**MPC MAJOR RESEARCH PAPER**

# More Than 1,000 Words: Visual Narrative Structures in CDC Instagram Posts During the 2014-15 West African Ebola Crisis

Jeff Junke

Dr. Matthew Tiessen

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## ABSTRACT

This major research paper (MRP) is a visual social semiotics study that identifies dominant visual narrative structures found in a series of photos posted to Instagram by the Centers for Disease Control and Prevention (CDC) during the 2014-15 West African Ebola epidemic. Based in scholarship from fields including visual culture, public health visual communication, and global health communication, the paper identifies the characteristics of each identified visual narrative structure and how they relate to larger historical discourse in health communication. This MRP identified six major visual narrative structures across 63 relevant photos that, together, show the CDC to be an organization concerned with the following two things, amongst their other priorities: 1) the epidemiological activities and expertise of its staff, and 2) a focus on the global health security regime and, in turn, the protection of American citizens in North America over those suffering in affected African countries.

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The spread of infectious disease has long been documented in historical records. From the Black Death of the 14th Century, to the Spanish Flu epidemic of 1918-20, to more recent and equally significant viruses such as severe acute respiratory syndrome (SARS) in the early 2000s or the Middle East respiratory syndrome (MERS) in Saudi Arabia and Korea in 2015, severe illnesses can spread across countries and continents despite the best efforts of national and international organizations and institutions. Today, health organizations have access to a multitude of platforms to share news and details with the public about important outbreaks of disease. Indeed, analysis of the ways in which this information is shared – and the media used to share it – can provide important insights into the priorities and perspectives of these large health organizations on a global health scale.

A recent case that lends itself well to in-depth analysis is the 2014 Ebola outbreak in West Africa. On March 25, 2014, the World Health Organization confirmed an outbreak of Ebola in Guinea, which quickly spread throughout the summer to the neighbouring countries of Sierra Leone and Liberia. By August, the Centers for Disease Control and Prevention (CDC) in the United States was experiencing its first real preparedness test, monitoring individual cases of Ebola in American hospitals and the potential for transmission. As one of the foremost United States-based public health organizations, the CDC started communicating facts about the outbreak, the disease, and its own role in fighting the outbreak in order to educate and inform the American public through various media channels.

To inform American citizens of this dual role and its work fighting the disease, the CDC took to its social media accounts, including a new Instagram account created at

the end of 2013. The use of Instagram by the CDC was significant for two reasons. First, the adoption of social media by public health departments has been characterized as being in its "early stages" (Thackeray et al., 2012, p. 6); therefore, the use of Instagram by the CDC can be considered a pioneering use of social media. Second, the CDC's use of Instagram opens up a new digital chapter in visual public health communication. Past visual modes of health communication have been characterized by organizations using analogue visual materials such as posters and pamphlets. As the CDC posted new images to its Instagram account during the 2014 Ebola epidemic, it signalled a new frontier for visually communicating global health issues to American audiences.

At the centre of this Instagram-based health campaign was the CDC's intervention itself. As an organization that sees part of its role as "detecting and responding to emerging health threats" (see "Mission, Role, and Pledge" in bibliography), the CDC's purview exists not only within the United States, but across the globe. Furthermore, using words such as "detecting" and "responding" aligns the CDC with what Lakoff (2010) has described as the global health security regime, which, as he points out, focuses more on stopping the spread of disease than providing more humanitarian aid (p. 64). Therefore, we can examine the CDC Instagram account as a form of health communication, but also as a form of justification for the global health security regime.

In this Major Research Project (MRP), visual narrative structures in CDC Instagram posts related to the Ebola epidemic will be identified through an interpretive visual social semiotic content analysis. Informed by the studies of visual culture, public health communication, postcolonial perspectives on global health, and contemporary

issues related to social media and health promotion, this MRP will also examine and interrogate the ways these visual narrative structures relate to and extend the history of public health visual culture, and how these visual narrative structures can be interpreted using a postcolonial reading of contemporary global health communication.

## LITERATURE REVIEW

The literature review for this MRP focused on four main areas of research: 1) visual culture theory and American visual culture; 2) public health communication and visual culture in the 20th century; 3) global health in post-colonial regions; and 4) social media and health promotion. Each of these areas of research features extensive scholarship with a range of interdisciplinary approaches. Visual culture studies draws on a strong theoretical background from such fields as art history, media studies, and communication. Public health communication also features strong levels of research, including specific a focus on visual culture. In terms of global health, post-colonial readings of various initiatives help to highlight who benefits from interventions by health organizations. At the same time, limited research exists that specifically examines the efficacy and suitability of Instagram as a platform for public health communication and promotion.

### Visual Culture Theory and American Visual Culture

Scholarship in the field visual culture provides much of the context for this MRP. Emerging as an academic discipline in the late 20th Century, studies in visual culture critically examine visual representations across a range of media. Scholars studying

visual culture, examine not just what we see, but also how we see and how ways of seeing construct meaning.

In *Introduction to Visual Culture* Nicholas Mirzoeff states that the current postmodernist era is marked by the accelerated rise of visual media and communication, where the global circulation of images has become an end in itself (1999, p 8). Mirzoeff credits this high-speed ascension of the visual in part to the Internet, which even in 1999 allowed for easier transmission and sharing of information, both textual and visual. Thanks to this proliferation of visual materials, studies in visual culture today focus on the visual experience in everyday life, which can be unstable in relation to exterior realities and the complexities of modern life (Mirzoeff, 1999, p.7).

Projects in visual culture can take on many different forms and draw on a variety of theoretical perspectives. Following Mirzoeff, Fuery and Fuery (2003) apply a range of critical theories to the study of visual culture. For the purpose of this literature review, two chapters stand out as most relevant in relation to the proposed method of analysis. In "Investing in Power and the Body," Fuery and Fuery (2003) summarize Michel Foucault's examination of the three different types of power struggles that the spectator must experience in order to engage successfully and critically with an image: domination, exploitation, and subjection. Through the interrelation of these three domains, Foucault says that a comprehensive analysis of power relations takes place, enabling the spectator to identify the links that develop between power and knowledge (Fuery and Fuery, 2003, p. 9-10). In order to reveal the power-knowledge dynamic, Fuery and Fuery (2003) examine films in which a character's change in physicality functions as a supporting structure. In the film *Philadelphia,* for example, Andrew Beckett's body is used "as a

vessel to…draw attention to the power relations at work in the social reality of the film," vis-à-vis the position of gay bodies in hegemonic social and cultural institutions (Fuery and Fuery, 2003, p. 14).

The second relevant Fuery and Fuery (2003) chapter relates to the work of Roland Barthes. In "Spectator, Culture, Image," Fuery and Fuery (2003) discuss Barthes' study of the ways images are read, their placement in culture, and their various associative meanings relative to one's contextual knowledge. According to Fuery and Fuery (2003), the spectator's act of viewing and subsequent interpretation gives images their meaning. Additionally, a spectator's previous contextual and cultural knowledge may give new and unanticipated meaning to images (p. 97). Barthes emphasized that critical viewing and dissociating images from their original context was crucial in order for active and engaged visual readers to come into being as they rebelled from traditional interpretive modes, and added new voices to the critical discourse of an image (Fuery and Fuery, 2003, p. 97).

Visual culture has also been examined in a specifically American context. In particular, two collections of essays, Holloway and Beck's *American Visual Cultures* (2005) and Rawlinson's *American Visual Culture* (2009), point to various moments in the history of the United States where issues of race, feminism, gender, and politics emerge in visual material. However, Rawlinson's introduction points to the concept of "American exceptionalism" that has been a point of contention for many scholars. Originally coined by Alexis de Tocqueville as a comment on the uniqueness of the social order in the United States as compared to Europe, American exceptionalism eventually took on other associated meanings. In general, the term has been used to signal the

superiority of American culture and systems compared to those abroad, something visual culture scholars in the 1990s sought to challenge.

A more recent aspect of visual culture studies observed in this literature review, and to be considered during analysis, relates to the nature of images as they are experienced through software and social media. Manovich (2013) argues that software manipulates the ways in which various types of digital media are displayed to our senses through different program controls that interpret the numerical codes found within digital files (p. 36). Hochman (2014) similarly argues that the changing experience, or re-conceptualization, of media is a "continuous presentation of multiple information units from many users, places, and times" as displayed in the data stream (p. 1-2). The data stream presents a multiplicity of worldviews that places media in constant comparison, and through the uses of functions such as "tags," changes the way images may be organized within a collection (Hochman, 2014, p. 3). Manovich (2009) also points to the affordances of social media that provide users with "unlimited space for storage and plenty of tools to organize, promote, and broadcast their thoughts, opinions, behavior, and media" (p. 324). This scholarship provides an important point for consideration in terms of the potential for images to gain new cultural associations through technological mediation.

The literature reviewed here partly reflects the rich theoretical background of visual culture studies, and the potential role digital technologies may soon play in the field. More importantly, however, the literature reviewed here presents the tradition of the study of images, helping to support the scope and purpose of this MRP.

## Public Health and Visual Culture in the 20th Century

Health communication has generally focused on three main objectives: 1) behavioral change, 2) self-empowerment, and 3) collective actions (Berry, 2007, p. 91). Health communication has also regularly relied on images to show proper or improper health behaviours and their consequences as emphasized in analyses of public health posters by Cooter and Stein (2007 and 2010) and issues with sexual health promotion in the UK as examined by Lee (2007).

To provide an American context for public health, Nancy Tomes' seminal book *The Gospel of Germs* (1998) gives an extensive background for the history of public health in the United States. In her epilogue, Tomes examines the profound impact of AIDS on the public health system in the Unites States, changing views regarding the capabilities of scientific medicine to cure disease, and challenges regarding the ability of health departments to effectively and objectively educate Americans on important health behaviours. In a later article, Tomes (2000) extends her 1998 epilogue on the AIDS crisis by describing the ways American citizens and public health professionals have responded to the threat of epidemics since the AIDS crisis and how various and divergent meanings are linked to new public health crises by scientists and the media. Lastly, King's (2015) chapter in *Empires of Panic: Epidemics and Colonial Anxieties* argues that American depictions of infectious diseases have used common visual elements. King works from arguments found and related to Tomes' (2000) article to argue that epidemics of well-known diseases, such as Ebola, are continually presented as "new" phenomena, which underlies a common "outbreak narrative" found throughout the last century (2015, p. 181-182).

The themes discussed in Tomes' (1998) epilogue also appear in more recent work examining public health visual culture by Serlin (2010). In the introduction to his anthology, *Imaging Illness: Public Health and Visual Culture*, Serlin asserts that public health visual culture from 20th century colonialism was dominated by "altruistic images of health technologies, beneficent institutional leaders, and smiling natives" as well as images drawn from biomedicine (2010, p. xxi and xxiii). In other words, public health communication looked to instil trust in the authority of modern scientific medicine.

Cooter and Stein (2007 and 2010) extend Serlin's (2010) argument by examining the changing visual culture of public health posters from various epidemics during the 20th century. Up until the AIDS crisis, modern medicine played a central role in informing people and rationalizing messages found in public health posters. However, the increasing role of advertising and design agencies, and the use of digital production technologies, also started to shift the public health poster further into the realm of advertising and marketing during the 1960s and 1970s. As the AIDS crisis dispelled the notion that individuals could be treated by universal medical methods, the public health poster started to communicate something reminiscent of a "visual sales pitch," commodifying the idea of health and the healthy person (Cooter and Stein, 2010, p.187). Like advertisements, Cooter and Stein (2010) also highlight an important quality of public health posters: their ephemerality. As materials that are displayed and then taken down or covered up, public health posters may only have limited impacts on individuals, and determining the historical context in terms of where they were displayed can be difficult (p. 173).

While much research has been done on the changing nature of public health visual culture, evaluations of the success or failure of images in communicating health and illness have also been carried out. In Lee (2007), sexual health promotion materials in a UK magazine for gay men are examined. Lee (2007) explains that these health promotion materials are inadequate because the magazine's definition for "men who have sex with men" does not include men who may identify as straight or bisexual, and therefore homoerotic images of men in close contact may not register with these individuals (p. 207). Furthermore, Lee (2007) argues that these images are often at odds with the textual material in the magazine that urges readers to practice safer sex (p. 215). In a different study, Thompson (2012) determined that stock images and other visual elements are being used in a growing trend to market mental illness as a growing concern for people who may not in fact be mentally ill by examining various versions of the website HappyPlace. Both these examples apply theory to critically determine the effectiveness of images used in health communication.

Thanks to these historical studies, rich context is provided on the changing nature of visual public health communication, which will influence this examination of CDC Instagram photos and their relationship to Ebola. This background can also help to determine a public health visual culture timeline that may act as a beneficial aid when examining these online images.

## Global Health in a Postcolonial World

The objectives and tactics of global health have been frequently debated among academics and researchers, especially when actions are taken to secure or strengthen

health and health systems in locations formerly controlled by colonial powers from Europe and the United States, including Guinea and Sierra Leone. The colonial system pursued by Western nations contributed to the discovery and spread of new infectious diseases. As a result, these colonial powers sought to exert control over these diseases in order to continue the colonial enterprise (Dutta, 2008, p. 193). According to Dutta (2008), this need to control disease created a "condition of dominance" in which Western solutions soon became critically important for the development and control of colonized spaces (p. 193). In contemporary scholarship, global health has routinely come to be seen as a continuation of these colonial policies as national and international health organizations attempt to stop the spread of disease in developing nations under the guise of international cooperation and development and as a way to protect Western populations.

In *Security, Disease, Commerce: Ideologies of Postcolonial Global Health* (2002), Nicholas B. King makes the connection between 19th and 21st century ideologies of medicine and public health through an "emerging diseases worldview." Throughout the 1990s, scientists and public health officials in the U.S. argued that "emerging diseases" such as HIV/AIDS and Ebola posed a threat to national security and international development (King, 2002, p. 764). This was made clear by a report produced by the National Academy of Science's Institute of Medicine in 1992 that explicitly stated that Americans were no longer insulated from diseases they assumed were "relegated" to the developing world due to changes driven by a host of factors including migration, war, and the increasing ease international travel (King, 2002, p.767-768). King (2002) also briefly summarizes the organizational history of the CDC,

describing its beginnings as an anti-malaria initiative led by the U.S military, up to a 2001 CDC-authored plan calling for the organization to take on a more interventionist role in countries affected by epidemics and outbreaks as a way to stop diseases before they reach the U.S. (p. 775). With these examples, King (2002) argues that the emerging diseases worldview sought to develop a system of global health surveillance through increased international integration and development led by American institutions, including the CDC. Furthermore, King (2002) delivers a lengthy discussion comparing the integrative aspects of the emerging diseases worldview and the control-based ideologies of colonial medicine and public health, concluding that the emerging diseases worldview champions pluralist rhetoric and integrative ambitions, but also interweaves concerns of American national security and economic dominance (p. 782).

Similarly, Mohan J. Dutta's book *Communicating Health: A Culture-Centered Approach* (2008) presents a comprehensive summary of how the presentation of health and culture has been greatly shaped by historical and current global forces, including colonialism and globalization. However, Dutta (2008) goes further than King (2002), arguing that global health is continually framed through a discourse that extends 19th century presentations of colonial spaces as contaminated, a concept central to the introductions of health surveillance, cordon, and quarantine (p. 239). To show this in a 21st century context, Dutta (2008) points to a 2000 announcement by the Clinton administration that labelled the HIV/AIDS crisis affecting formerly colonized nations in Africa as a threat to American national security. During this time, federal support for health organizations partially came through the U.S. Defence Department, making explicit the connection between security and public health (Dutta, 2008, p. 239). This

announcement was also a recognition that the developing world was no longer as distant from the health crisis as it may have seemed as geographic boundaries became increasingly fragmented through the process of globalization.

King (2002) and Dutta (2008) both lay the foundation of an extensive debate over international global health discourse. Lakoff (2010) also provides a useful description of what he considers the two "regimes" of global health: global health security and humanitarian biomedicine. While global health security focuses on overseas surveillance, tending to take reactive approaches to emerging disease threats, humanitarian biomedicine focuses on increasing access to existing medical technologies and the development of medication for poorer countries (Lakoff, 2010, p. 59-60). Lakoff (2010) concludes that an opportunity exists for these two regimes to work collaboratively (p. 75).

Other scholars have completed more critical analyses of the global health security regime through the examination of strategic global health documents. Using the WHO's *Global strategy on diet, physical activity* (2004), Brown and Bell (2011) argue that though dominant Western powers led the charge in creating this global health policy, the document was ultimately interested in a mission of integration through a common global health narrative as evidenced by the WHO's acceptance of certain demands made by developing countries. Conversely, Sastry and Dutta's (2012) postcolonial reading of the Bush administration's "U.S. President's Emergency Plan for AIDS Relief" (PREPFAR) contends that the report's call for intervention and international development to stop the spread of HIV/AIDS in developing nations actually relies on neo-colonial logic of a

"backward Third World culture" (p.530) in need of altruistic U.S. invention, which again is focussed on the protection of American citizens in North America.

Overall, when viewed through a post-colonial lens recent global health scholarship unmasks the motivations of health security and surveillance as most beneficial for Western nations which are generally the first to identify where and when outbreaks happen. Though these same Western nations send teams of experts from health institutions, such as the CDC, to fight infectious disease outbreaks, most critical scholars contend that these teams are largely sent to stop the spread of the disease before it appears in their own Western backyards. The studies reviewed for this MRP help support a critical perspective from which to examine whether or not the photos produced and provided by the CDC depict narratives emphasizing global security or look to impart a sense of humanitarian aid.

## Social Media and Health Promotion

Though it could seem self-evident that social media would play a large role in health promotion, many studies included in this literature review characterize social media adoption by public health departments as being in its early stages. Though many of the studies reviewed are short and informal and call for additional research to be completed, recent work also points to the potential for health agencies to use two-way forms of engagement with social media users.

One short study that supports the idea of a slow adoption rate of social media platforms comes from Thackeray, Neiger, Smith, and Wagenen (2012). In a cross-section study of state health departments in the United States, Thackeray et al. (2012) found that

60 per cent of state health departments were using at least one social media platform and on average were making one post per day (p. 2-3). Furthermore, Thackeray et al. (2012) found that many state health departments were not using their social media accounts to interact with the public, opting instead to share information in a one-way stream (p. 5).

Another major concern that was found during this literature review was the uncertainty that social media was able to reach intended and diverse audiences who use the health care system. McCarroll, Armbruster, Chung, Kim, Mckenzie, and Gruenigen (2013) found that social media was being used to connect with hospitals to communicate personal health information, but that more research was required to determine if hospitals were able to reach clients and patients accurately and effectively. Chou, Hunt, Beckjord, Moser, and Hesse (2009) similarly determined that social media use is not distributed equally across demographic factors. Therefore, as Chou et al. (2009) note, "health communication programs utilizing social media must first consider the age of the targeted population to help ensure that messages reach the intended audience" (Conclusions section, para. 1).

Lastly, in a survey of 281 public relations practitioners in public health departments in communities of various sizes across the United States, Avery, Lariscy, Amador, Ickowitz, Primm, and Taylor (2010) found that urban communities were more likely to use social media as a way to share information. In their investigation, the authors pointed to differences in communities' ability to access high-quality Internet service as one potential reason for this difference (Avery et al., 2010, p. 355). Additionally, Avery at al. (2010) determined that the extent of adoption of particular social media tools

remains largely an exploratory project for many public health departments as evidenced by the fact that only 49 participants actually used social media (p.355).

Research has also focussed on how public health organizations can move forward with increased two-way engagement. Korda and Itani (2013) and Heldman, Schindelar, and Weaver III (2013) both call for proper evaluation of social media use for health promotion and behavioural change, and lay out common challenges for health agencies such as loss of message control and financial resource allocation. However, Heldman, Schindelar, and Weaver III (2013) notably point out that conversations around health topics happen on social media regardless of the of the involvement of health agencies, furthering the need for these organizations to determine how best to engage with online audiences (p. 12).

Though these studies set a wide stage for any kind of social media investigation, most interpret social media in terms of Twitter or Facebook. However, at the time of writing, Instagram was not largely featured in any of the studies focusing on the United States examined for this literature review. Though Instagram has a smaller number of users than Facebook or Twitter, and concerns over the capability of social media to reach intended audiences are valid, there is tremendous opportunity to explore new territory relating to the use of social media for health promotion.

## RESEARCH QUESTIONS

Given the absence of Instagram as an outreach tool among health organizations, the traditional use of imagery in public health messaging, the postcolonial implications of the CDC's presence, and the longstanding study of visual culture, it is important to examine the types of visual material being produced by the CDC online for the American

public. This MRP will identify major visual narrative structures found in the images of CDC Instagram posts and comment on how these visual narrative structures relate to larger historical scholarship in public health and global health.

The research questions for this project are as follows:

1. What are the dominant visual narrative structures found in CDC Instagram posts related to the West African Ebola crisis between March 2014 and February 2015?
2. Using existing scholarship, how do these visual narrative structures relate to the larger history of health promotion in public health visual communication and culture in the United States?
3. Referencing existing scholarship, how do these visual narrative structures characterize the role of the CDC as a global health actor?

The following Methodology and Findings sections discuss the process of data collection, analysis, and overall conclusions in relation to these research questions.

## METHODOLOGY

### Data Collection

Data collection consisted of downloading screen captures from the CDC's Instagram account and saving relevant entries by date onto a computer. A naming convention was also developed for each file, listing the order in which the post was uploaded, followed by the upload date. Because the CDC's Instagram account is public, data was collected without having to request permission to access CDC posts and other content, making collection unobtrusive. This method presented a straightforward way to capture relevant data.

The timeline of data collection aligns closely with when the CDC first took notice of the epidemic and the overall timeline of the epidemic in West Africa. The CDC announced its initial response to the outbreak on March 25th, 2014 after the World Health Organization issued a statement confirming an outbreak of Ebola in Guinea (see "Previous Updates: 2014 West Africa Outbreak"). However, through a preliminary overview examination of CDC's Instagram account, dedicated posting related to the Ebola epidemic did not start until August 2014. Regular posting was sustained throughout September, October and November, with a smaller second wave of Ebola-related posts uploaded in January and February 2015 as the epidemic continued. During peak times of Summer and Fall 2014, posts on the Ebola outbreak were made almost daily, sometimes more than once in a day, by the CDC. Therefore, the timeline of data to be studied consists of posts made between March 1, 2014 and February 28, 2015. This timeline captures a significant amount of time before dedicated posting starts, and captures all Ebola-related posts within a one-year period.

Using this timeline data was collected and included both the image and textual content found of an Instagram post. To ensure the relevancy of data for this MRP, visual image and textual description sections of these Instagram posts was examined for the following terms and one hashtag:

- "Ebola," and "#Ebola"
- "West Africa,"
- and the names of the most critically affected countries: "Sierra Leone," "Liberia," and "Guinea."

The use of these terms during data collection acted as a strategic filtering device to ensure that a connection existed between the post to be examined and the Ebola outbreak or Ebola affected countries. A total of 115 relevant Instagram posts made between March 1, 2014 and February 28, 2015 were collected using this method.

This method of data collection responds directly to the three research questions by collecting relevant data. Concrete connections between Instagram posts and the research questions can be made through the identification of a limited set of terms found within the descriptive text or image of each post. Any analysis of descriptive text, however, stops after the data collection as it is not a focus of this MRP.

## Analysis

To analyze the collected data, a three-step content analysis method was used to gather both quantitative and qualitative findings. Though the research questions in this MRP aim to identify clear, qualitative visual narrative structures, due to the high degree of detail found in the images shared by the CDC on Instagram it became apparent that quantifiable variables such as gender, location, and ethnicity could also be recorded. Step 1 in this process identified which CDC posts contained photos or digital illustrations and recorded the number of likes and comments each. Step 2 identified important variables in each post including the representation of gender, ethnicity, and location, among others. Finally, Step 3 included an in-depth qualitative content analysis of each post using Kress and Van Leeuwen's *visual social semiotics*, specifically looking at each post's representational metafunction. Using this method, it was possible to determine if these images contained vectors of motion, which illustrate the presence of visual narratives

(Harrison, 2003, p. 50-51). This three-step analysis process helped to develop a stronger sense of familiarity with the types of images being posted by the CDC, and in turn, assisted in the identification of common visual narrative structures. Each step in this coding process is described below in more detail.

### *Content Analysis Step 1: Secondary Filtering Process*

After completing data collection, the first step in this content analysis was to employ a second filtering process to ascertain which CDC Instagram posts featured photographic images and which featured digital illustrations. This process also identified times where the CDC had repeated an image seen earlier in the timeline. Out of the 115 posts gathered during data collection, this step recorded 103 posts containing photographs (108 total[1]) and 12 posts containing digital illustrations (12 total). Though the 12 digital illustrations featured some icons with significant meaning, they mostly comprised information communicated through text without other strong visual icons or symbols. Vectors of motion were also absent in these files. Due to this fact, these 12 posts made by the CDC did not align with the research questions in this MRP and were removed from further analysis. Additionally, out of the 103 posts featuring photographs, three posts were found to be repeat posts with the same visual content and were also removed in order to limit any overrepresentation in the data.

### *Content Analysis Step 2: Quantitative Coding*

[1] Some posts made by the CDC feature more than one photograph.

The second step in the content analysis methodology for this MRP had the remaining 100 posts (105 photographs) analyzed for quantifiable variables and their constituent values. According to Van Leeuwen and Jewett (2004) a content variable is a category that consists of a set of related, yet mutually exclusive, options (values) that are represented within a text and recorded during analysis (pg. 15-16). For this step in the MRP analysis, three broad variables were developed with corresponding values and definitions (see Table A). The variables in Table A were chosen due to the fact that they were considered to be the most evident and potentially the most significant depending on what narratives would emerge during Step 3 analysis. The corresponding values in these variables were flexible in nature and were developed throughout the coding process. Though these three variables are not exhaustive, they provide important contextual information, though limited, to identify the types of individuals depicted in CDC posts, as well as clues to where CDC photos may have been taken. This step in the analysis methodology complemented the more interpretive findings that emerged during Step 3. Furthermore, this exercise also helps to determine the types of activities or events that may be taking place in each photo and establishes a level of familiarity for the researcher to aid in the process of identifying narrative structures in Step 3.

### Table A – Step 2 Analysis Variables

| Variable | Values | Definitions |
|---|---|---|
| Location | 1. Guinea<br>2. Liberia<br>3. Nigeria<br>4. Sierra Leone<br>5. United States<br>6. Indiscernible, but not US<br>7. Indiscernible | Photo features contextual or geographical symbols and information that help the viewer determine locale. |
| Gender | 1. Female only<br>2. Male only | Human figures in photo feature contextual or cultural symbols that |

| | | |
|---|---|---|
| | 3. Both genders<br>4. Indiscernible | allow the reader to recognize women, men, or both genders are present. |
| Ethnicities Represented | 1. Caucasian<br>2. Black<br>3. Hispanic<br>4. Asian<br>5. Other<br>6. Indiscernible | Broad categories of ethnicities are present. Recorded only once per appearance in photo. |

### *Content Analysis Step 3: Qualitative Coding Using Visual Social Semiotics*

To analyze data in Step 3, an inductive qualitative content analysis, specifically using interpretive visual social semiotics (VSS), was used. More specifically, the 105 images from 100 CDC Instagram posts were examined according to Kress and Van Leeuwen's (1996) representational meta-function framework, which equips researchers to identify dominant visual narrative structures comprised of individuals and the ways they are connected by "vectors of motion." According to Kress and Van Leeuwen (1996) vectors of motion are "oblique lines" that emanate from represented participants such as humans or objects (p. 56-57). When these vectors are identified, it is generally considered that an action or narrative is taking place in a scene, especially when they are found between two represented participants. The representational metafunction is one of three meta-semiotic tasks of an image as outlined by Kress and Van Leeuwen (1996) and seeks to answer, "What is the picture about?" (Harrison, 2003, p. 50). Exploring the representational metafunction also means that the significance and meaning behind an action or narrative in a photo can also be investigated. Thanks to its interpretive nature, VSS allows researchers to speculate and challenge the kinds of events or occurrences that may or may not be taking place in a photo. This MRP aims to accomplish this same task through its representational metafunction analysis and offer interpretive insights into

what is happening in CDC visual material on Instagram and what this could say about overall CDC communication goals and messaging.

This methodological approach is the primary method used to answer the first research question, revealing what story or stories about CDC work related to the Ebola epidemic are present in an image. Using the program Atlas.ti to house image files, 63 photos were identified as having a "strong visual narrative," meaning vectors of motion from represented participants (people and objects), and/or eye-line vectors from human represented participants were present in a photo. Strong visual narratives also tended to be supported and strengthened by embedded conceptual structures that provided contextual information to tell the viewer where the figures in the photo were, or what kinds of activities they may be doing.

The 42 remaining photos were classified as containing conceptual structures, or lacking strong vectors of motion. These were not considered in responding to the main findings to the three research questions related to dominant visual narrative, though the results gathered in Step 2 of this methodology have been noted as conceptual elements and can still be found embedded in visual narrative structures (Harrison, 2003, p. 52).

Both comprehensive quantitative and qualitative findings emerged through this three-step content analysis methodology. The combination of empirical and interpretive methods balances the overall conclusions made in this MRP, which acts as a catalyst for further discussion within communication, public health, and social media studies.

## FINDINGS

As mentioned in the Methodology section, 105 photos were analyzed from 100 CDC Ebola-related Instagram posts. Of the 105 photos, 63 were categorized as

containing visual narratives and 42 photos were categorized as containing largely conceptual structures (lacking vectors and identifiable events or action scenes). This findings section will be split into quantitative and qualitative sections corresponding to steps two and three in the coding process. The first section, Surface-Level Themes, will provide an overview of the trends in variables that were visually apparent upon the first glance of a photo during Step 2 analysis. These findings cover both narrative and conceptual photos posted by the CDC. The second section, Major Visual Narratives, will report on the 63 photos containing visual narrative structures and state the six thematic visual narrative structures that emerged during Step 3 analysis. This final section will also provide preliminary answers to this MRP's overall research question.

## Surface-Level Themes

Common variables that were easily identifiable (see Table A) in all of the 105 photos were coded for in Step 2 analysis. This coding process was broad in nature, and sought to identify some overall findings in relation to depictions of gender, ethnicity, and location. Results are below.

### *Representation of Gender*

Instances of gender were measured by instance and not by population in a photo (see Table A in methodology section for breakdown). For example, a photo with three men and two women would have been coded as "Both." Photos, however, were coded for instances when only women or only men were featured in a photo, which gives a

marginal idea of gender imbalance. Photos were also coded as "Indiscernible" for instances when gender could not be determined.

Overall, a sizeable number of CDC photos (38%) posted to Instagram featured at least one woman and one man together. However, results within these photos require further analysis as many featured gender imbalances as men outnumbered women, and vice-versa, in a number of files. Despite that, it is fairly apparent that the CDC captured a number of instances where men and women can be seen together.

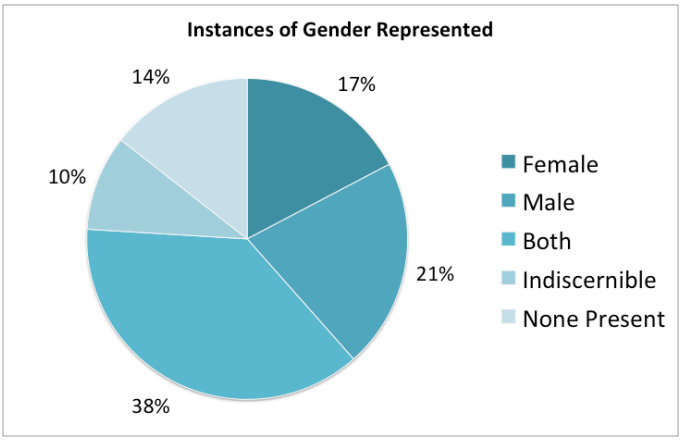



Figure 1

Results for photos labeled as "Female Only" or "Male Only" did reveal a slight imbalance, however. Of the 105 photos analyzed, 21% featured only men while 17% featured only women. These results also require further analysis in terms of any differences that may be seen in the way women and men are depicted separately. Nevertheless, these results show that photos showing only men did outnumber those showing only women.

Lastly, and somewhat unrelated, 14% of all photos were found to have no human figures present, showing a collection of land and cityscapes featuring signs, buildings, and other objects, most of which were taken somewhere in West Africa. These photos show the CDC's presence in countries and regions affected by the Ebola epidemic, but also lack what could be considered an emotional connection due to the absence of people.

Furthermore, this proportion of photos is fairly comparable to the number of photos depicting only males and females. This observation could show that the CDC felt it necessary to also depict the location of their work as an important aspect of their efforts.

## *Location*

In order to confirm the location of each photo, clear symbols (such as flags, government logos, or coats of arms) or words needed to be present. This proved to be a difficult task as many photos lacked any kind of revealing information. Therefore, important contextual and cultural information such as the state of buildings and style of architecture, names of hospitals and health facilities, styles of dress, and overall environment were highly considered. As a result, less than 25% of the photos analyzed could be assigned to specific locations. Liberia, at eight per cent, proved to be the most identifiable location thanks to flags placed on military uniforms and vehicle license plates. However, details like these across all photos had low levels of prominence and sometimes required an Internet search to determine their relevance.

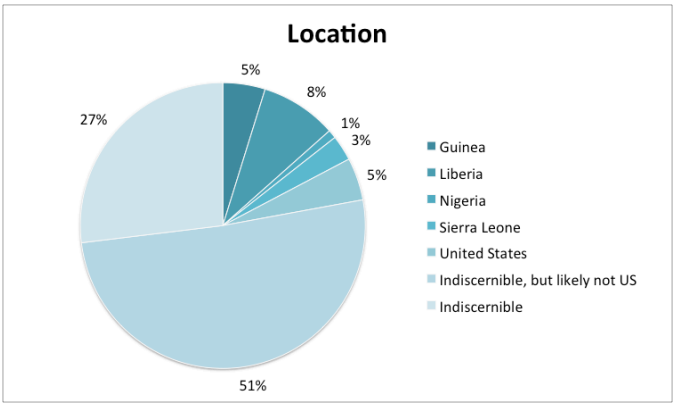



**Figure 2**

Many photos depicted places that could potentially be attributed to somewhere on the African continent thanks to the surrounding environment and the depiction of local peoples. Ultimately, however, this finding cannot be confirmed using immediate photo

details. These photos were labeled as "Indiscernible, but likely not US" during analysis and made up 51% of all photos. In addition, a further 27% of all photos were labeled as "Indiscernible," meaning no contextual attributes were present in the photo that could be associated with the countries listed. Therefore, over 75% of all photos posted by the CDC to their Instagram account lacked symbols or other details to allow the viewer to locate where the photos were taken.

### *Ethnicity*

An analysis of the types of ethnicities found in CDC Instagram photos was also completed during Step 2, recording only instances in terms of ethnicity. For example, a photo may show a group of two Black[2] individuals and two Caucasian individuals. In this case, the photo would be coded once for the appearance of each ethnicity (One Black and One Caucasian). However, these findings should be taken with a grain of salt given the difficult task of determining an individual's ethnicity based on sight alone. For that reason, categories of ethnicity are broad in nature and do not reflect any kind of differences in terms of nationality, culture, or hereditary background. An "indiscernible" value was also created during coding when it became difficult to full identify a figure's ethnicity.

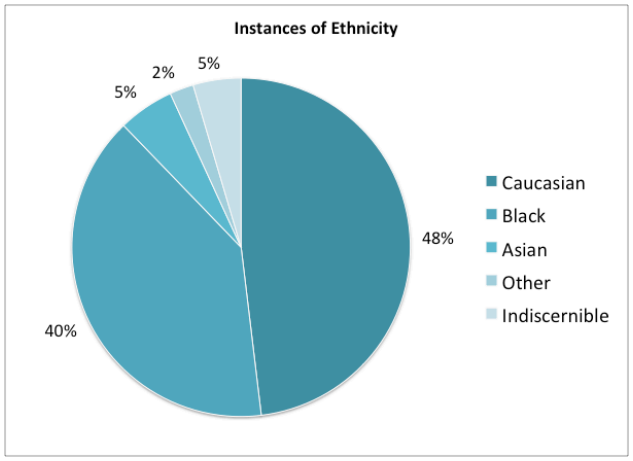



**Figure 3**

[2] Black is used as a general term to include those of African descent and those of African American descent.

Overall, instances with Caucasian and Black individuals make up a strong majority of peoples depicted in photos posted to Instagram by the CDC. However, nearly half (48%) of all photos depicted at least one Caucasian individual, compared to 40% of instances showing someone Black, and only 7% of instances showing someone Asian or another ethnicity. Due to the strong majority of Caucasian and Black instances of ethnicity, further analysis was completed to ascertain when Caucasian and Black individuals appear alone, together, or with someone of another ethnicity.

The second analysis of ethnicity showed much more nuanced, yet dramatic, findings. In the instances where either Caucasian or Black individuals appear, over one-third (34%) feature only Caucasian individuals. A slightly larger proportion (35%) showed instances where Caucasian and Black individuals appear together. Even more compelling is the comparably small number of instances (16%) when only Black individuals appear in a photo, a finding that is further reflected in dominant visual narratives identified during Step 3.

These three findings may show conflicting evidence. The substantial portion of instances with both Caucasian and Black in the same photo could signify collaboration or cooperation among CDC staff and local Black officials. However, an almost equal proportion of instances have only Caucasian individuals, pointing to a possible ethnicity imbalance in the types of people being

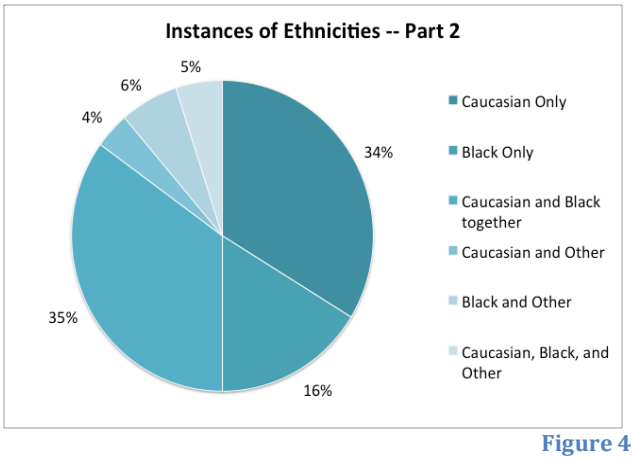



Figure 4

featured on the CDC's Instagram account. Nevertheless, a more in-depth qualitative analysis is required to fully probe these findings.

## Major Visual Narratives

Six major thematic visual narrative structures were identified during Step 3 analysis by grouping similarly structured photos together. (See Table B for a breakdown of thematic groupings and definitions).

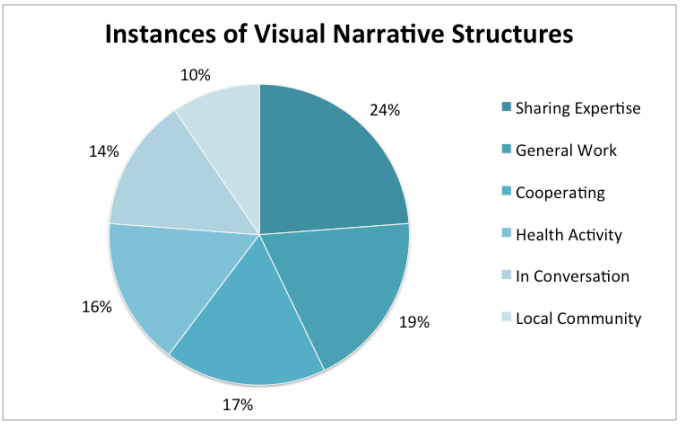



Figure 5

Thanks to the methodology of visual social semiotics, the narratives are largely interpretive in nature, and cannot claim to be absolute associations. Nevertheless, these narrative themes give us an idea of the kinds of messages the CDC aimed to communicate during the outbreak, and provide a foundational answer for this MRP's overall research question.

## Table B – Major Visual Narrative Structure Themes

| Themes | Interpretive Definitions |
|---|---|
| In Conversation | Action shot of two or more people speaking to one another, placed at or near centre of photo, no audience present. |
| Cooperating | A staged or action photo featuring CDC employees (assumed depending on appearance and context) with African individuals (assumed depending on appearance and context). |
| Sharing Expertise | Individuals or pairs in front of or with a present or implied audience, presenting or sharing knowledge and information (sometimes unseen or assumed). |
| General Work | CDC staff (assumed if at or near centre of photo, main focus) |

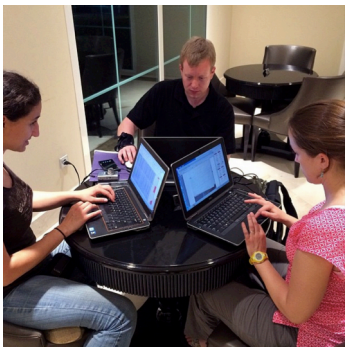
| | |
|---|---|
| | working at computers or writing information down in an action shot. |
| Health Activity | CDC staff (assumed if at or near centre of photo, main focus). engaged in a behavioural or practical activity related to health (i.e. washing hands, in hazardous material suits, etc.). |
| Local Community | Image featuring group of two or more Black individuals engaged in an activity. No other ethnicities present. |

### *Visual Narrative: Sharing Expertise*

The most frequent visual narrative structure was Sharing Expertise, which accounted for 24% of the 63 photos with narrative structures. The photos belonging to this visual narrative theme generally depict figures speaking to groups of people or to news media representatives, both in- and out-of-frame. The figures speaking were assumed to be CDC staff as they are usually at the centre of photos with numerous vectors from individuals and objects pointed towards them or emanating from

**Figure 6**

the individuals themselves. In these photos, presentation slides, demonstrations, and other materials acts as embedded conceptual structures, signifying CDC's work sharing information and potentially teaching proper techniques or skills in Western Africa at that time. For example, Figure 6 shows a selection of five photos found with the Sharing Expertise narrative. In photos a) and c) to e), figures stand at the front of the room and speak to an individual or individuals. In photos a) and d), the figures giving the presentation use visual aids on their person while gesturing towards to the audience in an instructive manner. In photos c) and e), slides can be seen in the background to aid in the communication of information while the audience watches. Though photo b) appears to be a media interview, we can assume the figure speaking is being watched by a broadcast audience and the sign for "Mainland Hospital Yaba" in the background gives some context to what the conversation being captured might be.

a) 

b) 

c) 

d) 

e) 

**Figure 7**

### *Visual Narrative: General Work*

The second most frequent visual narrative was

General Work, accounting for roughly 19% of all narrative photos. This narrative saw a variety of instances with both individuals and groups working at computers, desks, makeshift workspaces, or other facilities. Vectors of motion from hands and arms, and eye-line vectors, towards computers, notebooks, or sheets of paper, connected figures with their work and created a narrative of engagement between individuals and the activity they were doing. These vectors can be seen in Figure 7, a collection of photos containing General Work narratives. In photos a) and b), individuals work in groups at individual laptops with screens and their content in full view for the viewer, embedding a sense of transparency in the work being completed. In photos d) and e), individuals sit at tables or desks and engage with each other while envelopes and other sheets of paper act as embedded conceptual structures signifying work being completed or to be discussed. In photo c), an individual points and looks at papers containing information, creating strong action and eye-line vectors to show engagement. These General Work narratives are varied, but also lead the viewer to assume that the CDC has staff that is engaged with all the work they do, though it may look somewhat clerical.

a) 


b) 

c) 

d) 

**Figure 8**

### *Visual Narrative: Cooperating*

Moments of cooperation and collaborative activity were the third largest group of visual

narrative structures posted to the CDC Instagram account during the 2014 Ebola epidemic, accounting for 17% of photos. Visual narratives that showed cooperation generally featured Caucasian and Black figures together in both posed and action shots, which ultimately conveyed a message of teamwork. Some photos also featured the CDC's Director, Dr. Tom Frieden, which establishes a sense of attention from CDC leadership. Open body language, eye-line vectors, and close body positioning between individuals also helped to create a sense of intimacy and togetherness. These elements can be seen within the photos of Figure 8, which all show both Black and Caucasian figures engaged in work or positioned closely to one another. Though photo a) lacks some strong vectors inherent in a narrative structure, the body position of the individual on the left creates a sense of movement and a feeling of friendliness as it is open towards the figure in military camouflage. Photos b) to d) tend to have stronger action and eye-line vectors between figures. This is fully exemplified in photo c) where the two figures work closely together physically, both creating action vectors with their arms and fingers and eye-line vectors with their heads bent down, all of which point to the map and notebook on the table. Photos b) and d), however, show groups together with many eye-line vectors connecting individuals within the photo.

Though the photos in this group could be considered as conversation narratives, these narratives instead feature embedded conceptual structures that point to demonstrations or work related to planning, health, or sanitation. Ultimately, the cooperation narrative combines elements of Conversation and General Work narratives into one scene.

### *Visual Narrative: Health Activity*

Visual narratives depicting individuals engaged in activities related to health were the fourth most frequent theme. Many of these photos are action-type shots capturing moments of activity or work related to health. These photos were also significant for capturing moments of activity by individuals dressed in protective clothing and sanitation gear to protect themselves from contracting Ebola. Activities also ranged from people at hand-washing stations (see photo a) in Figure 9) to scientists donning protective clothing while working at lab stations (see photos b) and d) in Figure 9).


**Figure 9**

Figures in these photos tended to be more engaged with their work and less with each other if in teams or groups. For example, photo d) in Figure 9 shows two individuals in protective gear with vials and tracking sheets, presumably testing for Ebola in patients. These individuals both look down at their work, creating strong eye-line vectors, while action vectors from their arms, hands, and fingers point to the task at hand. Similarly in

photo b) of Figure 9, two individuals are clearly seen walking in protective gear, yet creating eye-line vectors by looking at objects or down at the ground. This lack of social engagement, unlike the scenes of conversation examined earlier, may point to the seriousness of working with infections diseases.

This visual narrative structure is also the only one to depict individuals engaged in behavioural activities related to health. In photo a) of Figure 9, one of two photos with similar narratives, we see a Caucasian woman, presumably from the CDC[3], washing her hands at a make-shift washing station, a behaviour well-known to be associated with preventing infectious diseases from spreading. However, messaging around health behaviours and the causes of Ebola infection are covered more extensively in the 12 digital illustrations removed form analysis during Step 1. These digital illustrations are textually heavy and use fact-based language. The difference in these types of photos may point to strategic communication decisions by the CDC, opting for clear textual explanations rather than more interpretive visual narratives.

### *Visual Narrative: In Conversation*

The fifth narrative identified during Step 3 analysis featured pairs and groups simply in mid-conversation or discussion. Conversation narratives took on two characteristics in terms of the photo's relationship with the viewer. Photos taken at close range, such as photo a) or b) in Figure 10, seemed to create a sense of intimacy and inclusiveness thanks to the open body language of the individuals captured in the photo which tended to be pointed toward the camera. However, photos taken at a seemingly far

[3] This woman is featured in other photos posted earlier by the CDC, including a close up portrait. Therefore, it is assumed she is a CDC employee though it cannot be confirmed without reading a post's descriptive text.

range, such as photo c) in Figure 10, have a more voyeuristic quality. The graininess of the photo and the individual's body language pointed toward one another gives off a sense of exclusiveness and privacy. In general, figures are connected again by action vectors from arms and hands pointed to one another, and by eye-line vectors, showing engagement.

a) 

b) 

c) 

**Figure 10**

However, it is unclear from just the photo what the topic of conversation is between all individuals. Some individual show smiles, such as in photo c), while others show looks resembling confusion or seriousness. It is also unclear why the CDC chose to capture these moments judging by the photos themselves. Many seem to take place on the African continent, and they do show scenes of action and of listening, but these photos tell much weaker stories than their other narrative counterparts largely thanks to a lack of embedded conceptual structures, and clear events that might more clearly resemble the CDC taking action against the outbreak.

### *Visual Narrative: Local Community*

The last and least frequent narrative that emerged during Step 3 analysis showed scenes of activity comprised of only Black individuals and generally within community settings in Africa. Though some of the activities within this narrative could fit in to other categories in this MRP, these photos were significant as they depicted unique scenes of agency, sickness, and recovery among local populations (as seen in photos within Figure 11).

a) 

b) 

c) 

**Figure 11**

For example, photo a) of Figure 11 shows agency as action vectors are created by arms, hands and fingers by the two individuals in the photo completing paper forms. A third individual in the center of the photo watched the activity, creating an eye-line vector, while his arms, hands, and fingers also create vectors that lead the eye to the event at hand. However, the photo is also unique thanks to the group of children in the

background of the photo who gaze straight at the viewer in front of buildings with thatched roofs.

Photos b) and c), however, show more voyeuristic types of photos which capture scenes of sickness and struggle. In photo b), a woman in the distance sits on the ground behind a Red Cross vehicle with its rear doors open, which in turn creates object vectors towards the woman. In photo c), men take a break from trying to wrestle a truck from a deep rut in a muddy road. In this scene, action vectors are created by two men leaning on the truck in the center of the photo and object vectors are created from the beds of trailers and the bumpers of vehicles. These photos are taken at distances in which the individuals photographed are unaware of the photographer's presence further evidenced by the fact that many faces of individuals are largely not captured or shown.

The findings that emerged from both Step 2 and Step 3 analysis are nuanced on both quantitative and qualitative levels. Surface Level Themes tend to show a strong level of balanced representation of gender and race in both conceptual and narrative photos, but also show a lack of visual detail in terms of a photo's location. Furthermore, though depictions of ethnicity seem balanced on the surface, once these findings are isolated to show only instances of Caucasian and Black individuals, results show that Caucasian figures feature more prominently overall.

Major Visual Narratives were grouped into these six main themes, all which show varying types of scenes and activities. However, most narratives shy away from more dramatic scenes generally found in the Health Activity narrative, such as individuals wearing protective clothing or participating in medical or scientific activities. Many

scenes take place in front of computers, looking at papers and maps, or making presentations to seen and unseen audiences. These findings will be further examined in relation to this MRP's research questions in the Discussion section.

## DISCUSSION

Many rich details were provided by the analysis of CDC Instagram photos. This section will provide an in-depth discussion in response to the second and third research questions outlined earlier in this MRP. Working from common details found in each of the six thematic visual narrative structures identified, these discussions will aim to make connections to both public health and global health historical literature. However, these discussions are only the beginnings of longer, more in-depth investigations yet to be completed.

### *Selling the CDC: Connecting the Tradition of Public Health Visual Communication*

After completing the analysis and identifying the dominant visual narrative structures by theme, the CDC's representation of itself and its mission in West Africa became evident. What also became clear, however, was the fact that of the six thematic visual narrative structures that were identified, only one had any clear connection to health or popular notions of scientific medicine. Four of the five remaining themes mainly show people leading seminars or instructing, working at computers, or simply in conversation with colleagues. These themes, whether they were conceived of deliberately or not by the CDC, can be connected to important concepts from existing scholarship such as the "visual sales pitch," first identified in health posters by Cooter and Stein

(2010), as well as potential signs of continued cultural reverberations from the American AIDS crisis of the 1980s as outlined by Tomes (1998).

As Cooter and Stein (2010) point out, public health posters during the AIDS crisis in the United States during the 1980s were increasingly produced by advertising and marketing agencies. As a result, the experience of viewing of health posters changed, taking up "the same visual sales pitch as other commercially spun desires and lifestyle identities" (Cooter and Stein, 2010, p. 187). This idea of the "visual sales pitch" and the commoditization of public health can still be seen in more corporate ways through four of the six themes identified during analysis. For the CDC, many of the photos posted to their Instagram account during the 2014 Ebola epidemic champion the organization's work and the work of CDC staff, which further rationalizes their role in a non-American crisis.

Figure 12

The most frequent visual narrative structure identified during analysis, Sharing Expertise, presents a compelling case for the CDC visual sales pitch. This is done through techniques in which CDC staff is shown in positions of leadership. In Figure 12, for example, the man standing in the center of the image is shown leading a demonstration or seminar to a group of Black individuals. Shown facing the camera, well lit, and with arms outstretched towards his audience, it is obvious he is the leader in this scene. Similarly in Figure 13, microphones and a camera held by Black hands are pointed to the face of a potential CDC official who

Figure 13

is speaking. The devices pointed toward the Caucasian man draw the viewer's eye to his face and also help the viewer identify that this figure is likely giving out important information to a broadcast audience. For the CDC, the Sharing Expertise narrative shows that CDC staff members are important sources of health information for the mostly faceless audiences they are in front of.

These audiences are also implied to be predominantly Black and passive in many of the photos within the Sharing Expertise Narrative. In both Figures 12 and 13, Black bodies and body parts point to non-Black figures, which also seem to frame the figure speaking. Though it is evident in many of the Sharing Expertise photos (see Figure 6) that these audiences are attentive and interested in the presentations being made, moments of agency or leadership are few and far between in these same photos. This lack of action on behalf of the audience further creates a sense of need for CDC knowledge and expertise in West Africa. Additionally, few members of the audiences in these photos are shown fully or clearly. At best, audience members are captured from the side or from behind, while others who may be standing are too far from the camera to been with any real identifiable traits. As a result, the lack of audience detail further reduces any notion of agency. Overall, the CDC seems to communicate that the passivity of the audience equals a notion of unpreparedness across the African continent in dealing with major infectious disease outbreaks. However, further investigation is likely required to fully considered this observation. Kress and Van Leeuwen's concepts of demand and offer may be helpful in this respect.

Through the Sharing Expertise narrative, the CDC highlights its staff capabilities and knowledge, and in turn, the lack of knowledge of the audiences depicted. For the

American audience on Instagram looking at these photos, a case is made for the CDC's presence in West Africa as necessary and benevolent. These notions are further supported by photos in both the Cooperating and In Conversation narratives (see Figures 8 and 10). Photos with these thematic visual narrative structures show instances of CDC staff working or conversing with West African officials, helping to further establish the CDC as a collaborative ally in the regions affected by the Ebola outbreak. Therefore, it could be concluded that the CDC develops a kind of teacher and student relationship, showing that the CDC has certain knowledge and skills that the organization suggests could be lacking in West African counterparts.

Though the photographs posted to Instagram by the CDC continue the "visual sales pitch" first identified in public health posters from the 1980s, they may also show some connection to cultural reverberations emanating from the AIDS crisis as identified by Tomes (1998). In her 1998 book *The Gospel of Germs*, Tomes writes that AIDS "revealed both the strengths and weaknesses of modern scientific medicine" in terms of the ability to pinpoint the causes and structures of HIV/AIDS and the difficulty in curing it (p. 257). As a result, prevention was the "keynote" of public health campaigns according to Tomes (1998) despite an aversion to frank sexual discussion among American social conservatives (p. 257). Similarly, the visual narrative structures found in the photographs posted to Instagram by the CDC also tend to refrain from overt depictions of popular notions of scientific medicine, such as work being done in laboratories. Of the photos that were labeled as Health Activity, only one shows two individuals engaged in a seemingly scientific exercise (Figure 14), while others focus on hand-washing or individuals dressed in protective clothing. More importantly, instead of

showing CDC employees engaged in outreach exercises focused on prevention, photos capturing CDC staff engaged in work heavily feature moments including a computer or sheets of paper.

As shown in the findings section of the MRP, 10 photos or 16% of all visual narrative structures featured some kind of health activity from washing hands to individuals dressed in protective clothing. The photos within this theme ranged from depicting almost everyday activities (Figure 15), to more dramatic depictions of those returning presumably from work with direct involvement with the Ebola virus (Figure 16). This extreme range of activities within the Health Activity narrative also highlights the degree of familiarity with certain activities from an American perspective. While a majority of Americans would likely be familiar with the act of hand-washing to prevent the spread of disease, others would likely not be familiar with health workers wearing protective clothing to also prevent infection.

Figure 14

Figure 15

Figure 16

However, the overall lack of popular notions of scientific medicine being shown in any photo, either in a lab located in West Africa or the United States, is quite noticeable. Figure 15, showing two individuals dressed in head-to-toe protective clothing at a workstation with

vials and other instruments and papers, is the only photo that aligns with one of the major points of the CDC's role: putting science and advanced technology "into action to prevent disease" (see "Mission, Role and Pledge"). With only one photo showing popular notions of science or scientific medicine, it could signal that the CDC's priorities were aligned with showcasing its interpersonal efforts though staff and interactions with local people or communities (as seen in three other visual narrative structural themes). Though more research is needed across all of the CDC's Instagram visual content, scientific medicine's shortcomings, first exposed during the AIDS crisis, may still be somewhat felt today as reflected through this lack of presence in these recent CDC photos.

The kinds of work more commonly depicted in CDC photos seem to be characterized as clerical or office-based. Photos sorted into the General Work and Cooperating narratives show CDC staff, sometimes joined by colleagues from West African countries, at computers or referring to papers or maps. For example, Figure 17 shows a CDC employee, seen in earlier photos, pointing to sheets of paper posted on a wall, all with charts with containing information. Though we cannot see the information, these sheets of paper may be tracking new and current cases of Ebola, closely related to the field of epidemiology[4]. As an important field of study within the control of infectious disease, the frequency of photos showing potential epidemiological work may further explain the lack of more popular notions of scientific activities –

**Figure 17**

[4] As defined by the World Health Organization, epidemiology is "the study of the distribution and determinants of health-related states or events, and the application of this study to the control of diseases and other health problems" (from: http://www.who.int/topics/epidemiology/en/).

showing that the methods of tracking disease may not be as easily associated with science or medicine to broader audiences. To the average viewer, however, this fact may not be evident, as it likely requires a better understanding of how infectious diseases are fought. Therefore, by just looking at scenes with CDC staff at work, the types and relevance of work in a health or scientific context may not always be clear to the viewer.

Overall, the major visual narrative structures identified during analysis do not have concrete connections to the historical literature on visual public health communication. Though we see the continuation of a "visual sales pitch," the commodities being sold to an American Instagram audience are likely the capabilities of the CDC and its staff, not healthy living or a healthy body. Nonetheless, this visual sales pitch helps to provide some reasoning for the public to support the CDC's mission in Ebola-affected regions of West Africa. Second, the lack of depictions of popular notions of science and scientific medicine in photos posted to Instagram by the CDC may reflect some cultural reverberations from the American AIDS crisis of the 1980s. However, due to the presence of potential epidemiological activities, this also could be a reflection of the modern types of work done when tracking infectious diseases. Without relying on the textual description included in an Instagram post, it is not always clear how the work being carried out by CDC staff directly relates to the Ebola outbreak or the history of health promotion in the United States. As such, more research and investigation is required.

### *Security Concern or Humanitarian Compassion?*

As discussed, characterizing the role of the CDC through the visual narrative structures identified in this MRP could be reduced to one word: work. In five of the six narrative structures identified, CDC staff members are seen engaged in some kind of work, whether it be typing on a computer, referencing a map, or dressed in protective clothing. This heavy emphasis on work helps to characterize the CDC as an engaged global health actor, showing its ability to intervene in major health crises abroad. However, the story is much more nuanced than this simple characterization. Relying heavily on photos set within African countries as well as scenes of cooperation and conversation with African colleagues, many of the visual narrative structures in CDC Instagram photos resemble Lakoff's (2010) regimes of global health security. Furthermore, the appearance of the emerging diseases worldview and neocolonial symbolism within the visual narrative structures also help to characterize the CDC's role in the Ebola outbreak as reactive to the situation and motivated by a need to protect American citizens.

Lakoff's (2010) breakdown of both global health security and humanitarian biomedicine (as shown in Figure 18), serves as a useful tool for deciphering how the six visual narratives found during analysis can be ultimately characterized. Though the work being done by the CDC in West Africa during the epidemic would have beneficial results for West African people, many of the activities portrayed in the 63 narrative photos more closely resemble the techno-political interventions spearheaded by a global health security regime. For example, the Sharing Expertise, Cooperating, and General Work narrative structures can be seen as portraying rapid intervention strategies as many photos capture "in the moment" snapshots, focusing on scenes of action and in turn giving a sense of momentum and urgency to the work being carried out. Showing CDC staff "on location" in affected regions and playing active roles in research or training also delivers recognizable forms of intervention for the CDC's American Instagram audience. Lastly, the Sharing Expertise narrative could also be considered as an example of building an external response capacity of African volunteers through the depiction of training/informational seminars, even though these individuals are rarely shown in action themselves.

**Table 1: Regimes of Global Health**

| | *Global Health Security* | *Humanitarian Biomedicine* |
|---|---|---|
| **Type of threat** | Emerging infectious diseases that threaten wealthy countries | Neglected diseases that afflict poor countries |
| **Source of pathogenicity** | Social and ecological transformations linked to globalization | Failure of development; lack of access to health care |
| **Organizations and actors** | National and international health agencies; technocrats | NGOs, philanthropies, activists |
| **Techno-political interventions** | Global disease surveillance; building response capacity; rapidly develop biomedical interventions to manage novel pathogens | Provide access to essential medicines; drug and vaccine research and development for diseases of the poor |
| **Target of Intervention** | National public health infrastructures | Suffering individuals |
| **Ethical stance** | Self-protection | Common humanity |

Figure 18, from Lakoff (2010), p. 64

In contrast, few photos show examples of humanitarian biomedicine interventions. The Health Activity narrative contains one photo of two individuals taking part in some scientific task (Figure 14), but it is not clear if it has anything to do with important drug or vaccine research as stipulated by Lakoff (2010). Lakoff (2010) also notes that the target of intervention in the humanitarian biomedicine regime is the suffering individual. However, suffering individuals are almost entirely neglected in the six narratives. In the few instances where presumed Ebola sufferers are shown, they are depicted at a distance, with few or no other individuals present (example: Figure 11, photo b).

Though Lakoff (2010) provides a good framework to characterize the CDC's role in the global health security regime, it is also possible to identify elements of the emerging disease worldview as outlined in King (2002). Many of the scenes labeled as important intervention strategies from Lakoff (2010) could also be identified as the pluralist rhetoric and integrative ambitions inherent in the emerging disease worldview. For example, photos belonging to the Cooperating narrative show scenes of teamwork and collaboration. In Figure 19, we see these elements clearly in the form of a Caucasian woman and a Black man referencing a set of papers on top of a CDC vehicle. In this action scene, the combination of Caucasian and Black figures gives the impression that the CDC is open to the varying views that come with collaboration. Furthermore, the appearance of the CDC logo acts as an embedded conceptual structure that reinforces the idea that the CDC is integrating themselves into local efforts to fight the disease.

Figure 19

Figure 20

The integrative aspect of Figure 19 can actually be found in almost all the visual narratives structures that feature CDC employees at work. For example, Figure 20 from the Health Activity narratives shows a Caucasian individual returning from work dressed in protective clothing taking direction from a Black individual. Again, the figure shows Caucasian and Black individuals in the same scene, presumably enforcing the idea that the CDC has integrated its staff into local health networks in Western Africa, thought the location is unconfirmed. Photos from the In Conversation narrative also feature some scenes of Caucasian and Black figures talking to each other (Ex. Figure 10a). Though it is unknown what is being discussed in these instances, scenes like this further the idea that collaboration and the exchange of ideas are important for the CDC. Therefore, it is clear that the CDC is trying to portray itself as an integral team member in the fight against Ebola, with the idea that these efforts are for the benefit of citizens of African countries and the United States.

Though photos like Figures 19 and 20 promote ideas of collaboration and integration, many of the 63 narrative photos also signal a degree of defensive action on behalf of the CDC. In both King (2002) and Lakoff (2010), the emerging diseases worldview and the global health security regime articulate reactive methods of stopping disease through direct interventions as a strategy to protect American citizens – a cornerstone of the CDC's 2001 plan as outlined by King (2002). Therefore, while the CDC opts to portray itself as collaborative and open, the need to protect American citizens from the spread of Ebola likely underlies these characteristics. By using visual

narrative structures that portray the CDC as a provider of knowledge and skills, American audiences on Instagram can rest easier knowing that the Ebola virus is being contained, regardless of the fact that the disease continues to ravage West Africa.

A slightly darker side of interpretation also exists in many of the six visual narrative structures as neocolonial logic appears throughout the photos as well. As Dutta (2008) explains, "colonialism in the global arena is maintained through the construction of the Third World as an inferior space that needs to be saved through scientific technology or modernity" (pg. 194). Although popular notions of scientific medicine are largely absent from the suite of photos posted by the CDC, many of the scenes showing seminars attended by largely Black crowds could be seen as bringing increased "modernity" to the region through increased access to information. In scenes where content can be seen on slides in these seminars, details are given about the causes of Ebola or treatment options. Furthermore, a demonstration is given regarding protective gear in a specific photo as a Black audience watches and even records the seminar with camera phones (Figure 6, photo a). Though audiences possess modern technological items, current knowledge of the causes and symptoms of Ebola are nevertheless lacking. As a result, an impression is created that implies citizens of African nations did not have this knowledge or understanding before the CDC's arrival (though this is unclear due to the constraints of this MRP's timeline). In turn, the CDC is shown satiating these countries' "need" for assistance.

The lack of appearances by Black individuals in both narrative and conceptual photos further strengthen this neo-colonial logic. As evidenced in Surface Level Findings, at least one Black or Caucasian individual appear in 88% of 105 narrative and

conceptual photos. However, only 16% of these photos feature only Black individuals, potentially reflecting a failure by the CDC to feature Black narratives, regardless if these individuals are associated with the organization. With such few photos showing sole Black figures, it becomes more evident that a neo-colonial "need" is developed by the CDC to legitimize its presence in Africa.

Furthermore, the photos shared by the CDC also add to the idea of a "backward Third World culture" as outlined by Sastry and Dutta (2012) in their reading of PREFAR. This idea is strongly communicated in the six photos belonging to the Local Community narrative. These photos show locations and experiences likely uncommon to experiences in the United States. Features such as dirt roads, thatched-roofs, and cement and stucco one-story buildings would likely be unfamiliar to American CDC Instagram followers who are used to experiences within a developed nation. These elements also appear in other narratives. For example, Figure 21 from the Cooperating visual narrative shows three men (one Caucasian, two Black), travelling on what looks to be a raft ferry. Additionally, In the Health Activity narrative, photos that show outdoor hand-washing stations made out of buckets, water coolers, and plastic tanks, (such as Figure 9a or Figure 22) suggest these locations lack plumbing or more technologically advanced forms of simple sanitization such as hand sanitizer lotion, likely more familiar to American Instagram

Figure 21

Figure 22

audiences. Scenes like this further create a "need," as outlined by Dutta (2008), to be addressed by the CDC and the American people.

The visual construction of a "backward Third World Culture" may also relate to the concept of American exceptionalism as outlined by Rawlinson (2009) – which in itself could be seen as a kind of neo-colonial logic. American exceptionalist critiques highlight the inherent difference of American cultures and systems to other nations. However, during the later part of the 20th century, as Rawlinson (2009) points out, the term had, somewhat problematically, come to symbol superiority of U.S. cultures and systems in American visual representations. In this sense, American exceptionalism can be aligned with Dutta's (2008) description of colonialism in the global area as both focus on the presence of an inferior cultural entity or system. Therefore, as the CDC justified the need for intervention through its Instagram presence, it is also possible that a message of American superiority in a health system or technology context was communicated to their audience. For example, by showing individuals travelling by raft instead of by boat (Figure 21), or using improvised washing stations, or learning about well-known Ebola-related facts, some Instagram audience members may walk away with a stronger impression of American superiority in technology.

Overall, through the six visual narrative structures, the CDC's role can be characterized as a reactive global health strategy. Although many of the six visual narrative structures show noble scenes of education and cooperation, research and critical perspectives from King (2002) and Lakoff (2010) demonstrate that these scenes reflect integration strategies that may actually be driven by the motivation to actually protect the health of American citizens, further justified by a neo-colonial logic. By showing Black

individuals as passive audiences with little individual agency, and by focussing on local scenes in West African countries potentially unfamiliar to American audiences, the CDC also furthers neo-colonial ideas to establish a "need" for intervention. Though it may have an altruistic front, the CDC's role is likely more concerned with the protection of American citizens and, indeed, its own image. However, more research and investigation is required.

## CONCLUSION

By identifying visual narrative structures in visual media, it is possible to gain a greater understanding of the agendas or motivations within an organization exist, whether explicit or implicit, and how these may be connected to larger historical trends. Assessing some of these motivations was the objective of this MRP. The dominant visual narrative structures identified here highlight the types of messages sent by CDC to its American Instagram audience. Furthermore, connecting these recent narratives to historical scholarship show common threads and trends in time that have existed for much of the 20th century, and continue to exist into the 21st.

Overall, six dominant visual narrative structures related to the 2014-15 West African Ebola crisis were identified in photos posted to Instagram by the CDC. These visual narrative structures showed many scenes of CDC employees at different types of work, though only one visual narrative structure showed a direct connection to broad health activities. Instead, photos focused on individuals giving presentations and sharing expertise, working with Black individuals presumably from local health organizations, in

conversation with colleagues, and few scenes of local agency or community life. Though these photos were often rich in detail, they only provide a very brief, year-long snapshot of the CDC's presence in West Africa. More research is required with a larger sample of data to fully grasp what more nuanced visual narrative structures may exist, and determine the overall success (i.e., number of likes or comments) of these visual narrative structures, something not considered in this MRP.

Connecting these recent visual narrative structures to historical scholarship in public health visual communication and global health communication provided noteworthy results. Due to the lack of explicit health activities, it was difficult to make clear and concrete connections to the public health literature reviewed in this MRP. However, this lack of health-related embedded conceptual structures and visual narratives may point to lasting cultural reverberations resulting from the 1980s AIDS crisis in the United States. Furthermore, the heavy focus on work and the multitude of action shots showing CDC staff leading seminars or working with colleagues did resemble the idea of a visual sales pitch as first outlined by Cooter and Stein (2010), though instead of selling health, CDC staff skills and capabilities are being sold to an American audience.

In terms of global health, visual narrative structures found in CDC Instagram photos show the organization's alignment with the global health security regime as outlined by Lakoff (2010). Seen by postcolonial scholars as a form of neo-colonial control in developing countries, the global health security regime is evident in these visual narrative structures thanks to the CDC's defensive intervention in West Africa. According to scholars such as King (2002), Dutta (2008), and Lakof (2010), the motivation of interventions such as this is more concerned with stopping the disease to

protect American citizens in North American than it is with helping those who have been suffering in West Africa. Though the CDC may focus much of their visual content on being a benevolent agency for African peoples, this position may therefore be suspect. However, more debate and research is needed to adequately examine and interrogate these visual narratives.

In sum, this MRP highlights the ways visual narrative structures can be open to an array of critiques, perspectives, and interpretations. Moving forward, scholars and researchers should continue to investigate the use of images as promotional tools, especially in a digital age where images as tools for communication have become increasingly ubiquitous and important.

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