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Google Glass and public relations: The use of optical head-mounted displays in building dialogue

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The Use of Optical Head-Mounted Displays in Building Dialogue

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This research is a Senior Honors Thesis project. The committee for this effort is Chair Dr. Tatjana M. Hocke-Mirzashvili, Dr. Isaac Woo and Dr. Daniel Schill.

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Abstract

The field of public relations is almost always on the forefront of new communication technologies, such as Web 2.0, social networking, and now "wearables." One prominent example of an emerging wearable technology is Google Glass, an optical head-mounted display (OHMD) that was released in a large-scale beta version by Google Inc. from April of 2012 until January of 2015, with a future commercial version on the way.

Using a qualitative content analysis to explore how the current and potential use of Google Glass complies with the tenets of the dialogic theory, this study found that OHMDs have the potential to assist the creation of dialogue between organizations and its publics. This was especially true of the dialogic tenets of mutuality, propinquity, and risk, which were clearly supported by Google Glass. The tenets of empathy and commitment, however, were not.

These findings suggest that there is potential for public relations practitioners to use Google Glass and similar wearable technologies to create dialogue, despite the need for some adjustments to the technology or the use of the technology.

Introduction

Public Relations

After a crowdsourcing campaign and much deliberation, the Public Relations Society of America (PRSA) listed its official definition of public relations as "a strategic communication process that builds mutually beneficial relationships between organizations and their publics" (Corbett, 2012). Until the past few decades, however, traditional media has been a clear middle man between companies and their target audiences (Kaul, 2013). This all changed with the advent of new technologies like Web 2.0, social networking services (SNS), social media, blogs, smartphones, and most recently wearables, which have allowed practitioners to produce digital content that bypasses traditional media altogether (Kaul, 2013).

These recent technologies have acted as new digital communication channels that enable more direct relationship building between an organization and its publics (Avidar, Ariel, Malka & Levy, 2013). Other benefits of these new technologies that impact public relations practitioners include the greatly increased speed and lowered cost of measuring the impact of campaigns, the ability to speak directly with multiple publics at once, the ability to reach a global audience, and the shared control of content between businesses and their publics (Kaul, 2013).

One such technology that has recently entered the market are optical head-mounted displays (OHMD). OHMDs are a relatively new wearable technology that allow the user to project images into their field of vision through projection or augmenting reality. Though similar head units have been used to augment reality in military helicopter pilot helmets since the 1960s, companies have only been seriously working to design affordable civilian models since the late 1990s (Fuchs & Ackerman, 1999). Widespread attention for the technology, however, had not been given to the concept until the announcement for the release of Google's OHMD, Google

Glass, in April, 2012, followed by the official beginning of its beta program a year later in April, 2013.

Google Glass

Google Glass [henceforth referred to as "Glass"] is in essence a tiny computer mounted to a glasses frame, including a high-definition prism resembling a monitor, a sophisticated ear piece, a camera, and a microphone (Angelini, 2013; Shanklin, 2014). The prism displays a screen just above the user's typical line of sight that appears like a 25 inch 720p monitor located eight feet away (Angelini, 2013; Shanklin, 2014). Similar to devices that directly augment reality by overlaying information into a user's physical field of view (Strickland, n.d.), such as the upcoming Microsoft HoloLens, Glass' features let you see and hear incoming information just "above" reality.

Users get clear audio through what is called a "bone conduction transducer," where a piece of the Glass frame sends sound waves directly through the skull that vibrate the tiny bones of the inner ear, just like typical sound waves traveling through the ear canal would (Angelini, 2013; Shanklin, 2014). Through this, a user can hear Glass while still being able to experience the world around him or her, as there is no headphone or earbud blocking the ear canal.

Glass also comes with a five megapixel camera that takes high-quality photos and video, as well as a microphone (Angelini, 2013; Shanklin, 2014). With these functions, Glass gives users the ability to instantly take photos and videos, write emails or texts, have emails or texts read to them, video chat with others through the Google Hangout video conferencing software, and use a sophisticated location-based search engine Google Now, all with voice commands or the touchpad located on the side of the frame (Angelini, 2013; Shanklin, 2014).

Through Glass, individuals can use these core built-in features listed above or third-party apps in much the same way as they would a smartphone, such as checking the weather, reading emails, or finding current news (Goldman, 2012). In fact, one of the features of the technology is that it syncs to a smartphone via Bluetooth, allowing users to maintain the device's settings through an app, and providing 3G and 4G coverage when Wi-Fi is not available (Angelini, 2013; Shanklin, 2014).

As a means of involving its publics in a way that would ensure the creation of the best possible product, Google chose to release Glass in its incomplete form through a large-scale beta program, much like the company did for its Gmail online email service in 2004 (Sanders, 2015). From April, 2013 until January, 2015, conference attendees from the original release, winners of a social media application contest (#ifihadglass), and later other interested publics were all invited to become 'Glass Explorers,' where for the hefty price of $1,500 these individuals became the willing guinea pigs that tested the technology and provided Google with valuable feedback (Sanders, 2015; Shanklin, 2014).

Overall, the Glass technology is meant to be a means of providing users with all of the information and communication mediums a smartphone could, without taking them out of reality (Shanklin, 2014). Glass brings technology closer to the user while letting them experience the world more freely (Shanklin, 2014). It is like an extension of a smartphone that, at the same time, allows a person to put their phone away; still providing the benefits while taking away the drawbacks of the distracting screen (Shanklin, 2014). With Glass, users gain the ability to far more easily send and receive messages (Angelini, 2013; Shanklin, 2014).

Research Project

Recognizing this potential to better send and receive information and communication, this research set out to discover whether Glass and other OHMDs would be able to provide public relations practitioners a more direct route for creating dialogue with consumers. Do the unique or improved (as compared to smartphones) functions of Glass adhere to the parameters of building dialogue, such as through using the technology's functions for engaging publics and vice versa, supporting collaboration, or even providing a means for real-time interaction between individuals and a business through video chats?

Through a detailed qualitative analysis of three main data source types regarding Google and its Glass technology, this study focused first on the current and potential use of OHMDs like Glass for public relations and dialogue building, and second on Google Inc.'s use of dialogic principles during its Explorer beta program. These were measured by coding and analyzing the data in accordance to the five tenets of the dialogic theory noted by Kent and Taylor's (2002), as well as coding additional themes found throughout the data.

The five tenets of the dialogic theory and their principal characteristics (listed in parentheses) include mutuality (collaboration), propinquity (engagement), empathy (supportiveness), risk (vulnerability and growth), and commitment (genuineness and honesty) (Kent and Taylor, 2002). Together, these tenets represent what a company must accomplish to establish a dialogue, and thus build strong relationships between that company and its publics.

The three source types collected for this research were general articles about the technology found through a systematic random sample of articles collected from scholarly research database LexisNexis, a collection of the total population of announcements, comments, and other posts made by Google and Google employees on the official Google Glass social

media profile, and through a convenience sample of Glass technology reviews taken from seven of the top rated gadget websites.

Review of the Literature

The Dialogic Theory Framework

As a means of studying the benefits and occasional pitfalls of new communicative technologies in the context of public relations, the dialogic theory is a valuable tool. Though descriptions vary, Kent and Taylor's work (2002) on clarifying this theoretical approach defined the dialogic theory as an ethical framework of establishing a meaningful dialogue between businesses and their publics. For public relation practitioners, dialogic communication denotes the negotiated exchange of ideas and opinions from clients to stakeholders (Kent, 2013; Kent & Taylor, 1998). More than simply one-way messages from a corporation to potential consumers, true dialogue is achieved through ongoing communication intended to build a relationship (Kent & Taylor, 2002). Kent (2013) later defined dialogue itself specifically as "the interpersonal conversational technique based on respect and trust, and as an approach, or orientation, toward others" (p. 257).

The concept of "dialogue" or dialectic, like many philosophies, dates back to Ancient Greece and the teachings of Socrates (Kent, 2013). This dialogic approach to communication was based on uncovering truth and finding knowledge (Kent, 2013). Our modern understanding of dialogue is largely based on the work of Kent and Taylor (1998; 2002), though public relations practitioners have been interested in the use of dialogue for decades (Kent, 2013). This became especially true following the landmark work of Grunig and Hunt published as Managing Public Relations (1984), which discussed the four models of public relations that have dominated

the field since; particularly that of the two-way symmetrical model (Theunissen & Noordin, 2012).

Since Kent and Taylor's (2002) work was published, recent technology has pushed the ability for businesses to create a conversation with their publics further. For example, technologies like social networking services (SNS), and more specifically social media, are inherently interactive, making relationship-building far more important for businesses to understand and utilize (Kim, Chun, Kwak & Nam, 2014). While past technologies like the telephone did enable messages to be quickly sent back and forth between a business and consumer, social media has granted businesses the ability to create more direct two-way communication with a larger number of its individuals. These public "posts" are closer to what was advocated by Grunig and Hunt (1984), with messages that are open and can be discussion-based when used correctly (Kaul, 2013; Kim et al., 2014). Despite the attention given to two-way communication and dialogue, though, it seems many professional communicators and businesses demonstrate a limited use of dialogue (Kent, 2013; Kim et al., 2014) often by talking at their publics rather than with them.

Dialogue, however, is not synonymous with Grunig and Hunt's (1984) two-way communication model, despite similarities between the concepts (Theunissen & Noordin, 2012). While both theories advocate using communication to promote mutual understanding between a business and its publics (Kent, 2013), Grunig and Hunt's (1984) model focuses on resolving conflicts that may arise. Even with these new communications technologies, however, both dialogue and two-way communication are more than simply spreading information through otherwise interactive technology. In other words, it takes more than posting on Facebook or Twitter to constitute as dialogue or interactive communication.

Dialogue and the dialogic theory involve five major tenets that separate it from "talk," even two-way talk (Kent, 2013; Kent & Taylor, 2002). These include (1) mutuality, or the recognition of shared goals and interests, (2) propinquity, or the spontaneity and honesty of interactions between companies and their publics, (3) empathy, or the supportiveness and confirmation of public goals and interests, (4) risk, or the willingness of businesses to interact with publics on the public's terms, and (5) commitment, or the extent to which an organization gives itself over to ethical dialogue, interpretation, and understanding in its interactions with publics (Kent, 2013; Kent & Taylor, 2002). Each of these concepts of dialogue are imperative to achieving a true ethical conversation and require more than publically posting content (Kent, 2013).

An example of a study utilizing these tenets was Kim et al.'s (2014) research on 60 nonprofit organizations and their use of dialogic principles, specifically through their web and social media communication. Kim et al. (2014) found that the highest employment of dialogic theory by nonprofits was through the companies' websites, followed by their Facebook and Twitter accounts respectively. These nonprofit websites were where their publics would comment and create meaningful conversation. As the research team found, nonprofits have typically underused the dialogic capabilities presented by social media platforms, despite over 90% maintaining at least one social media platform (Kim et al., 2014). These findings result from an over-reliance on websites for disseminating information, and a lower financial capacity to use multiple communication channels to employ dialogic principles (Kim et al., 2014). Though the creation of most social media profiles are often free or inexpensive, the maintenance of these sites requires continuous human and financial resources, particularly through advertising campaigns (Kim et al., 2014).

Another example of the use of dialogic theory in the study of a business' messages includes Meisenbach and Felder's (2009) study of the communication technique of the Walt Disney Company and the Save Disney campaign. While Disney had for years built a reputation of non-dialogue from their board of executives, rarely if ever addressing publics, the Save Disney campaign that began from former Disney executives Roy Disney (Walt Disney's nephew) and Stanley Gold fought to create a dialogue and point out issues within the company (Meisenbach & Felder, 2009). Though Meisenbach and Felder (2009) pointed to the difficulty in operationalizing dialogue, they still concluded that the Save Disney campaign's use of a discussion-based central website was a step toward businesses fully utilizing dialogic principles in their communication strategies.

While sporadic posts or Tweets may not constitute as a "dialogue" between businesses and their publics, more recent studies demonstrate that the tenets of this framework may be more achievable than previously thought through online means (e.g. Curtis et al., 2014). It may still be possible for trust and empathetic understanding to be built through engaged web-based two-way interaction, if technologies like SNS are used correctly. For example, most of the top social media websites offer more channels of communication than just public dissemination of information. Whether businesses and publics respond publicly via comments, or privately in messages, the two-way interaction between publics and businesses provides the opportunity for engagement, risk, trust, empathy, mutuality, and commitment (Kent, 2013).

This is not to say that SNS are devoid of issues, both in the maintenance of social sites and SNS' ability to create dialogic communication. For example, the interactive features of SNS require the allocation of trained human resources to rapidly respond to publics, there is a tendency for SNS to be used only for one-way communication, and there can be a number of

technical or infrastructural issues that can hinder the dialogic use of these technologies (Kim et al., 2014). Public relations agencies also tend to focus heavily on the production of outputs, such as websites, blogs, podcasts and posts, without monitoring and analyzing the impact of these outputs and using this data to advise their communication decisions (Kaul, 2013).

Another risk presented by SNS, as well as the Internet as a whole, to public relations practitioners as they attempt to create dialogue includes media fragmentation, or the tendency for individuals to become increasingly partisan and isolate themselves from the views and opinions that oppose their own (Kent & Saffer, 2014). While this tendency may help agencies persuading individuals with similar views to those of the company, practitioners presenting information contrary to what their publics think will face an uphill battle when individuals simply ignore their messages. (Kent & Saffer, 2014).

By using the five tenets Kent and Taylor (2002) established to define the aspects dialogue, researchers can study the messages between businesses and their publics in terms of whether they are employing dialogic conversations or simply "talk." As stated above, even with the myriad new social technologies presented to public relation practitioners, many businesses have not fully utilized dialogic principles in their communication strategies (e.g. Kent, 2013; Kim et al., 2014). By observing and analyzing the use of the tenets established by Kent and Taylor (2002), a business' use of dialogue in its messages can be studied across new technologies like social media, blogs, smartphones, and now Optical Head-Mounted Displays.

Evolution of Communication Technology in Public Relations

Historically, the field of public relations has pushed the use of emerging technologies to find new ways to communicate from clients to their key publics (Roloff, 2013). For example, now in public relations, as well as in nearly every industry, technological innovations like Web

2.0 have made a revolutionary impact on the way business is conducted (Kaul, 2013). These digital communicative technologies have introduced extraordinary new possibilities of dialogical and interaction-based relationships between clients and their targeted publics (Kaul, 2013).

With new social networking technologies, the public relations practice again has dramatically shifted to a far more symmetrical model of communication (Grunig, Grunig, Sriramesh, Huang, & Lyra, 1995; Kim et al., 2014). Publics now have the unprecedented ability to speak directly to businesses and vice versa (Scott, 2013). More than having this "ability," however, it is becoming necessary for businesses to develop a true dialogue with their publics in order to survive (Kaul, 2013). As Kaul (2013) stated in his research on new technologies in public relations, "one can't just be out there shouting at people about his brand, he has got to be engaged with them quite carefully" (p. 34).

Evolution of Public Relations Technologies

While the practice of public relations does not have set beginning date, it is commonly held that the professional field developed in the early 20th century with the establishment of the first public relations agencies, such as the founding of The Publicity Bureau in Boston mid-way through 1900 (Cutlip, 1994). From press agentry and publicity to the work of public relations founders like Ivy Lee and George F. Parker, the prevailing channel of communication for all businesses was print media like newspapers and informational pamphlets (Cutlip, 1994). This first era of public relations was dominated with the mass dissemination of knowledge in an effort to create a sense of openness rather than secrecy from corporations (Roloff, 2013). This is an example of a one-way asymmetrical model of communication.

A decade after the First World War, the father of public relations, Edward L. Bernays, would define the second era of public relations with the implementation of social psychology

methods into the field (Burton & Opdycke, 2011). Bernays developed a more modern understanding of public relations as the practice of building relationships between businesses and their publics (Burton & Opdycke, 2011). Bernays' methods were not met without controversy, however, most notably for the arguments in his books Crystallizing and Propaganda that encouraged controlling the masses through public relations techniques (Burton & Opdycke, 2011). With Bernay's findings and the emerging technology of the radio, colored photos and advertising, and the conglomeration of newspaper chains, organized propaganda saw a huge explosion in use following World War I (Roloff, 2013). These technologies were followed by what was perhaps the biggest influencer for the public relations industry for the remainder of the 20th Century: Television.

Though more traditional methods are certainly not obsolete, recent technology has notably impacted how practitioners and their publics interact (Scott, 2013). Staying at the forefront of technologies is becoming increasingly important for the public relations industry, resulting in the need for practitioners as a whole to broaden their familiarity with contemporary communication technologies as a means to stay relevant (Avidar, Aria, Malka & Levy, 2013; Kent & Shaffer, 2014).

Despite these facts, not all public relations practitioners have fully embraced the collaborative possibilities introduced with ever evolving social technologies (Kent & Saffer, 2014). This could be attributed to the risks presented to businesses and public relations if new technologies are not handled correctly (Kent, 2014). Some of these possible pitfalls include the threat to privacy for publics, the ease of falling behind trends, and "persistent memory" in which individuals and businesses have a hard time moving past mistakes that are saved indefinitely (Kent, 2014). However, as Turk wrote in 1986, public relations professionals must be innovators

and masters of technology rather than "minions." Practitioners cannot afford to ignore the future, but rather embrace its use to their advantage (Turk, 1986).

Though the literature has already studied the impact of social media, smartphones and blogging on public relations (e.g., Avidar et al., 2013; Curtis et al., 2010), few have looked to the possibilities presented by the new emerging wearable technologies, most notably OHMDs such as Google Glass. As new technologies emerge, public relations practitioners must be keenly aware of their own ability and the capability of their publics to bypass traditional media to create an entirely new channel of dialogue (Scott, 2013).

Public Relations and Google Glass

In the world of OHMDs, few have made as much of a splash in the recent market as Google Glass, one of the most sophisticated examples of wearable technology. As stated in the introduction, Glass is an OHMD that works as a miniature wearable computer, bringing technology closer to users while letting them better interact with the world without a phone screen in the way (Shanklin, 2014). The device comes complete with a prism monitor conveniently displayed just above a user's field of view, bone conduction transducer that transfers sound waves directly to the tiny bones in the inner ear, high definition camera for instantaneous photos and videos, microphone, and search engine capabilities (Angelini, 2013; Shanklin, 2014).

As Reed (2014) described the technology, "[Glass] is a social and technical experiment in digital immersion and social commerce, from instant context sharing to walkabout video conferencing" (p.10). While smartphones too can provide social commerce in the form of photos and video conferences, Glass more than any technology before it provides users with the ability to instantaneously capture the world around them via photo, video, or video conference, all

without the barrier of a photo or camera (Shanklin, 2014). With Glass' ability to provide easily accessible and omnipresent personalized information to users being just a voice command away, the wearable technology may be revolutionizing a number of industries in the near future (Ledger, 2014).

Glass and similar technologies are not without critics. Many pointing to issues related to the exorbitant cost of the beta version at $1,500, the shorter than advertised battery life (which did get progressively longer), the ethics of use, and most notably privacy (Ledger, 2014). Like smartphones, Glass can take photos and videos; however, people cannot as easily tell when individuals wearing the device are taking these visuals (Reed, 2014), and the speed difference between the time it takes for even the fastest draw of a camera and Glass is remarkable (Shanklin, 2014).

Like all new and emerging technologies, these new capabilities bring ethical and legal challenges (Reed, 2014). For the Glass beta testers, or "Explorers," some were met with resistance from individuals assuming the device were always recording, thus invading other's privacy (Holly, 2014). Users of Glass have also been criticized as "self-absorbed," concentrating more on the device than the world around them (Sloane, 2014), which is ironically the opposite of the goal Google set out to achieve with Glass. In contrast, Google saw Glass as a way to get people to stop being self-absorbed in their phones (Shanklin, 2014).

In the realm of public relations, however, Glass may present a number of opportunities for companies to build relationships with their publics. For example, some companies have already eyed the device as an extension of smartphone or search engine technology (Wasserman, 2013). Wasserman (2013) gives the hypothetical example of a man walking into New York City, asking his Glass about nearby restaurants, and scanning through restaurant reviews and special

offers. Through third-party applications created for Glass, the technology may act as another gateway for people to communicate directly with businesses.

Like any emerging technology, however, practitioners must be wary of possible pitfalls. For OHMDs like Glass, more than concerns of privacy and the high cost of beta units, companies may be impacted by issues ranging from difficulties of creating applications to publics being able to instantly price check items they would have otherwise purchased. Developers already ran into issues trying to create apps for users when they realized the Explorer Program simply did not have a large enough market to make the creation of apps for the technology commercially viable (Sanders,2015).

Other possible scenarios that would plague public relations could be companies like Coke or Pepsi being impacted by Glass applications that gave the wearer calorie counts of any food or drink they look at via the barcode. If a public relations practitioner was thinking about incorporating advertisements into the technology, they too would be out of luck, as the third-party application developers for Glass are not allowed to directly place advertisements into individual's field of view (BBC, 2013),

As stated above in Kent's (2013) review of dialogic theory, sending two-way messages between a business and its publics alone does not constitute dialogue. Unless a broader understanding of Kent's review of dialogic theory is used, with focus on engagement between businesses and their publics rather than necessarily the reciprocal sending of message, Glass may not fit with by Kent's (2013) definition of what is needed to constitute dialogue creation.

Research Questions

This research broadly asked how Google Glass and other similar OHMD technologies currently or potentially could impact the field of public relations, specifically in the context of building dialogue as defined by Kent and Taylor (2002). This general question was narrowed to two related components dealing first with the use of Glass and second with Google Inc. itself during its Explorer Program large scale beta test. Implications of these findings are discerned subsequently.

Using qualitative content analysis of three data source types regarding Google and its Glass technology, the study explores Glass' potential for dialogue creation. The data was coded and analyzed in accordance to the five tenets of the dialogic theory noted by Kent and Taylor (2002), along with additional themes found throughout the data.

RQ1: How much does the current and potential use of Google Glass comply with the tenets of the dialogic theory in creating relationships between businesses and their clients?

RQ2: Based on the five tenets of the dialogic theory, did Google Inc. effectively build a dialogue with its beta-testing publics during the Explorer Program.

Methodology

To answer the research questions, this study used a qualitative content analysis of news articles, Google announcements, and product reviews. Relying on both inductive and deductive means, the codebook captured the dialogue potential of Glass for relationship building between organizations and publics.

Qualitative Content Analysis

Content analysis is a research method that takes data from a phenomenon and condenses it to provide further knowledge, insights, and representations of the concept in a way that is replicable and valid (Elo & Kyngäs, 2007). Rather than using numerical units to analyze data, qualitative content analysis employs a systematic classification process of coding categories in ways that help discover hidden patterns (Valizadeh, Dadkhah, Mohammadi & Hassankhani, 2014). Through systematic means, content analysis allows the researcher to test a phenomenon in a way that enhances the understanding of its data (Elo & Kyngäs, 2007).

Through qualitative content analysis, this research examined first the current and potential use of Glass by companies with a specific focus on how the technology pushed engaged dialogue, second whether Google itself embodied the tenets of dialogue in its messages to beta testers during the Explorer Program, and finally looking at the implications Glass and similar OHMDs have on the public relations industry. The overarching idea this study addresses through its qualitative content analysis is whether businesses could use the technology to create a dialogue with their publics.

Data Collection Method

To discover the true capabilities of Glass as a way to engage publics, this research performed a qualitative content analysis on three different types of data about Glass: General media outlet articles about Google Glass, reviews from Glass' beta-testers from high profile technology websites, and the public announcements and other posts made by Google and its employees about the technology from their company and individual social media profiles. The unit of analysis was each individual article, announcement, or review.

The data and information gathered from these three source types demonstrated Google's, its public's, and Glass' beta tester's point of view on the technology. In particular, general articles gave external information about changes Google was making to the product and stories of other groups and organizations using the device; reviews detailed the specs, capabilities, and pitfalls of the technology; and the Google announcements provided a timeline of updates and future plans for Glass. The breadth of data allowed for a broader understanding of Glass' potential for dialogue creation. The data incorporated multiple publics' perspectives to give a detailed description of Glass' potential.

A random systematic sampling frame was used to select the data from a collection of news articles. These articles were gathered from academic search database LexisNexis. By using the keywords "Google" and "Glass," almost 990 articles and publications related to Glass on the database were collected. From this pool, the research focused on the first 200 articles collected, in which every 5th article was selected. This resulted in a final sample of n = 40 general articles, which was the number of articles coded until saturation of themes was reached.

The total population of Google Announcements and other posts were selected from the Google Glass and employee personal Google+ social media profiles, containing announcements, comments, and updates about the technology ranging from its original announcement in April, 2012 until the Explorer beta-testing program officially ended in January, 2015. The sample size was n = 33, representing posts from the official Google Glass page and comments made by Google employees answering customer questions on these Google+ posts.

A convenience sample was collected for the Google Glass user reviews. Articles about the technology were sought out from a list of the top 15 gadget and technology websites, based on unique visitors per month statistics (Top 15 Most Popular Gadget Websites, 2015). This non-

random data collection method was determined to be acceptable, as the information gathered from the reviews were used as a means to better understand the functions of the technology. From these sites, a sample size of n = 8 was collected, representing CNET, Gizmodo, The Verge, Tom's Hardware Review, Wired (two separate reviews), Engadget, and Gizmag.

Codebook Construction

After the data was collected and organized, a codebook was carefully constructed to help capture examples of Kent and Taylor's (2002) tenets of the dialogic theory. The codebook represented the five dialogic theory tenets. A more pragmatic example and characterization of each tenet was given, and specific examples and definitions were included (See 'Data Analysis' below).

Each dialogic tenet was briefly described and given practical examples, such as "when a company uses Glass to work collaboratively with its publics" and "when a company uses Glass to interact with its publics" in the mutuality and propinquity tenets respectively. When a source article, review, or announcement included an instance of one of these tenets, it would be coded deductively then descriptively in this category.

For organizational purposes, each unit of analysis was given an indicator, or number that would be used in the codebook and in the analysis. For example, a bolded "**30**" indicates the 30th general article from the pool of 200.

The codebook was designed to not only capture if a tenet was present, but to describe how each tenet was applied. In addition, the codebook included inductive elements by allowing for additional aspects and definitions of each tenet to emerge and capture other elements of dialogue not yet represented in dialogic theory. For example, themes of privacy concerns, legal questions, safety, two-way communication that were not dialogic, company's hindering

communication about or through Glass, and more were coded. Three additional principal themes emerged: privacy, safety, and legality. These were further analyzed and discussed in addition to the findings pertaining to dialogic theory.

Data Analysis Methods

The data was analyzed regarding whether the reviews and other articles had described the use of Glass as allowing businesses and users to create engaged dialogue with their publics, as well as whether Google Inc. itself was incorporating dialogic principles in its discussions of Glass. Using the qualitative content analysis methodology, the selected articles and publications were thoroughly read and coded through the lens of Kent and Taylor's (2002) tenets of the dialogic theory. In other words, the content was evaluated by whether each unit of analysis described the use of Glass as sending messages that achieve mutual goals, honesty of interactions and engagement, supportiveness, willingness to interact, and commitment to ethics (Kent & Taylor, 2002).

As stated above in the codebooks section, more pragmatic definitions and characterizations were written for each tenant prior to the coding based on Kent and Taylor's (2002) work. Mutuality, or the recognition of shared goals and interests, was further defined as "an acknowledgement that an organization and its publics are inextricably tied together" and was characterized by "inclusion or collaborative orientation" (p. 25). Propinquity, or the spontaneity and honesty of interactions between companies and their publics, was further defined as when "publics are consulted in matters that influence them and are willing and able to articulate their demands to organizations" and characterized by "engagement" (p. 26). Empathy, or the supportiveness and confirmation of public goals and interests, was further defined as when a company was "building an atmosphere or support and trust" and characterized by

"supportiveness" (p. 27). Risk, or the willingness of businesses to interact with publics on their terms, expanded this definition by adding that companies take these risks "despite the possibility of unpredictable outcomes to the relationship" and was characterized by "vulnerability and growth" (p. 28). Lastly commitment, or the extent to which an organization gives itself over the ethical dialogue, interpretation, and understanding in its interactions with publics, was characterized by "genuineness, honesty, and commitment" (p. 29).

These themes were fleshed out with the use of specific definitions written into the first columns of the tables of the codebooks (see Appendix for the codebook). For example, a specific definition of commitment was "when a company displayed deep understanding of its consumer base." If an article had an example of a company acting out one of the definitions for a tenet, the original quotes would be copied, paraphrased, and analyzed for its underlying meanings in the other three columns respectively.

Along with the tenets of the dialogic theory, other notable patterns the researcher found regarding Glass or Google were coded and evaluated. Some examples of these patterns included privacy, safety, and legal concerns over Google Glass, which, while not directly pertaining to public relations and dialogue, were impossible to ignore and integral to the topic of wearable technology.

While strictly quantitative content analysis research methods focus their readings on numerically measuring data and predicting outcomes, this research utilized qualitative analysis to better discover meaning through description. Instead of quantifying the content with measures that correlated to the exact number of uses of the dialogic tenets, deeper reading through the definitions provided from the codebook were used and key themes between the articles in how the use of Glass did or did not embody Kent and Taylor's (2002) dialogic ideals were analyzed.

All of the texts collected were carefully read, compared to the codebooks, important themes were paraphrased, and analyzed to discover patterns related to the tenets of the dialogic theory. A combination of random systematic sampling, total population sampling, and convenience sampling, along with strict organization of the data and careful analysis of the collected data, was used to ensure high quality of the research.

Analysis & Discussion

Mutuality

According to Kent and Taylor's (2002) work on the dialogic theory of communication, mutuality represents the recognition of shared goals and interests between a company and its publics. It is a direct acknowledgement by the business in its messages that the company and its publics are "inextricably tied together" (p. 25). This tenet is characterized by "inclusion of collaborative orientation" (p. 25).

The Use of Google Glass and Mutuality

Some of the core features of Glass include the device's five megapixel camera that can shoot instantaneous pictures and video (5.2[1] & 3.6), voice recognition and transcribing tools that can both send emails and texts as well as read incoming messages to a user (6II.1), and Google Now, which is essentially a highly location-specific Google Search that is now attached to a user's face (6II.3). Together these technologies make the sending and receiving of information fast and easy, which, if used correctly, can be used by a company to build a collaborative environment with external publics.

[1] These numbers are indicators that correspond to their data source. General articles are given in increments of 5, Google announcements and messages use postdate, and reviews are noted by their number on the 'Top 15 Gadget Websites' list (2015).

Interestingly enough, however, one of the best uses for Glass seems to be its ability to help organizations improve collaboration with their internal publics: their employees. In April of 2014, Google announced a new 'Glass at Work' program, which teamed up with businesses like the Washington Capitals hockey team, Schlumberger, Aug Medix, Crowdoptic, GuidiGo, Wearable Intelligence and more to test the potential for more practical, day-to-day uses of the technology in a work setting (4-7-24 & 6-16-14).

At this point in the Explorer Program, Glass really found its stride as an internal public relations tool, allowing workers at a business to quickly and easily transmit information back and forth in a way that would help boost efficiency and encourage greater communication (4-7-14). With Glass, employees can quickly send emails and texts, or start video conference calls through the Google Hangout video conferencing software.

> "Let's say I'm in the lab...and want to demonstrate to the Tom's Hardware editors how to configure the latest version of our automated benchmark suite," (said Chris Angelini from Tom's Hardware Review, noting the convenience of being able to instantly contact other workers). "I can 'hang out' with the staff, keep both hands free, and have them see what I'm doing from my perspective" (5.6).

Glass in the workplace is one of the most practical uses for the technology, and clearly improves internal communication within an organization (6-16-14).

Other businesses that have experimented with using Glass at work to improve internal communication efficiency include the New York Police Department (160), Mutualink (115), and a number of doctors and surgeons (185). The NYPD Intelligence and Analytics Unit stated that they were testing to see if Glass had any potential for assisting in investigations or for patrol vehicles to better report what they are seeing with video rather than just audio, though the

department as a whole did not confirm that it wanted to incorporate the technology in the future (160). Similarly, Mutualink began research into whether Glass could help police officers, firemen, and other public safety personnel improve their efficiency by greatly improving their ability to communicate on a visual level rather than just via radio, thereby benefitting law enforcement (115).

Glass has also been the cause of excitement in the medical field for its ability to bring important information right into a doctor or surgeon's view. For example, at the Medical Fair Asia 2014, a large medical conference in Singapore, Dr. Tiong Ho Yee donned a pair of Glass to assist him in six kidney stone removal operations. According to Dr. Yee, a consultant at National University Hospital's department of urology, Glass displaying information just in the doctor's field of vision saved him upwards of 20 to 40% of the operation time by allowing him to keep his sight on what he and his assistants were working on (140).

By the time this conference was held in Singapore, at least three American hospitals had incorporated the technology into their practice, all using Glass to help bring the surgical monitors to just above each doctors' right eye (140). The efficient transmission of information between the medical technology and the other surgical assistants show a collaborative spirit that makes public health safer along with it. The improved communication within the medical field seems to be one of Glass' greatest assets and possibilities.

Lastly Glass will certainly be encouraging a large amount of collaboration between users, Google, and software developers in the near future. These developers in particular will be the ones who create the applications and other creative uses for the upcoming commercial release of the technology (95). The future of Glass depends on individuals coming together to flesh out what the technology will be truly capable of. Public relations practitioners, too, will need to

develop ways to use the technology as a means to build dialogue in ways that even the best smartphones were not able to.

In summary, Glass' core communication features enable ease of information transfer and collaboration between publics, most notably internal publics, representing the dialogic theme of mutuality. Therefore, Glass does seem to fulfill the tenet of mutuality as described by Kent and Taylor (2002) by encouraging collaboration and equality of discourse partners. The analysis reveals how Glass is able to achieve mutuality.

Google Inc. and Mutuality

Looking at how Google itself displayed the tenet of mutuality while developing and updating Glass, it can be argued that the entire Explorer Program was in itself a massive collaborative project (145). Rather than creating Glass behind closed doors and later releasing a full commercial version of the product, as many other technology companies like Apple do (15), Google organized what some reviewers noted was an "aggressive beta-test" (4.4). Google released what they knew was not a complete product with the hope of receiving valuable feedback from its users, and updating the technology accordingly. In that respect, the Explorer Program was certainly a success (145).

Other ways in which Google was able to embody mutuality with its publics was through its #ifihadglass ["Hashtag - If I had Glass"] contest (195.2). Following the initial announcement of the device at its own I/O Conference in April of 2012, where Google originally invited attendees to sign up to purchase Glass (4-4-12), Google announced in February of 2013 that they were launching the #ifihadglass competition. Google stated that they were looking for "bold, creative individuals" who wanted to join the program and participate in "shaping the future of Glass" (2-20-13).

Through this contest, individuals who wanted to purchase the technology had to Tweet [post on the social media website Twitter] a message that described in 140 characters or less what they would want to use Glass for. In essence, this was a creative way for people to "apply" to buy Glass, and further gave Google and other followers a list of the possibilities and ideas for what people wanted to do and explore with the technology (75). Everything from people who wanted to mountain bike with Glass (3.1), to doctors (185), researchers (150), and even people just curious about how the technology would impact social relationships and etiquette (195.1) reached out for a chance to test the device. From this pool of people who participated, 8,000 were chosen, bringing the Glass Explorer program up to about 10,000 beta testers (195.2).

Throughout the process of taking user's feedback and continuously updating Glass, Google also started a large amount of collaborations to improve the technology. Some of the most notable of these included Google's partnerships with glasses designing companies Luxottica (40 & 155) and Warby Parker (30), which both helped redesign the Glass frames to be more stylish; the Glass Creative Collective, with five film and design schools that included students who experimented with Glass (7-30-13.1); Young Guru, a popular DJ who helped create the earbud accessory to let users listen to music (11-12-13); and the vast amount of third-party developers needed to create the applications for Glass (95). As will be discussed later in more detail in the risk section, these collaborations were often a result of Google adapting itself and the technology to better meet the needs of the beta-testers and future Glass users based on the feedback they received (15, 40, 105 & 155).

Therefore, Google clearly used Glass as a means to establish dialogue with its publics, specifically, the tenet of mutuality is clearly established through the collaborations with publics Google sought. In addition, publics were viewed as equal partners in the exchange and

refinement of the product. The way Google used Glass is another example of how the tenet of mutuality can be enacted by an organization.

Propinquity

Within the dialogic theory (Kent & Taylor, 2002), propinquity represents the spontaneity and honesty of interactions between companies and their publics. It is when a company's publics are directly consulted in matters that influence them, and in return when those publics are able to articulate their demands to the organization. A joint focus on the future and future decisions are elemental features to establish dialogue. This tenet is primarily characterized by the theme of "engagement" (p.26). Engagement asks the participants of the dialogue to give themselves over to the experience.

The Use of Google Glass and Propinquity

One of the tenets that the use of the Glass truly embodied throughout much of the data was propinquity, specifically in the sense that the technology could be used to engage publics in a number of creative ways. As stated above, one of the core features of Glass is its five megapixel camera, which allows users to take instantaneous photos and videos, and also participate in video chats through Google Hangout (5.2). The placement of this camera on an individual's face just above his or her eye also means the viewer receives that person's point of view, a profound way to step into someone else's shoes and actually see what he or she is seeing. These images and videos can even be automatically sent to the user's Google+ social media account (6II.1). Through this, a company can give its publics a firsthand look at the business, such as through digital tours of a facility, video updates of large projects, and so on. If a

company and some of its publics interact through a Google Hangout video conference, this more than anything else would certainly be considered engagement.

Some examples of businesses and organizations using Glass to build engagement with their publics include the Yale University football team (125) and the Jewish Federation of North America (JFNA) (200). Towards the end of one of the Yale football team's practices, senior quarterback Henry Furman was asked to wear a pair of Google Glass, with the live stream being sent to fans of the team as a way to get the players point of view during a game.

"It's a great thing for the kids to see and to be a part of something like that," (said Yale's Coach Tony Reno). "It's a great opportunity for the football program" (200).

This simple yet fun idea was a great marketing opportunity for the school to engage fans though the technology and through Google Hangout. Though not every business can necessarily give point of view tours, this examples still demonstrates the ability to bring what's going on with a business right to publics, and vice versa. It also shows both participants willing to fully engage, or give their whole selves to the interaction.

Looking for a more effective way to let the rest of their organization experience this journey, participants from JFNA got the chance to use two sets of Glass as a way to visually document their United Jewish Communities National Winter Mission Trip to parts of Galilee, Jerusalem, and the Negev. With Glass, the travelers could easily take photos and videos of their journal and instantly upload them to the organization's social media (200).

This trip demonstrated two key takeaways. One, Glass becomes a means to improve tourism by better allowing the user to experience what they are seeing without being stuck behind the lens of a camera or the screen of a smartphone. This is an idea that also applies to "real life" outside of tourism, highlighting one of the principal purposes of Glass as bringing

people back into their surroundings, without losing the access to information that has become so important in our day and age (200 & 4.2).

Second, and more important for public relations, is the idea of an organization easily, instantly, and spontaneously updating its publics with picture and video documentation (i.e. 11.7), as well as providing a greater ability to respond to comments and messages made about that documentation. If used correctly in a two-way manner, as many organizations unfortunately fail to do, this can be a successful means of engaging publics and creating dialogue.

In summary, Glass' ability to instantly send and receive communication messages through email and text, and audio and visual content through social media, offers businesses a means to engage publics, embodying the dialogic tenet of propinquity. In addition, features discussed within the mutuality tenet also point to propinquity. As Glass allows users to be a part of creating the next or improved version of itself, and provides new means of allowing users to be a part of the future of the product, the immediacy and engagement towards the future elements of propinquity are realized as well.

Google Inc. and Propinquity

During the course of the Glass Explorer Program, Google itself demonstrated a high level of engagement with its publics. Not only did the company continuously update users through its Google+ social media account on what was going on with the program, Google employees on some occasions answered questions in the comments (4-12-12 & 7-30-13_3), and big concerns were often brought up and answered in subsequent official posts and announcements (3-12-13, 5-31-13, 1-28-14, 2-15-14, 6-13-14, etc.).

For example, eight days after the original announcement of Google Glass on April 4, 2012, Google employee Isabelle Olsson answered one of the most frequently asked questions

posted on the comments section of the original post: Would Glass be available for people with prescription lenses?

> "We ideally want Project Glass to work for everyone, and we're experimenting with designs that are meant to be extendable to different types of frames. Many of our team members wear glasses, too, so it's definitely something we're thinking about" (4-12-12).

Olsson's post then showed an early mock-up photo of what prescription Glass would look like.

This post (4-12-12) was effective because it gave Google and the Glass program a real face and showed that they were listening to the feedback and were willing to answer questions. The post emphasized that Google wanted the technology to be all-inclusive; and humanized the company by relating many of its employees who wear glasses to the commenters asking about Glass and prescription lenses. Though it took Google more than a year to finally release Glass with prescription lens capabilities (1-28-14), the company's messages made sure to update people that this concern was not forgotten and was being worked on (i.e. 12-4-13).

Google also directly engaged with consumers at a number of other technology related events. For example, Google hosted two 'Glass Foundry Hackathons' events in San Francisco on January 28, 2013, and in New York on February 1-2, 2013, inviting developers to collaborate together writing code for the technology (1-28-13). Later Google toured the technology across the States with 'Glass on the Road,' where publics were invited in a number of cities to experience the technology, ask questions, and above all engage with Google representatives and the device. The series of 'road shows' were so successful that after a massive crowd showed up at the first event in Durham, NC, each subsequent show had to be made two days long (10-5-13).

Earlier in the Explorer Project when the time had come for Google to finally begin distributing Glass to the eager beta testers, rather than simply mailing the technology out, the

buyers were asked to come to specific locations and given the device face-to-face (130.1). This gave Glass users the opportunity to directly interact with Google employees, ask questions, try different frame colors, and even have Google representatives help set up the technology, such as through helping users fit the devices to their individual faces.

In some cities like San Francisco, this distribution ended up being a larger ordeal, with buyers being taken by boat to a huge airplane hangar where they had a cocktail party with Google representatives (130.1).

> "I showed up at the pickup location and we were shuffled into a boat and then zipped across the Bay to this huge airplane hangar, where there were tons of Google employees handing out champagne and letting us try on the different [colors] of Google Glass," said an anonymous Explorer (130.1).

> "The worst place to demo Glass is in a conference room," (stated Glass' Director of Business Development Kelly Liang). "Glass is about being out there, having fun, being active" (130.1).

Though these events were special and only this grandiose in a few major cities, the idea of giving customers something more than the standard retail experience was a great way to engage them and certainly created a buzz about the technology. These face-to-face events allowed Google employees and its publics to directly interact in a way that Google self-described as "unusual and personalized" (130.1).

Google clearly used Glass, the events surrounding the introduction and the program to establish dialogue, specifically, propinquity. The main element, engagement, is enacted by all participants. Google encourages and actively seeks the interaction with its publics to learn and interact with them. To build long-lasting relationships, engagement is especially important for

public relations professionals. It allows active listening to both sides and an equal, respectful exchange between all parties. Google invested many tools and financial resources to enable engagement with its publics, and the publics responded by interacting in honest and open forms with the company.

Empathy

The tenet of empathy within the dialogic theory of public relations (Kent & Taylor, 2002) embodies the supportiveness and confirmation of public goals and interests by a company. Empathy is about building an atmosphere of support and trust between a company and its publics, and as such is characterized by the theme of "supportiveness" (p. 27)

The Use of Google Glass and Empathy

Of all of the tenets of the dialogic theory, empathy was perhaps the least supported by the use of Google Glass. While a company that has incorporated Glass into its communication strategies can certainly create an atmosphere of support and trust for its publics, the actual use of the technology seems to play a minimal role in that goal.

It can be argued that communication through the technology, such as through texts, emails, Google Hangouts, or other messages sent from a company to a public, can all build an atmosphere of supportiveness, however that is really the message itself and not so much the medium of Glass. A company can use Glass to collaborate with internal and external publics, and easily use the technology to engage with publics, however, unless a company is directly addressing company concerns specifically through Glass, empathy technically is not achieved.

Is it possible for this to change once the full capabilities of Glass are realized? It certainly can if specifically Glass-related apps or software can be cleverly used by a company to help

build a strong feeling of trust that another technology could not necessarily accomplish. Maybe creating very open and honest point of view videos about the company's internal workings can help publics build trust in the quality of its goods or services, or maybe the extreme rapidity in which business personnel can respond to issues faced by the public through Glass will eventually become effective means for emphasizing empathy.

In summary, while current use of Glass may allow companies to send and receive messages to build an atmosphere of trust between a company and its publics, the technology itself seems to play a minimal role. Therefore, Glass does not seem to fulfil the tenet of empathy as described by Kent and Taylor (2002) in that the current capabilities of the technology by companies have not embodied supportiveness or confirmation of public's goals and interests. Time will tell whether the arious possible adoptions of Glass will lead to an empathic atmosphere, one that is essential for dialogue creation and successful maintenance of supportiveness (Kent & Taylor, 2002).

Google Inc. and Empathy

Google's greatest use of empathy during the Explorer Program was its constant messages that reiterated the fact that it was indeed listening to the feedback it was receiving from the Glass beta testers (4-4-12, 4-12-12, 5-15-14, etc.). Like stated above, Google employees addressed user concerns through their own social media profiles (i.e. 7-30-13_3), and the messages from the company often made it clear that Google wanted to improve the technology to give users the best experience possible (i.e. 2-20-13).

For example, when Google teamed up with the large Italian glasses company Luxottica, Glass' Google+ profile stated that "Luxottica understands how to build, distribute and sell great products that their clients and consumers love - something we care deeply about at Glass too"

(40). Through every step Google made sure its messages made clear that it understood customer concerns and wanted to do what it could to correct them (i.e. 3-12-13 & 4-12-12). When the company recognized that they alone would not be able to give users the best possible experience, they reached out to other organizations that could help. This clearly shows the company wanting to do whatever it could to improve its product, while boosting publicity for both companies (i.e. 40).

Although Glass inherently might not yet allow for empathy, Google itself is a good example of how an organization may use the technology to create an atmosphere of empathy and thereby foster dialogue. As Kent & Taylor (2002) state, supportiveness is encouraged by inviting participants to meetings, making locations and materials accessible and openly listening to gain mutual understanding. Google used its Explorer Program to achieve this, although not through Glass directly by through other means (e.g., websites, social media etc.). In addition, Google ensured that it let its Glass Explorers know that all concerns were heard and taken into account when changes were made, an example of confirmation and part of the empathy tenet. In summary, although Glass might not inherently yet contribute to the creation of an empathetic atmosphere designed to foster dialogue, Google did display the main features of this tenet during its Explorer program.

Risk

The willingness of a business to interact with its publics on its terms, despite the possibility of unpredictable outcomes to that relationship, is the dialogic theory's tenet of risk (Kent & Taylor, 2002). Companies by nature have to take a risk to expand, improve themselves, or just increase its bottom line. As such, the tenet of risk is characterized by the themes of "vulnerability" and "growth" (p. 27)

The Use of Google Glass and Risk

As with many emerging technologies, the use of Google Glass in itself represents a risk for any company wanting to incorporate it into its communication strategies. The technology is so new, and not necessarily well understood, which is only compounded further with many individual's discomfort with privacy issues due to the ease of being recorded at a moment's notice (15, 30, 65, 2-15-14, 3-20-14, 1.7, 5.3, etc.).

Regardless, there are still companies looking to use Glass, despite the possibility of unpredictable outcomes in their relationships with publics. Even with businesses being excited about these possibilities of Glass and other similar wearable technology, most have not fully realized what exactly they can do with the technology (60.1). For example, many stores and credit card companies sought out ways to improve customer experience by allowing them to more easily find items and automatically pay via Glass (5, 60 & 110). Though these apps are typically limited, and do not themselves constitute building a dialogue, they represents a start to incorporating the technology into the customer experience (60).

To name a few examples, MasterCard first began looking at ways to allow Glass to help people easily order and make payments for products (5), Tesco created an app that allowed customers to "fill a cart" before even setting foot in their stores (60), Intuit adapted its GoPayment card reader to allow Glass users to pay for items via a QR code (110), and LLC's 'GlassPay' allowed users to purchase items in-store with bitcoin (110).

Tesco in particular was not only willing to try incorporating Glass, but also actively solicited feedback from users.

> "It's about understanding how customers want to use wearable technology," (said Tesco spokesperson Felicity Callaghan). "Wearables are in very early stages and this is an area that is quickly changing and developing" (60).

Tesco's and other company's willingness to at least give Glass a try and openly receive feedback shows a promise for future businesses to expand upon these business' findings and apps when consumer versions of Glass are released. In some ways, the business' attempt to learn about wearables is in itself even creating more dialogue with customers than the actual device is (60).

None of these current store apps were perfect, but they all represent a starting point to where Glass might lead once more people have the technology and software developers can put more financial investment into building apps. These examples show a positive trend for companies to later better incorporate glass into their communication strategies. The companies that are using Glass clearly risk being vulnerable with their publics by trying technology that is new and untested, bringing with it unanticipated consequences, and the possibly "strange" uses by other publics – all of these are core elements of the dialogic tenet of risk (Kent & Taylor, 2002).

In summary, the uncertainty related to incorporating a new technology into a company's communication strategies in itself embodies the dialogic tenet of risk, as established by Kent and Taylor's (2002) study. Businesses willing to experiment with the device, solicit feedback, and improve upon their applications as a means to expand and improve embody a sense of vulnerability and growth. It seems that Glass encourages and facilitates risks and with risk the potential for ridicule or great rewards. But in either case, the tenet of risk seems clearly supported by the data.

Google Inc. and Risk

Google took many risks throughout the Explorer Program. The largest risk the company took was having an open and public beta version of an incomplete technology (15). There was no doubt that the technology would bring up concerns, such as the privacy, safety, and legality debates, as well as criticisms about the people wearing the technology (90), the limitations of the product (5), and in turn criticisms about the company itself (15).

Google too is not a company necessarily known until recently for its hardware (105). Google has grown into the large corporation it is today through its software, like the original and now ubiquitous search engine (where "Google" is now both a noun and a verb), the highly popular Gmail email service (15), Google maps and its accompany street view, the Google Drive cloud-based office and word processing online software, the Google Earth satellite map software, and many more. Glass marks one of the first true hardware developments for the company, and while an open-beta worked well for its software services, in some ways this did not transfer to Glass (105).

This large scale beta test was risky in that it would be difficult for Google to correct any hardware issues once the technology was out in public and not safely in the company's headquarters (105). When Google had a similar beta test for its Gmail service, updates were as easy as changing code (15). With Glass, internal issues were continuously improved upon with monthly updates (4.4), while external issues would remain unfixed until a new version was manufactured (11.3). Google did effectively release its Beta Version 2.0 with a free upgrade for those with version 1.0; however, this still required users to go out of their way to pick up the newest version (12-4-13). Despite this setback, this public beta still demonstrated a willingness

to let the publics try the technology and provide Google with valuable feedback and suggestions (145).

In some cases, the risks Google took did not pay off. Toward the end of the Explorer Program, fewer developers continued showing interest in creating applications for the product because the market simply was too small. In trying to make the beta for Glass something that was cool and exclusive, the technology had been given an extremely high price tag of $1,500, and a relatively small number of people were given access to even buy it. Because of these factors, Google limited itself by not having a large market, and in turn no financial incentive for developers to create applications for Glass (15). Without a large number of people using the device, it will also take longer for the novelty of the Glass to wear off and for the technology to become perceived as "normal," which may hinder the acceptance of Glass once it's released to all consumers (4.6 & 6II.8).

These issues and more comprise a number of concerns Google needs to address before any commercial release of the product. Higher price tags may make the technology more exclusive or trendy, but it can also make people simply not want to buy it (15 & 11). Without a large enough consumer base, developers will not create new and exciting software (15), and as Theo Ahadome, senior analyst at ISH, noted in one of the Google announcements "if developers fail to produce compelling software and uses for the devices, shipments could be significantly lower in the next several years" (105). Glass in many ways is an extension of a smartphone (11.4), and like smartphones a major selling component is an ever-expanding app store.

In other ways, however, the Explorer Program was a large success. Google received the feedback it wanted, generated much media attention, and clearly showed that it was listening to the feedback it was receiving and was excited to incorporate that into its product (i.e. 135). For

example, some of the early criticisms of Glass were that the technology was not stylish enough (i.e. 135), that the battery life was not long enough (75, 1.3, 5.7, 11.8, etc.), that the volume was not adjustable (1.4, 3.2, 5.9, 11, etc.), and that there were no prescription lenses for the product (135, 140, 1-28-14, 12-4-13, 5.4, 11.3, etc.). All of these issues and more were corrected as monthly software updates were sent out (4.4), and a number of hardware updates appeared when Google unveiled its Beta Version 2.0, with a free upgrade for the early Explorers (12-4-13).

Google teamed up with Luxottica and other similar glasses companies to rework the design of Glass (30, 40, 3-24-14, etc.), eventually coming out with the even lighter weight 'Titanium Frame Collection,' with more color and style options for people to individualize their purchase (135, 1-28-14, etc.). Beta Version 2.0 also came with 'Shades,' clip on sunglass accessories for practical and style purposes (5.1 & 11.3). Google in essence admitted that its critics may have been right about Glass not looking "cool enough," and by reaching out to companies that specialize in trendy glasses styles it was able to physically change the design to a more desirable appearance, while boosting publicity for itself and the companies Google was working with (i.e. 40 & 155).

With each subsequent upgrade (4.4), the battery life for Glass progressively improved (i.e. 5.7). Even during the announcement of the device, Google's co-founder Sergey Brin had acknowledged that battery life was of principal concern and would be a priority of Google to correct for the betterment of its consumers (75). This is both an example of Google releasing a not fully ready technology with the hopes of improving it, and a recognition of what would soon become important to users (75 & 105). Though by the end of the Explorer Program Google still could not get the batteries to consistently work an entire day with 'regular use.' However, the average time more than tripled from the original pairs to around eight hours of typical use (1.3).

Glass' audio works with through bone conduction transducers (1.4, 5.9. 11, etc.). By having the device gently rest against the area just above a user's ear, the technology works by directly vibrating the tiny bones in the ear canal that let a person hear. By keeping a user's ear canal open without a headphone or earbud, Glass users can hear the device and the outside world (11). The only issue was the earlier versions did not have a volume control, meaning that while the sound quality was clear, even a noisy street could be loud enough to inhibit a user from being able to hear the device (1.4, 3.2, 5.9, etc.). Noting these concerns, but without the ability to change the hardware of the devices by adding a physical button, Google made it so users could alter the volume through the settings found with the corresponding Glass app (11). This was a clever temporary fix that will likely lead to a physical change on the consumer models.

Finally, one of the biggest questions from day one was whether Glass would be available with individuals with prescription lenses (4-12-12, 3-12-13, etc.). The answer became a definitive "yes" when the Titanium Collection had the ability to have prescription lenses added (1-28-14). Many insurance plans were supposed to cover this, and Google specifically trained a number of optometrists, such as Dr. Mavic from Bloomington, Indiana, to be 'Google Glass Preferred Providers' (1-28-14 & 40). This was also when Google was comfortable enough with its technology to release the beta version to the entire American public (130). This change to the Titanium Frame collection best demonstrates the length Google went to improve the product based on consumer needs and feedback.

Other risks were also taken by Google in the messages they released to its publics. Some risks were smaller, like having employees directly respond to questions in the comments rather than having them answered in more official, and more company-reviewed, releases (4-12-12, 7-30-13_3, etc.). For example, Google employee Sarah Price, responded to questions about Google

after the company had asked some Explorers to invite additional people to purchase the technology.

> "Hey everyone, if you haven't received this email yet, I'll try to find out whether we're done for now or not…since this is an experiment, I don't want you sitting on the edge of your seat if we're done for the moment…just to clarify - this is an experiment we're trying. It's independent of #ifihadglass, although some #ifihadglass Explorers may receive this email" (7-30-13_3).

Price admitting she did not know the answer clearly displayed vulnerability and a willingness to do her best to answer to the best of her knowledge.

The email Price was referring to (7-30-13) can also be seen as a risk, because some Explorers were invited in July of 2013 to nominate up to three friends or relatives into the Glass Explorer Program (50 & 130.2). This move by Google to expand the Explorer program through an exclusive nomination process was met with some criticism, as these invitees would still be required to pay the $1,500 and confusion occurred when not every Explorer received the email (50, 130.2 & 7-30-13_3). Price's comments (7-30-13_3) showed that Google representatives who were there to answer questions; however, the response also suggested that the whole invitation process might not have been as well planned and executed as could be expected.

Google also took some risks in the release of its 'Do's and Don'ts of Glass' article and 'Top 10 Google Glass Myths' list (2-15-14 & 3-24-24). In the Do's and Don'ts list, which in itself was a collaboration with Explorers to develop a list of practical uses for the technology while noting things to avoid, Google attempted to address the issue of what was the appropriate Glass etiquette, or how not to be rude when using Google Glass in public places (2-15-14). This was a good risk in the sense that the company was finally addressing a major issue. Google also

took language from critics in an attempt to change the connotation of a previously derogatory term (2-15-14). In a "Don't" message telling people to not be rude with Glass, Google used the critics word by asking users not to be "Glassholes." This sparked some controversy (2-15-14), however this move was also seen as a clever way to de-emphasize the power of that term and turn it against critics by agreeing and embracing it.

The Glass Explorer program overall clearly demonstrated Google's embodiment of the dialogic tenet of risk, as described in Kent and Taylor's (2002) work. The organization took many risks and made itself vulnerable to ridicule, unanticipated consequences and potentially strange responses from others. Risks can bring both negative and positive outcomes and are therefore an essential element in dialogue creation (Kent & Taylor, 2002). Only by giving up some of the control over its product was Google able to elicit true feedback about potential shortcomings of Glass. As noted above this risk could have had the impact of making Glass unattractive for a later commercial release or it could lead to the improvements needed to make it a desirable device for a broad public. It seems that Google is confident that the risk paid off and it will release a commercial version of Glass soon. In summary, as a new technology, embracing the risks of Glass seems to have paid of positively for both third-party organizations and Google.

Commitment

The final tenet of the Dialogic Theory (Kent & Taylor, 2002) is commitment, or the extent to which an organization gives itself over to ethical dialogue, interpretation, and understanding in its interactions with its publics (p. 29). Commitment is difficult to truly perceive or codify, as it represents more of the sentiments between an organization and its publics through that organization's ethics and understanding, something not always easily found in articles or even in the company's messages. The tenet is often found in the underlying

meaning behind those messages. Nonetheless, the tenet of commitment is represented by the themes of "genuineness" and "honesty" (p. 29).

The Use of Google Glass and Commitment

Like empathy, commitment was also underrepresented in the analysis of the data in terms of the use of the technology's capability to directly impact a company's ability to demonstrate genuineness and honesty. However, commitment in many ways seems to be a coalition of the other tenets. If a company can demonstrate a recognition of shared goals and interests (mutuality), be spontaneous and honest in its interactions (propinquity), show supportiveness and confirmation of public goals and interests (empathy), and be willing to interact with publics on their terms (risk), then inevitably that company will be building an understanding with its publics. So long as the company remains ethical in its dialogue, that company is showing commitment.

With this in mind, it can be inferred that with Glass' ability to greatly improve internal and external communication (1.1, 6II.1, 7.1, etc.), provide creative ways to engage publics with audio and visuals (60.1, 185, etc.), and push the boundaries of what technology can do for a company's communication, it is certainly possible to use Glass as a means to demonstrate commitment, albeit indirectly. Like empathy, however, the medium of the message, may be less important than the message itself produced by companies to build ethical dialogue and understanding.

Can Glass be used to build these characteristics? It can in the same way an expensive camera can create a video to improve understanding of a public to the company producing; however, Glass' ease and speed of sending video messages can make a noticeable difference. For example, Glass could be used for instant customer service in a way that lets employees can see a

caller's point of view and quickly help them address an issue, all while a user maintains the use of both of their hands. Seemingly simple gestures like this more than anything are both useful and show a company going above and beyond for its customers.

In summary, commitment, like empathy, was underrepresented in the data. The use of Glass as a message medium did not, in itself, impact how a company developed an atmosphere of supportiveness and honestly in the communication between a company and its publics. Therefore, Glass did not seem to fulfill the tenet of commitment on its own as described by Kent and Taylor (2002) by creating genuineness and trust on its own. However, by embodying the other tenets of dialogue with the technology, there is promise for future uses of Glass to help companies go above and beyond for their publics and build commitment.

Google Inc. and Commitment

From the start, Google certainly demonstrated a commitment to its publics through consistent announcements (4-4-12, 4-12-14, etc.), monthly upgrades (4.4), and understanding of the issues users reported (4.4, 40, 55, 75, etc.). Google showed its willingness to adapt both the technology and itself, often by admitting it needed help from other companies (30, 40, etc.). By consistently demonstrating most of the other tenets of dialogue, Google also did what it could to build credibility and trust with its publics, most notably through collaboration and engagement with the Glass Explorers (i.e. 145).

A prominent example of Google going above and beyond for its users was the free update when the company released the second version of the beta (12-4-13). Another example was when Google offered to replace products that had been damaged during the summer of 2013 from high heat and humidity (8-28-13). Although the company was reluctant to divulge why the products were suffering issues with humidity (despite the device being otherwise water-resistant), users

overall were impressed with the company's quick response and replacement of the defective units (8-28-13).

Even in many of the company's messages, Google kept a consistent tone of wanting to do what was best for the consumers (i.e. 55 & 90).

> "The most important thing that we do is focus on building a great product for users whenever that might be launched,"
>
> (reiterated a representative of Google in a message to AFP Relax New) (55).
>
> "We are completely energized and as energized as ever about the opportunity that wearable and Glass in particular represent,"
>
> (noted Glass Head of Business Operations Chris O'Neil amid the declining interest of developers) (90).

Overall, Google showed commitment to its Explorers and presented itself mostly as a genuine and honest company. Google was interested in honest feedback and often communicated and interacted with consumers in a fairly open and honest fashion. The more the organization displayed the various elements of dialogue creation already discussed above, the more credible its commitment to the Glass users became. The company did not only say it was interested in feedback but actively acted on this feedback, thereby clearly showing its commitment to the relationship with the beta testers. Again, although the technology might not be ideal (yet) to create and maintain commitment, Google demonstrates in its Explorer Program that an organization can commit to dialogue with specific publics.

This concludes the five original tenets from dialogic theory (Kent & Taylor, 2002). In addition to these five themes, a few other themes emerged that seemed important for the creation

and maintenance of dialogue. These themes are: privacy, safety, and legality. Each will be discussed.

Privacy

While Glass was met with excitement from many because of its capabilities and sheer novelty, the technology was not without dissenters. For example, some individuals felt uncomfortable with the device's ability to quickly and (arguably) discretely take pictures and videos that can be instantly shared online (15.2, 70, 90, 5-13-13, 1.7, 6II.2, etc.). This concern represents the first major theme: privacy.

Glass and the Privacy Debate

The consequences of the privacy debate were one of the biggest challenges for Glass Explorers, especially early on. Explorers were routinely met with strange looks, awkward questions, and in some cases open hostility about the fact they were wearing this technology (11.6, 175, 180.2, etc.). Some Explorers noted that by making others feel uncomfortable, they also felt awkward (6II.2).

> "It's downright distracting having people look at you like you're some foreign alien object every time you run to the store or grab a bite to eat," (stated Will Shanklin from Gizmag). "Google wasn't kidding when they were looking for bold individuals to join this Explorer program."

Particularly in San Francisco, an area where a large number of young wealthy urbanites were a part of the Explorer Program, the term "Glasshole" came into prominence to describe the local Glass Explorers and their use of a technology. They were becoming known for making

people feel awkward (90 & 6II.2). Mat Honan from Wired described people getting visibly upset at him for wearing the technology:

"People get angry at Glass. They get angry at *you* for wearing Glass" (6II.2).

Honan went on describe another aspect of the hostility; the perceived (or real) inherent self-importance of wearing Glass. Glass was seen by some as a pretentious and "exclusive" technology because users had to pay a hefty sum for the technology and had to apply to have it. As Honan summed it up, "Glass is a class divide on your face" (6II.2).

The Bay Area too was the scene of violence against Glass users. For example, Explorer Sarah Solcum, a tech writer, was attacked in a bar (175), and another anonymous user had the technology yanked from his face and smashed on the ground (180.2). Both cases, however, show fault on both sides of the debate. In each, the Explorer was using Glass in an inappropriate way and then refused to take off the device when first asked nicely to do so. The other party then used violence to get their way.

From these reports it is difficult to say whether this outright violent backlash to the technology was even about Glass or just frustration with evolving technology in general. It is also hard to know whether these were rare and isolated events that the media hyped, or if people overall actually were this concerned with the capabilities of the device. Either way, it is important to recognize that not every situation is appropriate for Glass.

This observation might further dialogic theory tenets by showing that although the dialogue is initially between the organization and its publics, other third-party groups become impacted or involved in the dialogue. Although conflicts erupted between the Explorers and other citizens, these interactions also shaped dialogue between the original groups.

Google Inc. and the Privacy Debate

Part of this privacy is rooted in Google's communication surrounding the release of device. Though Google made its purpose clear at the release conference and in some subsequent messages (i.e. 4.2), the purpose of the technology was mostly left up to consumer imagination (i.e. 15.1).

> "You can't just throw some new radical technology out there without marketing and articulating a vision, or else people will make their own conclusions about it," (explained JP Gownder of Forrester Research). "That's what led to the privacy situation [Google] face[s] today." (15.1)

Glass from the start was actually meant to maintain the positive aspects of technology, such as instant information and improve communication, while simultaneously reducing people's habit of staring at their phone screens and not paying attention to the world around them (4.2, 6I.1, 6II.7, etc.). In this sense, Glass is like an extension of a smartphone (6II.7, 11.9, etc.). However, without this basic purpose made clear to most, people automatically began to think the purpose of Glass was the ability to discreetly take photos and videos of unsuspecting people (15.1). The mystery of Glass' purpose frustrated many and the exclusivity of the product and gap of information compelled people to develop their own theories about its purpose (15.1).

Google then further exacerbated the issue by taking too long to fully address the issue (15, 65, etc.). From the start Google should have stated that Glass was designed with a social etiquette in mind, including voice commands, clear button usage, and an obvious red light that was on when video was being taken (61.3, 65, etc.). Google should also have made clear that it is the user's responsibility to know when it is and is not appropriate to use the technology. For example, Brent Rose from GizModo noted that while Glass was great for taking photos and

receiving directions while biking, the technology would not be appropriate to wear on a date (3.1). It is understandable why Google did not spend a larger budget on marketing for Glass because the technology was a beta version released to only a few thousand Explorer; however, the hype surrounding the device left a large gap that Google should have filled with its own messages.

Google's eventual release of its "Do's and Don'ts" (2-15-14) and "Top 10 Google Glass Myths" (2-20-14) did a good job of addressing many of these issues. It may have been too little too late, as well as not advertised well enough. There is always some backlash over new technologies (180); however, a company should do what it can to correct misconceptions. Until Glass becomes more "normal" in everyday life and a more formalized etiquette is agreed upon, Glass will have to deal with a privacy debate.

Again, this particular theme clearly shows that dialogue can evolve to include more than the initial organization-public relationship. Google built strong dialogue with is Explorers, but not with other publics who were or felt impacted by the new technology. Therefore, these other publics became important to the Google-public relationships.

Safety

Glass and Safety Concerns

Another common theme found throughout much of the data was the question of safety, particularly in respect to driving (1.6, 3, 5.4, 11.5, 45.1, etc.). Does Glass make basic tasks like driving more dangerous by becoming a distraction, or safer by providing turn-based directions just out of vision without the requirement to look down at a phone or GPS unit?

There was concern over Glass' monitor being more distracting than a GPS dash-mount or a smartphone (i.e. 3.9). Opinions on both sides were given, though people who had used Glass to drive for the most part described the device as safer than some other methods (1.6, 5.4, 11.5, etc.).

> "In the past, I've always just put my phone down in a cup holder, or in my lap, and cast furtive glances downward when I needed to know what turn was coming up. Frankly, it wasn't safe," (said Brent Rose from Gizmodo). "With Glass, directions pop up just when you need them on the screen just above your field of vision. It actually feels very safe and is much, much less distracting than looking down at your lap" (3.9).

In addition, many of the core features of Glass do not require looking at the screen, such as getting directions, responding to emails or texts, or having emails and texts read to you (3.9, 11.5, 85, etc.). Glass' audio also puts directions directly into your ear via its bone conduction transducer technology, while still letting a driver hear the road (i.e. 5.9).

Google Inc. and Glass' Safety Concerns

Google addressed the driving safety issue even before initial release, by blocking Glass from using any other possibly distracting feature whenever the direction feature was engaged (1.6). Compared to smartphones, which of course lead to the temptation to use other apps like music or texting while driving, Glass seems like a far superior and safer way to get directions (i.e. 3.9). This move also showed that Google had thought about the safety of its users far in advance.

Like most technology, safety often comes down to the user. Glass seems to have the potential to make "Driving while Glassing" far safer than many other ways to get directions. This

seemingly common sense solution, however, was further complicated when lawmakers became involved in the safety debate.

Legality

Directly following the themes of privacy and safety comes the question of legality, or what role the law should play for Glass. Due to these debates, a number of lawmakers have put forth legislation that would ban the use of Glass while driving and in other public places (70). For example, some bars have banned the device for making patrons feel uncomfortable, movies theaters have banned the technology because of the threat of piracy, and casinos have banned Glass for questions of cheating (45.2).

Glass and the Law

On November 12, 2013, Glass early adaptor Cecilia Abadie was pulled over and given a ticket for speeding in San Francisco. Abadie was then given a second citation for "driving with a monitor visible to the driver," or as it would later be known, "Driving while Glassing" (45.1). This would be just the beginning for the long and murky debate of how the law should handle this new technology.

Since the start of the Explorer program, Glass has been banned in a number of "visibility-sensitive" areas like casinos and movie theaters. In addition, many Explorers have gone to court for traffic violations, or "Driving While Glassing." Lastly, a group of eight congress members send a letter to Google CEO Larry Page asking for details about how Glass handles various privacy issues (11.5, 45, 70, 80, etc.). Most notable in this inquiry, legislators were worried about whether Glass had facial recognition technology. Google assured the law-makers that Glass does

not have that technology, nor does it plan to unless they had "strong privacy protections in place" (70).

Legislators also were concerned about safety while driving, as stated in the above section (11.5, 70, etc.). People around the nation have been pulled over and ticketed for assorted laws pertaining to monitors in view, distractions, and other reasons that Glass may have broken state laws (i.e. 45.1). Even on its official FAQ page, Google told Glass users that it was their responsibility to read and understand state laws before driving with the technology. This is problematic for Glass users because laws are typically difficult to understand. This is also an issue for Google because turn-by-turn navigation is one of Glass' main selling points (45.1).

> "I personally think it would be a mistake if governments continue to try to ban Google Glass behind the wheel...that's one of the places where it make the most sense," (noted Shanklin from GizMag). "Of course lawmakers are going to understandably worry about the potential for distraction, but the fact is you can do all kinds of things like send messages, read incoming messages, and search for businesses without even looking at Glass' display" (11.5).

Though people on both sides have disagreements about the role laws should play with Glass, there are some well-founded concerns over the capabilities of the technology. More than just taking pictures and videos of people at a moment's notice, the device too can take record (intentionally or not) sensitive information faster than most any other technology on the market (3.8 & 80). This is especially a concern for medical personnel, one of the groups most excited to incorporate the technology into their practice. While the technology may be great for providing doctors and surgeons with up-to-the-second updates and patient data, whether the technology can

provide adequate privacy protection for this sensitive information is another question entirely (80). Individuals and organization must be cautious of the possible legal implication of Glass.

All three of these themes point to an additional aspect not well addressed in dialogic theory: the impact of third-party publics on dialogue between an organization and its public. It also shows the complex situations an organization has to face when communicating and building relationships. Although the Explorers might be Google's primary public, many other secondary publics greatly influenced the relationship between Google and the Explorers. These other groups include other citizens concerned with privacy, business owners, politicians, law-makers, and law enforcement, to name a few. For example, these third-party relationships impacted the Google-Explorer relationship by causing traffic citations. Dialogic theory does not provide an adequate frame to address these additional impacts on the initial dialogue or relationship creation. Although the data here does not point to an extension of the theory, it does show a shortcoming in how dialogue is established.

Conclusion

Google Glass and Dialogue

Through the analysis of the data collected from this research, the current and potential use of Glass by a company as a means to build dialogue found support in each tenet, though more strongly in some than in others. In particular, a number of companies had already demonstrated Google Glass' ability to embody mutuality, propinquity, and risk.

Mutuality and propinquity were achieved through Glass' core functions of a camera and microphone (1.1, 5.2, etc.), as well as its ability to allow the user to easily access the Internet from nearly anywhere (3.4, 11.9, etc.). By greatly increasing the capability for a company to

send and receive information rapidly, whether through messages like email or text, or by direct communication through the Google Hangout video conferencing software (3.8, 5.6, & 6I.2.), a company can easily increase collaboration and engagement with publics. Interestingly, however, these uses seem to be best suited for different publics, with the ease of collaboration becoming much more prominent for increased flow of information between employees (internal publics), and the ability to share information to external publics quickly and spontaneous being a better way to engage them (115, 6-16-14 & 5.6).

The risk found in Google Glass derives from its status as a new and in many ways novel technology, which calls its future use into question until wearables become normalized in society (4.6, 6II.8, 11, etc.). Glass in particular has been met with criticism for its implications on how technology is treated (i.e. 11.9), privacy concerns over the rapidity of video documentation (i.e. 3.8, 65, etc.), safety concerns with driving (1.6, 3.9, 11.5, etc.), and the debate of where the law should stand with the new device (45, 70, 80, etc.). Companies wanting to find ways to incorporate the technology into their communication strategies must also come up with clever and sometimes unsuccessful attempts to do so if they want to use the technology to build relationships with publics.

This is not to say that empathy and commitment could not be achieved with Glass; however, in most cases it seemed as though Glass acted more as a medium for messages that built supportiveness or honesty rather than a means to achieve those goals. As the Explorer Program was a large scale beta program, the future possibilities for Glass, or an app on Glass, to better embody these tenets is certainly possible even if an example does not exist now.

Google Inc. and Dialogue

The research also noted what the Google Company did during its Explorer program that did or did not follow the tenets of dialogue. The Explorer Problem did involve some mistakes. For example, there were too few and slow messages related to issues like privacy (i.e. 15.1), and the relatively limited release of the beta caused software developers to back out when they stopped seeing a financial incentive (i.e. 6II.4). Despite these setbacks, Google overall demonstrated a strong use of the tenets of dialogue to build a relationship with its Explorers.

The overall program was a massive collaboration with Google's public (mutuality) (i.e. 145), the company and its employees regularly gave updates (4.4) and answered questions via its social media accounts (propinquity) (i.e. 7-30-13), the principle theme through the entire program was that they were listening to the feedback closely (empathy) (i.e. 20 & 135) and making changes to the technology accordingly (risk) (i.e. 30), and on a number of occasions the company went above and beyond for its Explorers, like quickly replacing all damaged units (commitment) (i.e. 8-28-13).

As for the additional themes studied through analysis of the data, the three most important and interrelated debates still continue on for Glass, as well as for many wearable technologies. These include concerns of privacy, safety (especially with driving), and legal questions that deal with the former two.

While the ability to instantaneously take pictures and video with a simple voice command is a main selling point for Glass (i.e. 3.8), this function also sparked arguably the main controversy surrounding the technology (i.e. 60). People are uncomfortable with the capabilities of Glass, partially because Google did not do a good job of a explaining those capabilities and purposes earlier on in the program (i.e. 15.1). Fixing this issue will involve time for people to

become used to the technology, and the development and following of social etiquette surrounding the glass. These will both happen faster if more people have Glass. Through common sense, it should soon become clear when it is and is not appropriate to wear Glass.

Safety, particularly with "Driving While Glassing," has become a debate turned into legal question as to whether the device becomes a dangerous distraction, or a safe alternative to using a smartphone to get directions (i.e. 45.1). While some say they think the Glass monitor would be a distraction, typically those who use Glass actually find it much safer than using a cell phone (i.e. 3.9).

Stemming from privacy and safety, legality and the place of law in enforcing rules of Glass has become a hot topic. There have been people pulled over and ticketed for driving with Glass (45.1), the technology has been banned in bars, movie theaters, and casinos (i.e. 195.1), and legislators even sent a letter to Google executives asking whether the device as facial recognition capabilities (it does not) (70). It may become necessary for privacy controls to be put on Glass in places that are "visually-sensitive," and Google's messages may need to make clear what is and is not legal for the use Glass. Like the other two themes, common sense will be the best solution to this issue.

Glass' Future Use in Public Relations

The future of wearable technology overall looks bright. There is talk of smart watches from Apple, virtual reality goggles from Oculus, true augmented reality glasses from Microsoft, and soon Google Glass will be commencing its "phase two" with a full commercial version release (1-15-15). So long as Google continues to take and incorporate the feedback it received and the lessons it learned from the Explorer program, as well as make the unit affordable, Glass should catch on and become more normalized in our society.

As for public relations practitioners, the findings from this study point to possibilities for building dialogue and subsequent relationships with publics. This is particularly true through increasing the efficiency and collaborative capabilities of internal publics (6-16-14, 160, 115, etc.), providing an even easier and more creative means to spontaneously engage external publics (115, 6-16-14 & 5.6), and by encouraging practitioners in the field to use new technology to keep pushing the boundaries of what can be accomplished through strategic communication.

As the industry for wearable technology continues to evolve, so too must public relations practitioners. OHMDs like Google Glass in particular have shown the ability to help companies promote many aspects of dialogue as outlined in the dialogic theory of communication. These include most notably those of collaboration (mutuality), engagement (propinquity), and vulnerability and growth (risk). With the next iteration of Google Glass on the horizon (1-15-15), Glass and wearables like it will further make their way into society and change how people think about technology and information (4.6, 6II.8, 11, etc.). Public relations practitioners must be ready to spot these changes and adapt with them.

Limitations

There were five limitations found in this research. These included (1) the inability to get randomized data units for Glass reviews, (2) a large portion of the data collected focusing more on Google Inc. rather than the uses of Glass by other companies, (3) the Glass Explorer Program constantly changing and evolving during a large portion of the actual research, (4) the program's conclusion during the research and subsequent uncertain future, and (5) the inherent limitations of fitting the topic into the smaller frame of the dialogic theory.

Randomized reviews from a large data pool might have further increased the nuances of findings. However, the information reviews brought to light only needed to focus on how Glass

worked, how the technology would impact a company's dialogue, and in turn what public relations practitioners could learn from that.

This research also would have benefitted if a larger part of the data collected pertained more directly to the research question of how Glass did and would impact company's dialogue; and in turn what public relations practitioners could learn from that.

Conducting research on an ongoing program also presented interesting and challenging obstacles to overcome, as Glass updates were continuously released and new ways to use the technology were conceived. The conclusion of the program in early 2015, while good for catching up on the data, also brought with it uncertainty into the future of Glass and whether the research would still provide practical and useful data to practitioners wanting to learn about wearable technologies. However, subsequent announcements have more clearly stated that the consumer release of Google Glass is on the horizon, making this research more valuable than it was even during the Explorer beta program.

Finally, by choosing one model of communication to study, research inherently must overlook other interesting data found that does not quite fit. Other challenges presented by the dialogic theory were developing pragmatic definitions for the coding. These, however, gave way to interesting discoveries as to how dialogue can apply to the use of Glass.

Future Research

Future research into the field of wearable technology can expand upon this research by further delving into how Glass builds dialogue, or by choosing another public relations model to provide a different lens to study the data. Research could also look at similar technologies coming out to see if they yield similar results. For example, the Apple Watch, the Oculus Rift,

and Microsoft's HoloLens would all be fascinating wearable technologies to research with an eye for how they may impact public relations.

Altogether, these findings show that the core communicative functions of Google Glass and similar OHMDs give companies the opportunity to connect faster and more efficiently with their publics than ever before. The use of these capabilities are also in accord with many of the tenets of the dialogic theory of communication, most notably allowing companies to collaborate with, engage, and grow alongside publics as a means to strengthen the relationships between the two. The results of this study therefore show the impact OHMDs may have the field of public relations as a way to help public relations build dialogue, as well as point to the importance for practitioners to pay attention to these emerging technologies.

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Appendix

Codebooks

Mutuality: The recognition of shared goals and interests. Acknowledgment that organization and publics are inextricably tied together. Characterized by "inclusion or collaborative orientation."

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
Definition I: When Glass lets consumers directly collaborate/work together with companies to achieve a goal.			
Definition II: When the goals of both the consumer of glass and a company align.			
Definition III: When a company specifically mentions the shared quality of goals.			
Definition IV: When a company uses Glass to improve collaboration with internal publics			
Definition V: Other, does not quite fit into other definitions			

Propinquity: The spontaneity and honesty of interactions between companies and their publics. Publics are consulted in matters that influence them and are willing and able to articulate their demands to organizations. "Engagement."

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
Definition I: When Glass users and a company interact digitally through online communication (Google+, Social Media, Forum posts, etc.)			
Definition II: When Glass users and a company interact digitally through the technology itself (customer services through voice control).			
Definition III: When Glass users and a company interact face-to-face			
Definition IV: Other, does not quite fit into other definitions			

Empathy: The supportiveness and confirmation of public goals and interests. Building an atmosphere or support and trust. "Supportiveness"

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
Definition I: When a company specifically addresses Glass user concerns in its messages.			
Definition II: When a company makes clear that they understood these concerns.			
Definition III: When a company changes itself or its products to meet Glass user needs			
Definition IV: Other, does not quite fit into other definitions			

Risk: The willingness of businesses to interact with publics on their terms, despite the possibility of unpredictable outcomes to relationship. “Vulnerability and growth”

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
Definition I: When a company takes action to correct Glass user concerns.			
Definition II: When a company adapts its technology/apps to meet Glass user needs.			
Definition III: When a company speaks or responds directly to specific Glass users.			
Definition IV: Other, does not quite fit into other definitions			

Commitment: The extent to which an organization gives itself over to ethical dialogue, interpretation, and understanding in its interactions with publics. “Genuineness, honesty, commitment”

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
Definition I: When a company displays deep understanding of its Glass using consumer base.			
Definition II: When a company obviously goes above and beyond what is expected for its Glass using consumers.			
Definition III: Other, does not quite fit into other definitions			

Other Patterns Noted in the Data:

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
Privacy Concerns: Concern or discussion of the controversy of privacy with Glass, including other individual's discomfort around Glass users.			
Legal Questions: Concerns over "driving while glassing," banning from establishments, etc.			
Safety Concerns: Exactly that			
Definition V: Other interesting information.			

Common Communication Topics in Reviews:

	Sources (Direct Quotes)	**Description (In Your Words)**	**Interpretation (What it Means)**
General Features: What Glass is, what is does			
Build Quality: How sturdy is Glass			
Battery Life: If the device cannot be on long, it can hinder communication.			
Audio: How does it sound?			
Visual: How is the picture and video quality?			
Multi-Tasking: Glass allowing users to better perform more tasks at once			
Purpose: Discussion of the point of Glass.			
Other future capabilities: Other relevant things reviewers predict Glass will be able to accomplish			