be excluded from knowledge. Their exclusion will have effects

on their understanding of risk and how to respond. I identify this level after determining the first two and draw conclusions from all three about the power dynamic between FEMA and citizens.

VISUAL ANALYSIS

To accurately investigate both images and texts within the publications, I conduct a visual analysis followed by the meaning of the images. The visual analysis involves both the first and second levels of discourse. The conclusions I draw based on the visual analysis is finalized in the third level. In the third level, overall findings and implications can be addressed. Because I am focusing on a visual analysis, I have access to a wider and more vulnerable population--those who do and do not have written literacy skills. Below I detail the criteria I chose to analyze the sample documents for the study.

I pull reading strategies from several scholars and conduct a close reading based on their design principles. Some reading strategies pertain more directly to images such as advertisements but are still applicable to the images and designs used by FEMA. For example, identifying topological versus topographical processes is one of the reading strategies I used to look at images within the publications. There are markers that occur within images when close reading documents such as topographical or topological processes. Topographical and topological processes refer to maps or diagrams used in texts--when they are typically used and what message they send to the audience. The presence or absence of topographical or topological processes can potentially show what is being emphasized or privileged with more detail through visuals.

I viewed each image in relation to these concepts and compared it to the overall design of the page the image is on (what context the image exists in). Another strong means of visual analysis was the focus on gaze, as described by Kress and van Leeuwen. Viewing the use of

human or non-human elements of the images, along with the angles from which they do or do not "gaze" at the audience is the second strategy noted within the selected image set. Kress and van Leeuwen's *Reading Images* (1996) consider the design strategies of human versus non-human actors in images and the types of images used to analyze how images are used to create meaning by their producers (p. 1) These particular approaches are the most relevant to the research I am conducting on the FEMA documents because they relate to placement of images, perspectives, and the use of different types of images.

DEFINING IMAGES

In the context of this study I define an image, or visual, as a picture or illustration used as a metaphor for represented material within a text. When considering what could be deemed a visual representation within the text, all items that were not strictly part of the central text of the document were identified as potential images. Any image, chart, graph, illustration, etc. is considered a visual representation within the study. However, this does not include any FEMA or other type of logo that is repeated throughout documents; branding is outside the scope of this study. Logos and references to FEMA as the publisher of documents were not considered in the analysis because they could be considered for a different type of project. The logos do not vary throughout the publications, but the reading strategies would be different than a typical image. These logos do add to the ethos of FEMA as an organization, which relates to the consideration of the document as valuable, but do not relate to the meaning of images within the text itself. Other potential images that were eliminated were text boxes that reiterated ideas from the text. Although these boxes were a point of focus, they do not convey a remediated version of the material presented within the piece.

Photographs are defined as images of real life occurrences that were taken by a camera. This definition is fairly inclusive to consider photographs that can be taken of various subjects such as objects or people. For example, some documents contained images of structural damage that occurred after an earthquake. Photographs were one of the least noted image types within the texts, but they are nonetheless important to differentiate because of their meaning and implications. Photographs are the most direct type of images, meaning they usually have a direct relation to the text.

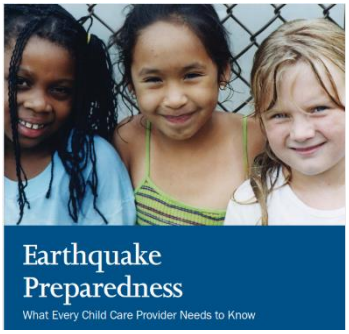
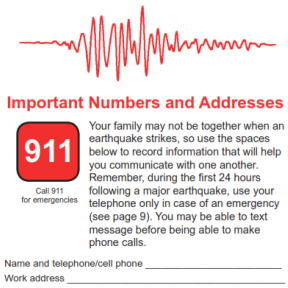


Figure 2. Cover of Earthquake Preparedness booklet

Icons are small visual representations of concepts used to simplify understanding. There are often illustrations that are created within a square or circle that have very little detail and have one single message. For example, in one of the documents there is a red square with the chemical abbreviation “911” written in white font. This representation is placed beside a short section named “Important Numbers and Addresses,” showing the connection between the simple icon and the message it is meant to reinforce—keep safety numbers written down.



Important Numbers and Addresses

911

Call 911 for emergencies

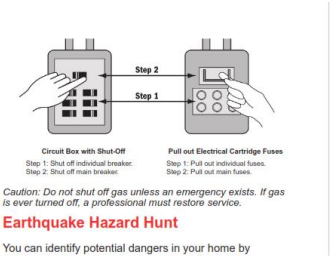
Your family may not be together when an earthquake strikes, so use the spaces below to record information that will help you communicate with one another. Remember, during the first 24 hours following a major earthquake, use your telephone only in case of an emergency (see page 9). You may be able to text message before being able to make phone calls.

Name and telephone/cell phone _____

Work address _____

Figure 3. Page from Earthquake Safety Checklist

Diagrams are defined as images that provide a large amount of detail, typically concerning a task or explanation of task that may need to be done. These images are not to be confused or conflated with charts, which are blocks used to respond to specific instances of text. Although charts have a similar premise to text boxes, they are considered images because there has been metaphorical work to remediate the information. They also occasionally standalone instead of complimenting something that has already been written. Diagrams most often relate to structural concerns to prevent extreme damage to homes.



Caution: Do not shut off gas unless an emergency exists. If gas is ever turned off, a professional must restore service.

Earthquake Hazard Hunt

You can identify potential dangers in your home by

Fig 4. Secondary Page from Earthquake Safety Checklist

The last types of image are illustrations: Sketches that are a representation for something either realistic or fictitious. For example, FEMA introduces a poster within one of the documents that shows students taking cover under their desks. The image was created through computer

graphics and was not a photograph or icon. These representations occur occasionally throughout the texts, particularly in the children's publications. Illustrations can be valuable to analyze based on their complexity in design and where they occur within the publications.

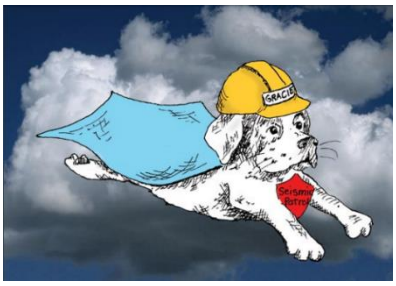


Fig 5. Illustration from *The Adventures of Terry the Turtle and Gracie the Wonder Dog*, Grades 3-6

DETERMINING WHICH DOCUMENTS TO EXAMINE

An important component in determining what texts to analyze is navigating FEMA's website for appropriate context specifically related to earthquakes. When first viewing FEMA's website, the user is presented with a home page with information about what disaster is most relevant at the time (For example, Flood safety). A left side menu offers "Navigation," "Search," and "Languages" as options to explore the site.

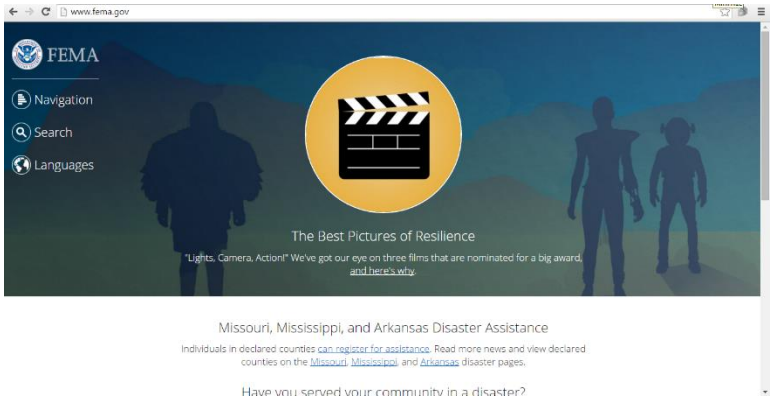


Figure 6. FEMA's Home Page

A search for specific instances of risk, such as floods and earthquakes, reveals several resources for users, ranging from publications that are described by FEMA as "Posters, checklists, guides, reports, recommendations, examples and more" to "Quick Links" on training, events, and other resources for individuals and communities. When the user follows the link for publications, they are presented with five categories for different types of audience depending on their needs. These range from personal safety of individuals to structural concerns for businesses, etc. The only resources users could access without internet access are the publications on safety information. The means used to find these publications can also be considered for accessibility testing or analysis for an extended project.

Upon examining FEMA earthquake publications, the user is presented with what FEMA describes as "reports, handbooks, guides, and manuals to posters, software, web-based tools, and instructional materials" (http://www.fema.gov/earthquake-publications). From this point, the publications are separated into several categories based on who FEMA has determined they concern. The categories are as follows:

- Individuals and Families
- Teachers and Kids
- Private Sector and Small Businesses
- Public Policy Makers and Planners
- Business Designers, Managers, and Regulators

Each of these categories has a brief description of its intended audience. For example, the "Individuals and Families" section is intended as "practical guides and checklists describing how you can prepare yourself, your family, and your home to reduce the likelihood of damage or injuries during earthquakes and the risk of hardships and disruptions following disasters"

(http://www.fema.gov/earthquake-publications). Of the five categories, only two are related to the general population (Individuals and Families; and Teachers and Kids) while the latter three are intended for those who own and/or can control property structure (Private Sector and Small Businesses; Public Policy Makers and Planners; and Business Designers, Managers, and Regulators).

First, I compiled a list of these publications based on their location in the five categories. I cross-referenced each publication with the intended audience (based on the categories) to determine what publications occurred in more than once within the website. There were a total of ten publications repeated within the five categories. Several repeat more than once between different intended audiences. The publications that were chosen for analysis occurred the most frequently throughout the highest number publications. After this criteria was established, there were seven publications remaining to examine.

After deciding which publications to consider, I calculated the length of each document in relation to its category, the number of images, and the number of each type of image that occurred (icon, illustration, chart, drawing, other). Based on which type of image occurred the most frequently, I chose 1-2 pages within each design that contained at least one image or analysis. I performed a close reading of each page based on Kress and van Leeuwen's *Reading Images* and Schriver's *Dynamics in Document Design* to determine what audience FEMA is writing to and who is potentially being left out of communication. This helped me discover the power dynamic that occurs within the organization, specifically concerning earthquake publications.

When I began to close read individual pages from the selected publications, I first looked at the overall content of the page. What was the page about? I relied on information such as titles

or subheadings to determine the purpose. Next, I looked at the images used on the page—specifically identifying their size and what information they were related to. For example, identifying if the page is text heavy or relies more on images. The front of the Home Hazard poster is solely an image, but the back of the poster contains a relatively equal ratio of images to text. Now that specific sampling had been chosen, I was able to move onto specific image analysis based on the levels of critical discourse.

From this point, I examined the images based on the three levels of discourse as previous described (text, discursive, and socioeconomic). After addressing the three levels, I make claims about the research questions I originally posed. I use the design principles from Kress and van Leeuwen and Schriver as evidence to support these claims. These include concepts such as the gaze and processes previously mentioned as well as the overall design of the page, as described by Schriver. I related these design principles to the categories of homeowners and non-homeowners to better understand who FEMA is addressing with their publications and who is being excluded. More information on my conclusions from the analysis will be addressed in my findings.

LIMITATIONS

These limitations for this study include (but are not restricted to): small sample size, exclusive focus on earthquake materials (as opposed to other disasters), lack of usability testing, and lack inter-reader reliability. Although some of these limitations can be attributed to the scope of the project, they should be kept in mind.

SAMPLE SIZE

The first limitation is the small amount of publications examined for the study. Because of the large amount of potential documents and images, I chose to analyze the publications that occurred most frequently, meaning they were repeated over more than one publication. This can be seen as a limitation because there is a small amount of material, which could exclude key findings. My method of using the most frequent publications and image type within those publications is sufficient in addressing this limitation, but more sampling can be done in the future.

The number of publications were also limited because of the categorization FEMA provides. This relates to the non-listed publications (not on the FEMA earthquake webpage) that are referenced within listed publications (on the FEMA earthquake webpage in any category). For example, the Earthquake Checklist publication contains a list of publications at the end of the document—some of which are not listed on FEMA's earthquake webpage. A bigger sample would consider these publications as well, and it speak more to the fact that some of the publications are not included within the same webpage as the others.

DISASTERS

FEMA deals with both natural and human constructed incidents. I have limited this study to focus exclusively on materials related to earthquakes. I could have chosen to analyze materials focused on any of the disasters FEMA deals with, depending on the accessibility of publications. It should be noted, though, that some preliminary searches suggested earthquake materials may be easier to access than those covering other types of disasters. Nevertheless, earthquake research has definite value and function within the field as newer issues such as fracking are resulting in even more earthquakes.

FINDINGS

Based on my analysis, I found that FEMA uses images and design to create and facilitate knowledge. I identified this through the first two levels of discourse. After determining the distribution of knowledge, I classify FEMA's audience as being broken down into "homeowners" and "non-homeowners." "Homeowners" meaning those who have control over their structural environment (owning homes, apartments, etc.) and "non-homeowners" being those who do not have control over their structural environment (renting homes, apartments, homelessness, etc.). The category of homeowners also includes businesses and other non-residential owners as well. FEMA privileges these groups throughout the publications regardless of intentionality.

The results from the publication sampling show that there is an imbalance in the power dynamic between FEMA and citizens who do not have control of their home structure for any reason, whether that be that they are renters, cannot afford making changes to their own home, are homeless, etc. (otherwise known as non-homeowners). I found that FEMA gives power to "homeowners" versus "non-homeowners," based on my interpretation of the third level of discourse. First, I establish FEMA's use of design and images to create an imbalance of power. Then, I categorize those imbalances specifically between homeowners and non-homeowners based on the visuals within the publications.

The following are the results I concluded from my study of FEMA's most repeated earthquake publications. I reflect on several aspects of the documents, such as page length,

image quality and content, image relation to text, and overall findings based on these and other factors from my close readings. I reference the principles from Kress and van Leeuwen's *Reading Images* strategies alongside Schriver's work in *Dynamics in Design* throughout the levels of analysis. Ultimately I find there is a need for new publications, as well as a new classification system to counteract the privileging of information that has occurred.

USING DESIGN AND IMAGES TO CREATE PRIVILEGE

FEMA is using images and design to facilitate and create knowledge. I determined this claim by analyzing the publications through the three levels of critical discourse analysis and by examining specific images for design strategies and meaning. By bringing these levels together, I am able to assess the text directly and the audience FEMA is identifying on their website. Foucault's levels of discourse provide a better means to determining power dynamics than a sole close reading of images. Identifying FEMA's audience shows who is being the most considered and who is being left out, which has life threatening consequences for citizens. In the next section, I provide evidence through image content and design that identifies the groups FEMA is privileging and leaving out of risk communication.

PRIVILEGING INFORMATION THROUGH DOCUMENT DESIGN

The first factor in determining an imbalance of information is through document design. Design includes how documents are created (length, types of images, etc). For example, longer documents typically have more information available than shorter documents because of the amount of space available to share material. Through my initial survey of documents, I found there was an imbalance with document length between types of publications. Although this can sometimes be related to subject (technical documents about structure may need more details than a children's safety book), FEMA's connection between groups and length of material was

drastically different depending on who was addressed. Below are some examples I found, underlining my claim.

When the page length of publication numbers are compared, documents pertaining to structural concern and safety are much longer than those that deal with physical safety before an earthquake. For example, the longest document related to structural changes is entitled "Reducing the Risks of Nonstructural Earthquake Damage—a Practical Guide, Fourth Edition" This handbook is a total of 885 pages, in comparison to "Are You Ready? An In-depth Guide to Citizen Preparedness," which is only 205 pages long. In addition, only 8 of the pages in this handbook are directly related to Earthquakes in a section of the book designated for "Natural Hazards." Instead, this booklet covers a variety of both natural and human constructed disasters covered by FEMA. It is notable that there is only one document of significant length concerning physical safety and yet it is really only partially related to the topic at hand.

Table 1. Chart of Image Categorization

Name	ID	Pages	Images	Photos	Icons	Graphs	Diagram	Draw	Other
Earthquake Preparedness: What Every Child Care Provider Needs to Know	FEMA 240	11	15	6	1	0	4	2	2
Earthquake Safety Checklist	FEMA 526	18	47	0	3	1	1	41	0
Earthquake Home Hazard Hunt Poster	FEMA 528	2	9	0	0	0	9	0	0
Drop, Cover and Hold Poster	FEMA 529	1	1	0	0	0	0	1	0

The page length of FEMA earthquake publications varies, depending on the type of publication and its content. Naturally, a poster will not be as long as a guidebook, but it is important to remember that the types of documents created, and for what audience, were determined by FEMA based on their judgement of audience and audience needs. The decision between making a poster or guidebook determines how much information FEMA chooses to provide for specific groups, resulting in privilege between groups.

APPLYING DESIGN PRINCIPLES

The design principles shown in FEMA publications provide evidence to an imbalance of power between homeowners and non-homeowners, based on the use of images and structure. The overall design principles of documents have an effect on their meaning and user understanding of information (Kress and van Leeuwen, 1996; Schriver, 1997). I use the design principles of Kress and van Leeuwen (1996) and Schriver (1997) to understand the meaning of the images. Ultimately I argue that the types of images being used for homeowners are more detailed and provide more meaning than the simplified images used for non-homeowners. Below are some examples providing evidence for my claim.

One example is found in the publication "Earthquake Preparedness: What Every Child Care Provider Needs to Know." It could be argued that the publication "Earthquake Preparedness: What Every Child Care Provider Needs to Know" contains images that do not have the "gaze" Kress and van Leeuwen describe in their work. Kress and van Leeuwen argue that when there is a human or nonhuman gaze directly at the viewer, the image is demanding that the reader respond. However, if this is not present, the object is simply being offered. The question then becomes: what are the consequences of not directly engaging with the audience through images such as photographs that make eye contact?

The publication “Earthquake Preparedness: What Every Child Care Provider Needs to Know” is available in both the categories “Individuals and Families” and “Teachers and Kids.” FEMA states the purpose of this publication is to provide “practical and low-cost techniques to make child care facilities safer in the event of an earthquake, whether they are based in a home or a larger facility” (http://www.fema.gov/media-library/assets/documents/1795).With a total of fifteen images, the majority being photographs, this particular document does not provide a lot of complementary information within its images and design. I chose a page with a photograph of an Emergency Phone entitled “What You Can Do after an Earthquake.” The image is roughly the size of the average icon shown in other FEMA documents, and shows an orange emergency phone.

Figure 7. Page from Earthquake Preparedness: What Every Child Care Provider Needs to Know

The text surrounding the image is about finding a safe gathering place and attempting to call 9-1-1 if possible. According to Schriver, this image could be viewed as complementary to the text, underlining what is being focused on. On the other hand, it could be considered underdeveloped as it does not add explanation.

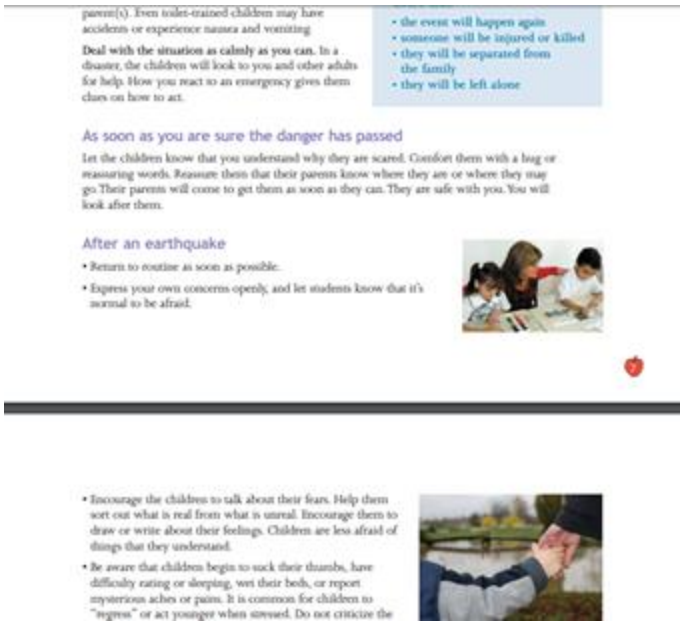


Figure 8. Others Pages from Earthquake Preparedness: What Every Child Care Provider Needs to Know

Because the image does not have any context aside from the emergency phone itself, there is less of a direct connection to the viewer. Although there are photographs throughout the pamphlet, the majority of images do not make direct eye contact with the viewer or do not add to the overall content of the text. The images often show children interacting with adults, but in no particular setting related to earthquakes.

Another aspect of analysis previously mentioned is the differentiation between topographical and topological processes. An example of the differences occur in "The Earthquake Safety Checklist." According to FEMA, this booklet is meant to "help[s] individuals and families prepare for an earthquake and prevent earthquake-related damage to their homes (http://www.fema.gov/media-library/assets/documents/3234). The page that I chose to specifically analyze has both the gas valve diagram as well as an icon pertaining to pet safety. This is a strong page to examine because it contains more than one image and context to compare directly.

Figure 9. Page from Earthquake Safety Checklist (Full)

The page being read is under a section of the booklet called "Have on Hand for Any Emergency – Ideas for Home, Workplace, and Car." This portions goes on for several pages, showing icons adjacent to bullet points describing safety measures. The icon of a cat and dog is beside a bullet point telling the reader to make sure their pet has up-to-date records, etc., to ensure its safety. This icon represents the types of pets people commonly have, but does not add information to the booklet. This could be considered topological because it is not a literal representation of the object.

The gas valve diagram is at the end of the page under the heading "Home Preparedness." This section details how to shut off the water in the reader's home in order to prevent further damage to property or flooding. Diagrams are classified by Kress and van Leeuwen as a type of image that is usually for scientific documents such as FEMA's. The diagram of the gas valve can be labeled as a topographical structure because it is an accurate representation of the physical relation to the real object. This is a huge contrast to the icon, with different intentions and meanings. The use of an icon simplifies the content, which can be useful in certain situations. Unfortunately in this context, it does not add to the information provided within the text, whereas the diagram would be something citizens could directly reference to better understand what

action to take concerning structure. These processes show the different values place on types of information (structural versus personal safety).

CLASSIFYING INFORMATION CLASSIFIES CITIZENS

When examining the classification system FEMA uses to categorize their publications, I found that there are instances within the system that can cause disadvantages to non-homeowners. Within the earthquake webpage, there are a total of five categories based on audience type. The first two ("Individual and Families" and "Teachers and Kids") are meant for people individually, implying personal safety, while the other three ("Private Sector and Small Businesses;" "Public Policy Makers and Planners;" and "Business Designers, Managers, and Regulators") are described as being written for those who make changes to structures. The first two categories are gravitated towards non-homeowners while the remaining are specifically concerning homeowners. Some of the categories are related to changing business establishments, rather than personal homes. There are many overlaps between categories, which lead to the sampling strategies that were used in the study. While this overlap seems appropriate in some instances as previously noted (The Turtle book, for example), some occurrences seem less appropriate. The following are examples of instances that expose the privileging of information by FEMA. .

An example is the "What to Do Before, During, and After an Earthquake" poster. This poster provides general information about the latter, but the only image is the "Drop, Cover, and Hold On" poster intended for "Teachers and Children," according to FEMA. This makes the "Drop, Cover and Hold On" occur multiple times as the "What to Do" poster is categorized under "Individuals and Families", "Teachers and Kids", "Private Sectors and Small Businesses." This is problematic because the audience is meant to be children, but is distributed to adults. This

leads to an oversimplification that could result in a miscommunication of the severity of the damage that could occur in this situation.

What To Do Before, During, and After an Earthquake

Recent earthquakes remind us that we live on a restless planet. But there are many important things we can do before, during, and after an earthquake to protect ourselves, our homes, and our families.

Before an Earthquake

It is important for individuals, families, organizations, and communities to identify their risk, make a plan, create a disaster kit, and remove, relocate, or secure anything that can

- Fall and hurt someone
- Fall and block an exit
- Fall and start a fire
- Require a lengthy or costly clean-up

During an Earthquake

DROP to the ground, take **COVER** by getting under a sturdy table or other piece of furniture, and **HOLD ON** until the shaking stops. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.

DO NOT RUN OUT OF THE BUILDING DURING THE SHAKING AS OBJECTS MAY BE FALLING OFF THE BUILDING AND CAUSE SERIOUS INJURIES OR DEATH.

After an Earthquake

Safely evacuate. Please note that aftershocks could happen. These additional shaking events can be strong enough to do additional damage to already weakened structures and can occur in the first hours, days, weeks, or even months after the main earthquake. Have a professional engineer or local building official inspect the structural integrity of your home and/or building for potential damages. This should also include:

- Inspecting your chimney for unnoticed damage that could lead to fires. Even a few cracks not obvious at first glance can create an unsafe condition the next time the fire place is used.
- Checking for gas, electrical, sewer, and

Figure 10. What to Do Before, During, and After an Earthquake Poster

The poster is a one page document that provides bullet points on what to do before, during, and after an Earthquake. This poster shows an illustration of a classroom in which several students and a teacher are under their desks, holding onto the legs. FEMA describes the DCHO poster as "intended for classroom use and updates a previous edition," (http://www.fema.gov/media-library/assets/documents/3266) implying there was another poster of similar content. This simplified image could be viewed as an acceptable poster if only meant for children, but this publication is used in multiple instances throughout the FEMA website, changing its audience each time it is seen in a new category as previously stated.

The use of simplified images is a frequent issue within FEMA's earthquake publications for non-homeowners. The detailed images seem to be reserved for homeowners--providing specific material about structural concerns. The simplification of objects based on content and audience is something that Schriver describes that can be applied to children's literature or

illustrations. An issue arises when this publication is distributed to audiences other than children, or for which they were intended. The same principle applies if a technical document with diagrams about shutting off a gas valve were present in a children's book. The design would be illogical because the information would be too complex for the audience (children). Overall, the placement of the publication is more questionable than the image itself. This is a classification concern that could possibly be solved by reorganizing the categories or making more clear distinctions between audiences.

PROVIDING PRIVILEGE TO HOMEOWNERS OR BUSINESSES OVER NON-HOMEOWNERS

After determining that FEMA uses design to create and facilitate knowledge for users, I assert that there is a distinction made between information for homeowners and non-homeowners. In this section, the separation is more clear and specific. I use examples from visual analysis of images rather than document principles such as length, etc. I will provide more information on how FEMA uses classification and image design to privilege homeowners specifically while leaving out non-homeowners. It is important to consider the types of audience and accessibility to the material. An issue that affects both groups is what material is available in print and through the website. During a time of disaster, there will most likely be little to no access to internet, meaning the online documents will be of no use during or after a quake. This means that 1. The documents need to be detailed on earthquake preparedness and 2. Understanding physical safety at any time is extremely important. I propose that in order to remedy the issues addressed in the levels of discourse, there should be changes in classification, types of images and documents, and image content.

For this portion of the study, I split the documents into two categories: documents on structural information and documents on physical safety information. The issue with this dynamic is the lack of information for physical safety as opposed to structural safety. This has a negative effect on non-homeowners because there is limited information to help them prepare. It also has a generally negative effect on both groups because they still need general safety information to protect themselves outside of the home. I was able to draw these conclusions because of the social roles within the rhetorical situation of the text.

REVISITING CLASSIFICATION

Based on the overlap of publications within the five categories, there needs to be more efforts to properly classify the publications provided on FEMA's website. The overlap found in the current navigation creates confusion about who the audience for each document is, and therefore changes the meaning. As detailed by Schriver, the types of images used are based on the audience and purpose, therefore there should be less overlap if they concern different categories of people. There were several publications that were not listed on the earthquake webpage that were referenced in particular documents. These publications would be reconsidered and assessed based on their relation to the other publications already assigned to categories. Adding these documents would potentially provide stronger details about earthquake safety for all citizens, depending on their content.

The reason FEMA's classification system is failing is because there are publications in several categories that do not match up to their intended audience's needs. I suggest reorganizing these publications with more effective categories in order to guide audiences to the appropriate space. Bowker and Star (1999) assert that classification systems are only visible when they are not working properly. For example, publications such as the "Drop, Cover, and Hold On" poster

should be limited to the "Teachers and Kids" section, ultimately removed from the "What to do before, during, and After an Earthquake," which is more appropriate for an adult audience. Another suggestion would be to create new categories altogether in order to better fit publications, ultimately resulting in less overlap. Creating a new classification system would take a large amount of thought and time, but could ultimately result in a much stronger means of communicating risk to the public.

DOCUMENT TYPES

The document types used by FEMA are often booklets or posters. The longer publications are often related to structural safety. There are also CD-ROMs available for large sets of information such as a collection of resource for "Individuals and Families." A variety in document types based on their audience would potentially aid the balance between physical safeties versus structural considerations. This could mean lengthening the personal safety measures, or reducing the structural booklets. There are many possibilities that could be explored in future research or conclusions.

CHANGING IMAGE CONTENT

Although the ratio of images to text are similar in both types of publications (homeowners versus non-homeowners), I would argue there is an imbalance when analyzing the content related to these images and their complexity. Oftentimes icons or simplified images are being used within publications designed for non-homeowners, while documents pertaining to structural changes have diagrams and detailed illustrations or text. The amount of detail needed for structural concerns is going to be relatively high, based on the information needed to make changes. But, in some cases, the need for detail in physical safety outweighs the need to know

information about your home. Even for those who do have the ability to change their structure, it is valuable to know what to do *outside* of the home, just as well as *inside* it.

An example of this claim can be seen in the "Earthquake Home Hazard Hunt Poster." he front of the poster shows a diagram of a home and areas of the home that can be prepared. Security features include tasks such as securing heavy pictures over beds, strapping down computers, and securing ceiling fans. This diagram covers the entire front of the poster, but the back details specifics about various elements in the home.

Figure 11. Back of Earthquake Home Hazard Hunt Poster

There are a total of nine images on both sides of the poster, including the repeated diagram. Each of the images are classified as diagrams because they are all a detailed representation of something real on a smaller scale.

FEMA describes the poster as "visuals and descriptions so that homeowners can identify and fix at-risk areas of their homes to reduce future earthquake damage and disruption" (http://www.fema.gov/media-library/assets/documents/3261), excluding non-homeowners. This

contrasts the fact that it is listed under “Individuals and Families,” which does not imply that it is only meant for homeowners. It is also important to note the detail on the images. There is a text box on the side that talks about personal safety, but it does not contain any images. Based on Schriver’s conclusions about the stickiness of images, citizens are less likely to remember the information in the text box because there are no images to compliment the material.

It is important to cover as much information about general safety as possible to ensure the protection of all citizens, regardless of living situations.

IMPLICATIONS

The consequences of unsuccessful risk communication can result in injuries or even fatalities during or after a crisis. When citizens are not appropriately informed about what to do before, during, or after a disaster, they are more vulnerable to accidents that could be avoided with the proper information accessible. Preparation and knowing what to do during and after an Earthquake can be the difference life and death. In the following section, I describe specific concerns within the FEMA publications that could cause a lack of communication to both homeowners and non-homeowners, and the potential solutions.

POTENTIALLY OUTDATED MATERIAL

When viewing the publications, it is difficult to ignore the simplification of information that spans across documents for both children and adults. Several documents repeat the phrase, "Stop, Drop, and Hold on." This statement is eerily familiar to the "Duck and Cover" propaganda videos used in the 1950's during the Cold War. There is even a figure called "Bert the Turtle" in a cartoon, similar to "Terry the Turtle" in the children's book about earthquakes. The 1950s videos were meant to prepare people from atomic bombs. In the situation of an atomic bomb, there are arguably no procedures that would save someone in this disaster, unlike in an earthquake. It is difficult to justify no real advancement in safety protocol over a 65 year time span with an actual disaster in which safety is more likely than in an atomic explosion.

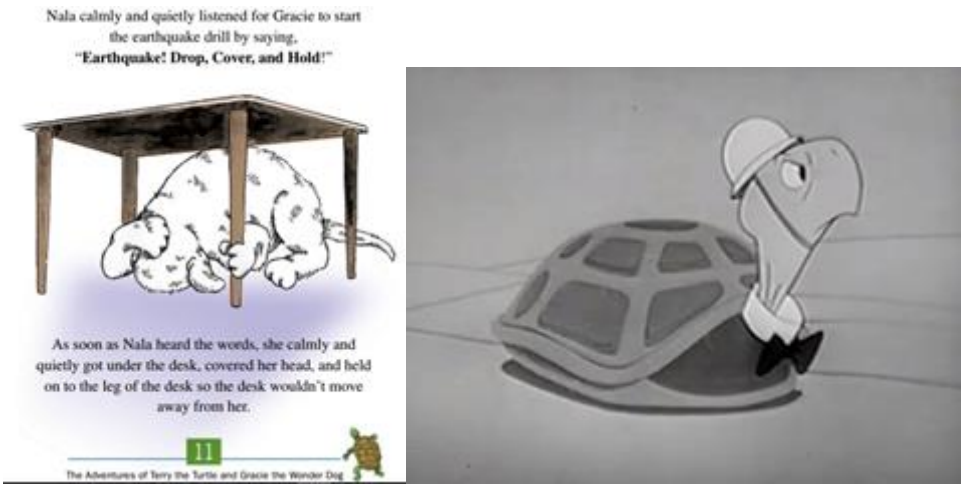


Figure 12 and 13. Comparison of page from "Terry the Turtle" to "Bert the Turtle" from video

Some publications have been updated since the Department of Homeland Security absorbed the Federal Emergency Management Agency, but the question still arises: Has enough information been provided to keep citizens as prepared as possible in the event of a disaster?

ADDITIONAL PUBLICATIONS

There are some publications that make references to FEMA documents that are not provided on the earthquake website. The "Are you Ready" handbook provides additional publications at the end of the earthquake section that are not provided on the earthquake publication web page that would seem to be helpful for citizens. There are also additional publications that are not distributed online. This leaves possibility for multiple publications that may not be noted online but are available elsewhere. There are other examples of FEMA publications that reference outside sources, such as the Turtle children's book and others. Future research may consist of finding more publications through the FEMA Publications Warehouse.

REDESIGNING PUBLICATIONS

In order to include more types of images, there needs to be a redesign of several publications. Below is an example of a reconstructed FEMA document that adheres more to design principles and audience:

Figure 14 and 15. Original FEMA Poster versus Reconfigured FEMA Poster (created by author)

Using the "What to Do" poster as a model, I pulled various images selected from the earthquake publications on the website to created a more encompassing design. The newer design contains drawings, icons, and photographs to provide various effects for the audience. By providing a

variety of images to go alongside the text and limiting the audience to the category it is first characterized as, I have created a new means of design for FEMA's consideration. This can be considered a step in the direction of understanding audience and design principles in the field of risk communication.

REDESIGNING CLASSIFICATION

By reorganizing the publications on the website, there could be less overlap and therefore less issue with audience confusion (i.e. having children's publications under adult categories). A new classification system could also incorporate publications that were for some reason left off of the main page. This could be done through similar research strategies that I used to gather my data, specifically searching through current publications or visiting the Government Publishing Office website. With a stronger classification system, citizens would be able to access information easier and that would ideally be more relevant to their needs.

FURTHER RESEARCH

There are many ways in which my research here could be extended or replicated to understand a variety of concepts. The same research questions would be used, but applied to any type of disaster relief organization or documents. There is also the possibility of usability or accessibility as a means of research. By testing users on how they navigate the website, classification and redesign of documents could be more informed by audience. I would like to see this project as an example of using visual rhetoric and risk communication to create stronger technical communication for citizens.

USABILITY

In order to determine how the public is responding to these documents and analyzing their effectiveness, there needs to be interaction with the audience. This is where usability testing comes in. Citizens would view these websites and provide feedback, as seen in Schriver's work. Although this was not the focus or intent of the study, it could be appropriate for future research. A mixed methods approach is recommended for this approach in order to receive both qualitative and quantitative results.

To perform the usability testing, I would reference the hazard maps FEMA provides to determine what regions in the United States are the most vulnerable areas to earthquakes. These areas, according to FEMA, are the most likely to be the victim of an earthquake. By testing these areas, I could see if the information on the website and print was helpful to those most vulnerable. I could also compare the feedback to those who are not in the areas identified as most

hazardous. Visual rhetoric would have the same emphasis as the previous project, with an increased focus on how audience responds to particular images.

WIDER SCOPE

I chose to focus on earthquake documents for this project, but I would like to replicate my work here for other disasters. One could study FEMA's interpretation of manmade disasters such as acts of terrorism. Examining the language FEMA uses as well as the images chosen to complement the text. With the increase damages of fracking, the research on earthquakes should continue as well. Ideally I would like to be able to replicate my research onto any type of disaster, so I would be open to approaching any other organization or disaster type. It may also be interesting to consider local organizations over global. With local organizations, there is more ability to cater to the audience.

CONCLUSION

The study conducted in this project was meant to determine the audience FEMA addresses in its publications for earthquakes. The variety of documents tells us who FEMA is directing their publications and what the message they are intended to send. By using Critical Discourse Analysis, I was able to determine FEMA's privileging of information about structural safety over physical well-being, leading to a skewed power dynamic in which non-homeowners are at a disadvantage over homeowners. Not only are non-homeowners at a disadvantage, but the homeowners are also losing the opportunity to learn more about their physical safety as well. When we talk about earthquakes, we know that they can occur at any time in any place. That means citizens need to know more about what to do during an earthquake in any situation, not just emphasizing what can happen in the home.

I argue the text within the earthquake publications have an imbalance between structural and non-structural information. Although the majority of the publications that are repeated in different categories are related to both personal and structural safety, the overall ratio of page length to publication type is not evenly distributed. Many of the publications pertaining to individuals and families are much shorter. In order to remedy this, documents such as "Are You Ready?" should be broken into smaller publications about specific disasters. For example, there are sections in the booklet about general preparedness for disasters, regardless of type. This information could be disaster specific, and maybe even contain information about general evacuation procedures.

When it comes to technical communication, there are a lot of potential consequences for faulty design. This organization has taken on the responsibiltiy of informing citizens about both manmade and natural disasters, leaving little room for error in their distributions. In order to best determine the success of their current designs, I used the principles of Schriver and Kress and van Leeuwen to assess the effectiveness of images. Ultimately, I determined that there needs to be stronger design principles in place and argued for a need for a stronger classification system. By improving these aspects of their website, FEMA could improve their communication both online and in print. I hope others find this research to be replicable to other organizations or types of disasters FEMA addresses in the future in order to create better technical communication.

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