

EXPLORATION OF AFFORDANCES IN
SUBSCRIPTION-BASED DIGITAL MAGAZINES

by

Marijana Miric

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ABSTRACT

This study analyzed 128 digital magazines through the lens of affordance theory in order to analyze the current state of digital publishing and establish a framework for the design and development of digital magazines. Twenty affordances were identified and categorized into four distinct groups: extend content, community involvement, utility, and entertainment. Overall, a nonlinear relationship between the number of digital subscriptions and the variety of affordances implemented in a magazine was identified. Additionally, the 20 affordances identified were analyzed against three previously established frameworks, including Gibson's original categorization of perceived, hidden, and false affordances. This study provides valuable information for the media industry regarding the application of the theory of affordance and how it applies to digital magazines. In order for a digital magazine to be perceived as a successful adaptation of the print issue, it must provide the end user with a unique and immersive experience.

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I hope this research inspires others to continue exploring the application of affordance theory in the magazine industry and build on the framework outlined in this paper. After exploring and identifying the affordances associated with 128 digital magazines I have become more in-tune with the design and development of a magazine unique to a digital platform compared to one that is not. One day I hope to expand my research and explore the application of affordance theory in regards to native magazine applications.

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INTRODUCTION

From print to digital, the consumer magazine publishing industry is in the midst of a transformation. Print media maintains a number of limitations regarding how to engage its readers with the overall media brand. The assumption is that with the advanced development of digital technology present in the magazine publishing industry, the degree of interaction between magazine brands and readers will be enhanced. From native mobile applications (also known as apps) to subscription-based platforms like Next Issue, there appears to be a collision of online business models. With analogue dollars becoming digital dimes, and now mobile pennies¹, it is up to the brand to determine whether the app economy is worth the potential investment. If so, whether the return on investment (ROI) is better with a native app or a subscription-based platform.

Next Issue allows the vendor (the magazine brand) the opportunity to increase the degree of interactivity and engagement the consumer has with the digital edition through the use of Adobe Digital Publishing Suite (DPS) (C. White, personal communication, June 29, 2015). The incorporation of digital technology is not new to magazine brands. Therefore, the development and distribution of a static PDF, meant for print media, to a digital platform is still viewed as acceptable by some publishers (Infotrends, 2014). However, with the increase of availability and uniqueness of applications to digital platforms, a digital edition, in today's industry, is significantly more advanced than uploading an optimized PDF. Instead, today's digital editions approach the idea of increasing user engagement through the extension of content and community involvement. With an estimated 25 percent increase in the Compound Annual Growth Rate (CAGR) of the digital publishing industry over the next four years (by 2019) (Infotrends, 2014), it is projected that digital magazines will be fully optimized for the medium on which they are presented.

¹ In 2008, Jeff Zucker was credited with coining the phrase "analogue dollars for digital dimes." Over time as media executives picked up the phrase and passed it on it was amended to "analogue dollars for digital dimes for mobile pennies." The phrase is representative of how difficult it is to make profit on digital content, especially on a mobile platform (Satell, 2013).

The aim of this Major Research Paper (MRP) is to examine the current degree of interactivity applied to digital magazines through the use of a subscription-based platform (Next Issue) and analyze whether or not the gap between digital replicas and digital editions is decreasing. This topic is relevant for research because the degree of interactivity applied to a digital magazine is based on a number of factors, including: “the output file type, the type of channel the content can be deployed to, and the robustness of the solution itself” (Infotrends, 2014, p. 7).

While researching, actor, organism, individual, agent, and end user were interchangeably used when referring to the end user; in the case of a digital magazine, the reader. Object and artefact were also interchangeably used when discussing the product at hand. Throughout this MRP, I chose to use end user to emphasize the human relationship with the artefact; in addition, I decided to use artefact to describe the tactile object.

LITERATURE REVIEW

In examining the current state of the magazine industry and the current level of research regarding the theory of affordance, five primary areas of research were identified, examined, and analyzed. They include:

- The evolution of the digital publishing landscape
- The differentiation between digital replicas and digital editions
- The variation in utility between print media and digital publications
- The application of affordance theory in media and design
- The evolution of affordance theory from its original definition

CURRENT STATE OF RESEARCH

By definition a magazine is described as a periodical that contains a number of articles, photos, illustrations, and more, targeted at a niche market (Oxford Dictionary, n.d.). Prior to the increase in popularity of digital publishing technology, magazine publishers focused on the distribution of magazines for print media. Print remains a relevant medium for many areas of the magazine publishing industry (ex. independent magazines)(Le Masurier, 2012), however the consumer market maintains a healthy mix of both print media and digital media (Señor et al, 2015).

WHAT IS A DIGITAL MAGAZINE?

Blankenship (2014) defines a digital magazine as “a designed sequence of brand topic related and edited content elements published digitally in a logical linear navigation view or flow based user experience including issue contents or visual navigation, capable of user interaction and social media sharing” (p. 6). In addition, much like a print magazine, a digital magazine must follow a standard set of criteria. Santos Silva (2011) outlines the six key features of a digital magazine as: 1) “it has a beginning, middle, and end; 2) it is edited and curated; 3) it has an aesthetic treatment; 4) it is date-

stamped (a series of issues are published during a specific time frame, usually weekly, monthly or quarterly); 5) its contents are permanent; and 6) it is periodic” (p. 302). This has been further explored in terms of enhanced content and e-publications to define digital magazines using three specific characteristics: 1) the digital magazine must be formatted to attract an online reader through the use of digital extras, such as video clips and hyperlinks; 2) it must be designed for easy interaction between the publication and the end user (ex. easy sharing to social media); and 3) the end user must be able to interact with the advertisements (Gordon, 2011).

PRINT VS. DIGITAL

While print media allows the end user to interact with the magazine through a 2-D standpoint, digital media is meant to engross the end user in the magazine and extend its reach. Yet, the introduction of digital magazines changes the end user’s perspective on how the media functions. Instead of the traditional concept of a magazine publication, digital magazines are perceived to promote a unique experience through curated content (Alang, 2013). In order to better understand and analyze the affordances associated with digital magazines, the benefit(s) of print media must first be outlined.

When reading a print magazine the reader often experiences the action through the use of, at minimum, two of their senses—often touch and sight. In turn, the layout of a print magazine is designed differently than it would, or better yet should, be for a digital publication. Ytre-Anne (2011) noted that situational context was often correlated with high preference towards print media. However, this relationship is not new. Many studies, on a global scale, have identified print media as the preferred medium (Cull, 2011; Liu, 2006; Leyva, 2003; Woody et al., 2010; Ytre-Anne, 2011).

In reference to recent analytics and trends in the publishing market, Infotrends, a company specializing in global market research, outlined four key requirements for the digital publishing software used to develop a digital edition: 1) “rich media publishing capabilities; 2) analytic and data reporting capabilities; 3) publication management capabilities; and 4) content distribution capabilities”

(Infotrends, 2014, p. 3). Each of these four capabilities impacts specific areas of a digital publication that enhance user engagement. Rich media publishing capabilities provide the brand with the capability of not only publishing an interactive publication, but also previewing how rich media elements, such as an embedded Twitter box, appear prior to publishing. Analytic and data reporting capabilities give the brand the capability of determining key analytics, such as amount of time spent browsing a specific article or section. Publication management capabilities allow the brand the capability to effectively manage their workflow and store media. Content distribution capabilities allow the “end user to publish to mobile app stores (such as Google Play or Apple), internal ports, and marketplaces” (Infotrends, 2014, p. 3).

A successfully digitized magazine can present juxtaposition to its print counterpart. The act of flipping through a print magazine has evolved into a learned behaviour, through the reader’s personal experience or observation. However, this learned behaviour isn’t so apparent in the digital sphere. For example, a print magazine affords the end user the option of reserving their place in the magazine through the use of a physical bookmark; this affordance isn’t easily translated in the digital format (Maxwell, 2013). Mitchell, Christian, and Rosenstiel (2011) analyzed the increase in tablet usage in regards to the level by which content is absorbed by the end user. A recent study from The Association of Magazine Media (MPA) (2014) presents the idea that digitized publications are here to stay. The report shows that “79 of the 100 top-grossing ‘Lifestyle’ apps are magazine media brands,” (p. 57) with Health & Fitness, and Food & Drink categories not far behind. Choosing to replace one medium with another stems from the belief that the new medium holds an advantage over the current selection. This can refer to format, function, as well as content (Mitchell et al, 2011). In the end, while some brands have actively sought out the digital space, others have held back from fear of losing paid subscribers (Guidone, 2000).

DIGITAL EDITION VS. DIGITAL REPLICA

Digital publications often consist of two forms—digital replicas and digital editions. The digital replica, a PDF version of the print magazine and newspaper, is considered to be the earliest stated form of digital news (Ashton, 1993; Pesonen, 2014). Kon, Gosalia, and Portelette (2011) note the benefit of a digital publication, with the insistence of a unique experience for the end user.

With the developmental increase of mobile technology, end users have an increased selection of features when using digital platforms. Therefore, in order to differentiate a digital edition from a digital replica, the digital edition must provide the end user with a unique and immersive experience. In turn, the end user must be able to interact with the digital content differently than they would with a print magazine (Kon et al, 2011). However, in order to enhance the digital publication, the publisher must consider the affordances allowed by their medium of choice.

In the field of publishing, Schijns and Smit (2010) examined the differentiating factors associated with custom magazines, a type of publication produced by a publishing house on behalf of a third-party (ex. LCBO's Food and Drink). Here, a single commonality—the usability context of the media type—stood out. The individual affordances of each media should be taken into account during the design stage to ensure a positive user experience. User experience, the overall experience the end user undergoes while using the artefact, is described as the end user's cognitive response to the interaction (Karapanos, Zimmerman, Forlizzi, and Martens, 2009; Forlizzi and Battarbee, 2004). To generate a positive user experience for the end user, the publisher must acknowledge that “a screen is not a page and it's not looked at in the same usability context as a page” (Schijns and Smit, 2010, p. 35).

DIGITAL READING

The goal of this section is to introduce the concept of digital reading, more specifically digital news. Pesonen (2014) defines the term as an aggregation of news delivered via a digital platform (ex.

iPad) that may include multimedia content. Due to the broad definition, digital reading takes into consideration items such as Internet newsletters, online content, cyberjournalism, blogging (Chung, Kim and Kim, 2010) and digital editions. However, the complete definition of digital reading has not yet been formalized.

Reading has been studied throughout a number of fields including literacy studies, psychology, neuroscience, book history, media, literary criticism, and learning theory (Hillesund, 2010). The digitization of content-based items, such as books and magazines, has had a significant effect on society's reading patterns. The change in medium does not imply the death of literacy, but instead forces the adaptation of content to fit the medium in which it is presented (Bolter, 1991). From website content to online newsletters and email, to digital magazines, digital reading has made its mark in a number of key areas in everyday life. To understand the background behind the current state of digital reading, Liu (2006) analyzed changes in reading behaviour over a span of 10 years, from 1994 to 2004. Based on the data collected, he determined that the degree of reading rose to 67 percent over the past 10 years, in part due to the impact of digital media.

When analyzing the concept of digital reading, it has been suggested that its impact is caused by an alternate set of practices determined by multimodality². Digital reading provides the end user with the option to extend the context of the story through the use of multimedia content and hyperlinks. However, on the other hand, digital reading also eliminates certain aspects associated with reading, such as getting a sense of the length of the publication. Based on a case study completed by Roswell and Burke (2009) it was confirmed that not only does digital reading require a specific skillset to successfully undergo the interaction, but also “assumes a natural understanding that complex discourses can materialize in designs and, equally, that modalities distribute messages” (p. 115).

² Roswell and Burke (2009) defined multimodality as “an understanding of different modes of communication (visual, acoustic, spatial) working together without one being dominant” (p. 106).

When examining digital reading behaviour, user experience is a key component of success. Digital media provides the end user with a handful of approaches to reading, such as scrolling, that aren't available with the magazine's counterpart. Consider the difference between a print magazine and a digital edition. Print magazines are assumed to lend themselves better to long form journalism, while a digital magazine is expected to expand the story through the use of multimedia toolsets (Ryberg, 2010). Despite the belief that a digital edition of a magazine should be tailored to fit the needs of an online platform, Ryberg (2010) noted that readers "want the digital magazine to respect long reading, once the reader has chosen to start reading a longer piece there should be no disturbances at all" (p. 18). When examined for the purpose of this study, digital magazines lended themselves favourably toward long form journalism 52 percent of the time.

THE YEAR OF MOBILE

The concept of mobile technology has developed immensely over the past decade. Mobile phones are now viewed as a primary screen for digital communication (Señor et al, 2015), in addition to "a medium of education, information, organization, health and entertainment" (Fortunati and Taipale, 2014, p. 318). In 2013, Adobe released statistics from their digital publishing software identifying that 75 percent of their users read digital magazines using a tablet, while the remaining 25 percent preferred reading digital magazines on their mobile phone (Yang, 2013).

Approximately 50 percent to 75 percent of web traffic is directed towards popular media sites—such as Sports Illustrated, People, All Recipes, etc.—from an end user's mobile device. In addition, *Outside* magazine noted an increase of over 70 percent in web traffic, directed from mobile devices. Todd Hodges, site director of Outside.com, attributed this increase to four key factors—responsive design, social media, search engine optimization (SEO), and original content (Señor et al, 2015). That being said, the enhancements presented in a magazine's digital edition are seen as an important contributing factor behind the usage of mobile devices for the consumption of media (Tomas, 2013).

Mobile, as a platform, provides the brand with a greater scope of engagement with their readers, thus increasing the reader's expectation of interaction with the magazine. Overall, there is less of a technological shift in how the content is managed and more of a change in mindset regarding the move to mobile devices as a whole. Dan Maccarone, CEO of Charming Robot, accurately described the development of digital replicas as the act of a brand chasing a trend they haven't fully wrapped their head around (Señor et al, 2015).

In the field of media technology, Ryberg (2010) analyzed how users interacted with a mobile device such as a tablet or an iPad. She noted that a mobile device presents itself as the perfect platform for the consumption of digital magazines because of its association as both a "lean forward and lean backward media device" (p. 2). The concept of lean back and lean forward refers to the engagement style of that specific medium (Whirlpool EMA, 2013).

- Lean-forward media is one that actively engages its users. Users have a shorter attention span and actively scan content with a purpose. An example is the Internet.
- Lean-back media passively engages its users and obtains a longer attention span from its audience. An example is television or print media.

In the end, the overall experience should be targeted towards "the user and his mobility, expectations, time limits, and in-the-moment needs" (Señor et al, 2015, p. 14), and not the size or type of the platform used. In addition, Kon et al (2011) identified that 30 percent of renewing subscribers opted to subscribe to both a digital edition and a print copy. Thus, making the combination of the two media the more favourable option, compared to a single digital copy purchase. Therefore, with the average smartphone user checking their mobile device 221 times in a 24-hour span (Tecmark, 2014; Señor et al, 2015) publishers need to ensure that their brand acknowledges and follows a mobile-focused mindset. Both media—print and digital—lend themselves to their individual medium differently. Print allows for the consumption of long-form journalism and in-depth investigation, while

digital affords user interactivity and story expansion through a variety of multimedia tools (video, audio/podcast, image gallery, etc.) from within the digital application.

The primary difference between a digital edition and a digital replica is the level of user engagement associated with the issue. Users expect the content to match the medium. Not only does the end user expect a digital magazine to provide a higher level of user engagement than a print copy, but they also want to be in charge of how and when the interaction takes place (R. Swietlik, personal communication, July 21, 2015; Ryberg, 2010). Consider Facebook as an example. The videos linked on Facebook play automatically upon entering the active screen³. When interviewed by Ryberg (2010), many participants were frustrated by the lack of control. Yet, a number of publications, analyzed in this study, actively presented content in the form of an autoplay slideshow throughout the publication (nine percent of magazines analyzed incorporated video covers in their digital editions).

THEORY OF AFFORDANCE

The theory of affordance, coined by Gibson, states that everyday items in the world are perceived not only by how they look, but also their functionality and potential action. However, it is important to note that all affordances are relative to the end user (Gibson, 1977; Invitto, Faggiano, Sammarco, De Luca, and De Paolis, 2015). For example, the “climbability” of a set of stairs is relative to a combination of the length of the end user’s leg and the riser height of the stairs (Gaver, 1991).

The most frequently noted accomplishments in this field of study are attributed to Gibson and Norman—Gibson for coining the term, and Norman for introducing the term to the field of Human–Computer Interaction (HCI), where it spread rapidly. However, each definition of affordance has deviated from the original meaning in order to properly address the needs associated with its respective field.

³ For the purpose of this study, the *active screen* refers to the current screen visible within the confines of the device.

The deviation between the two definitions was due to a change in focus. Gibson coined the term while focused on the development of ecology and used it to define “the relationships between an organism (people or animal) and the environment (various objects)” (Hu, 2012, p. 13). Alternatively, Norman re-focused the term for the HCI field as a means of optimizing the design of a product in order to help the end user operate it more efficiently (Hu, 2012).

WHAT IS AN AFFORDANCE?

The best-known definition of affordance, originated by Gibson, refers to the use of everyday items as perceived by their aesthetic appearance and their perceived function (Gibson, 1977). There are no set rules for the implementation of affordances, as the application of an affordance does not guarantee the desired outcome.

Affordances take the form of a relationship between the artefact (physical object) and the end user. In turn, they are often relative to the end user’s action capabilities, identified as the skillset of an individual (Hutchby 2001; Majchrzak and Markus 2012; Volkoff and Strong 2013; Gaver, 1991). The existence of an affordance is not mutually exclusive to the end user’s ability to perceive it, thus making it objective. Alternatively, affordances are considered to be subjective in that the end user acts as a frame of reference to the artefact (Pozzi, Pigni, and Vitari, 2014).

Recent literature regarding the study of affordance theory has looked at the application of affordances in psychology, information systems (IS), education, publishing, and interaction design (Bourlamaquai, 2014; Pozzi et al 2014; Borghi et al 2012). Gibson’s original definition of affordance assumed that the direct perception of an artefact’s affordance could be easily determined.

In psychology, Borghi, Flumini, Natraj and Wheaton (2012) studied and analyzed the emergence of affordances in response to the context of the situation. While affordances have been heavily studied and analyzed, the situational context by which an affordance is activated has not been studied as in-depth. In their study, Borghi et al (2012) identify three specific issues that pertain to the

end user's interaction with the artefact, two of which are relevant to this study—1) spatial versus functional relations between an active artefact and its surroundings; and 2) the relationship between the end user's hand and the artefact. Yoon, Humphreys, and Riddoch (2010) examined the impact on the end user's cognitive system by looking at the interaction between two artefacts.

Through deep and thorough analysis, Forlizzi and Battarbee (2004) identified and analyzed three levels of user-product interaction—fluent, cognitive, and expressive. Each level of interaction provides the end user with a unique interaction associated with the artefact. Table 1 identifies the key features associated with each level of interaction. Based on the definitions noted below, the probability that a single affordance will be associated with more than one level of interaction is low.

Table 1 Forlizzi and Battarbee's User–Product Interaction Levels

Fluent	Cognitive	Expressive
Definition <i>Automatic and learned interactions that don't compete for the focus of the end user</i>	Definition <i>An interaction that allows the end user to focus on the product. This interaction is often regarded as an opportunity for trial-and-error.</i>	Definition <i>Interactions that work to improve the relationship between the end user and the artefact.</i>
Example <i>Flipping the page of a print magazine</i>	Example <i>Manipulating an image in a digital magazine</i>	Example <i>Increasing the font size in a digital magazine to improve readability</i>

As defined, affordances are potential actions activated by the end user through interaction with the object. Ellis and Tucker (2000) proposed a sub-theory referred to as “microaffordances” that further contextualizes affordance theory through the indication of triggered action components. Microaffordances are considered to be the trigger aspects associated with the activation of action components (ex. grasping an object). However, these triggers differ depending on the specific artefact, as well as the visual properties (such as location) surrounding it (Borghi et al., 2012; Ellis and Tucker, 2000).

ADAPTATION OF GIBSON'S THEORY OF AFFORDANCE

The meaning behind the concept of affordance has been adapted since Gibson coined the term in 1977. The initial theory of affordance, as proposed by Gibson, made the assumption that the existence of affordance and perception was mutually exclusive, with the exception of hidden and false affordances (see Table 2) (Norman, 2013).

Table 2 Gibson's Categorization of Affordance

Perceived Affordance	Hidden Affordance	False Affordance
Definition The aesthetic characteristics of an artefact that provide the end user with a clear direction for use	Definition An affordance that must be inferred from its surroundings	Definition When the artefact directs the end user to perform a nonexistent action (Hartson, 2003)
Example <i>A pushable button.</i> This affordance can be adapted to fit all mediums	Example <i>An unmarked door.</i> Without the clear indicator of “push” or “pull,” the end user must rely on the artefact’s surroundings (i.e. location of the hinges)	Example <i>A placebo button.</i> The end user perceives the items intended action, but the lack of feedback from the artefact indicates a false affordance.

Alternatively, Norman (2013) identified affordances as real and perceived. A real affordance is considered to be a design feature/physical characteristic, which allows the end user to successfully complete the task, found on the artefact or interface. A perceived affordance, on the other hand, is a characteristic found in the appearance of the artefact indicating the functionality of a particular affordance to the end user. However, Norman’s adaptation of affordance theory contradicts Gibson through the assertion regarding the lack of uniqueness associated with a particular affordance. To Norman, affordances associated with an artefact do not change depending on the context of use or the end user’s goal, and instead are considered to be ubiquitous (Pozzi et al., 2014). Consider a doorknob. It affords the end user the option of turning the knob, pushing the door closed, as well as pulling the door open. The three affordances associated with the knob, as noted above, are consistent, regardless of

the situational context. However, often enough the end user is unable to perceive the requested action without a signifier (ex. a sign indicating whether a push or pull is required).

Osiurak, Jarry, and Le Gall (2010) identified two key assumptions of affordance theory: 1) affordances lack meaning and the use case of the artefact must be determined by the end user; and 2) artefacts already have a built-in meaning that is internally determined and exploited by the end user without prior knowledge and mental calculation. This psychology-based study identified and analyzed the theory of affordance in regards to the underlying psychological mechanisms of human tool use. Affordance theory was developed on the belief that affordance perception and technical reasoning could work together in a rationalistic manner (Osiurak et al., 2010). For example, a chair may afford the action of sitting for an adult, but not a larger organism, such as an elephant (Borghi et al., 2012).

AFFORDANCE THEORY AND RESEARCH

To accurately assess the impact recent studies have made to the theory of affordance, I followed the approach outlined by Pozzi et al (2014) and categorized the research into affordance existence and affordance perception. In order for an affordance to be perceived by the end user, it must exist. This often takes two routes—1) the affordance exists regardless of the end user’s perception and is not affected by the end user; and 2) the affordance is relative to the perception of the end user (Michaels, 2010).

AFFORDANCE EXISTENCE

The first and arguably most significant association with the theory of affordance is affordance existence. This concept is one of the most frequently analyzed and theoretically studied that outlines the definition of affordance theory and highlights the key characteristics associated with it (Pozzi et al, 2014). As previously noted, Norman repurposed Gibson’s original definition of affordance to align with the goals of the HCI field. To understand the difference between the two definitions, McGrenere and Ho (2000) reviewed 19 various papers from the HCI field—eight supported Gibson’s definition,

six supported Norman's definition, and five supported both definitions. A brief comparison between the two definitions is shown below in Table 3.

Table 3 Categorization of Affordance (Gibson vs. Norman)

Gibson's Definition of Affordance	Norman's Definition of Affordance
<ul style="list-style-type: none"> • Affordances are relative to the action capabilities of the end user • Affordances exist independent of the end user's ability to perceive them • The end user should be able to understand the action capability of the affordance through direct perception • The frame of reference revolves around the action capabilities of the end user • Affordances are considered to be binary—they either exist or they don't 	<ul style="list-style-type: none"> • The existence of an affordance is reliant on how the end user perceives the interaction • A perceived property does not have to be an actual property to be considered an affordance • The end user's perception of the affordance is affected by their surroundings • The frame of reference refers to the end user's perceptive capabilities

The general definition of an affordance is supported by the fact that it is a precondition for an interaction to take place. Yet, in the field of HCI, affordances are designed and introduced by the creator of the artefact, thus implying that an affordance exists whether or not the end user perceives its correct function (Bourlamaquai and Dong, 2014).

Alternatively, studies have argued that an artefact's affordance is not only relative to the item, but also to the end user (Hutchby, 2001; Gaver, 1991). Gaver (1991) hypothesized that the theory of affordance indicates that physical characteristics of the artefact are compatible with the physical attributes of the end user. In addition, he perceived that the end user could successfully perceive the information identified about the physical attributes of the artefact.

While Gibson defined affordances in terms of physical traits and attributes associated with an artefact, the action capabilities associated with items have evolved to expand the basic definition of an affordance into something more complex. Overhill (2012) identifies seven broad categories—physical, perceived, hidden, designed, cascading, social, and intellectual—that encompass the majority of

artefacts and their affordances. Physical affordance, based on the original definition coined by Gibson, refers to any and all physical actions performed (ex. touching a screen). Perceived affordance is based on whether or not the end user is able to perceive the intended action associated with the artefact through learned behaviour and/or signifiers⁴ implemented in the design. Hidden affordances are identified when an affordance is not perceived. Designed affordances are affordances implemented into man-made artefacts (i.e. touching the screen of an iPad). Cascading affordances, much like nested affordances, as identified by Gaver (1991), are the result of multiple affordances acting together (ex. a keyboard affords typing and a screen affords readability. Therefore, a computer affords writing a paper). Social affordance is viewed as any affordance that encourages social interaction (Bradner et al, 1999). This can be physical or digital depending on the context of the situation. Replying to a tweet is viewed as a social affordance in the same way two chairs placed next to each other are. Intellectual affordance identifies specific activities and affordances through the progression of intellectual activities, such as reading. In terms of media representation, intellectual affordance can “be seen in the impact of media on the presentation of ideas” (Overhill, 2012, p. 3). This categorization of affordances allows for a more direct approach to defining the relationship set by the affordance at hand.

The overall assumption regarding the existence of affordances is that the concept is binary—the affordance exists or it does not. However, the lack of a grey area does not effectively apply to the design community when examining the field of study focused on HCI. In turn, McGrenere and Ho (2000) identified affordance as an action capability that connects the artefact to the end user, independent of the end user’s ability to perceive the affordance.

⁴ Coined by Norman (2013) a signifier is a visual representation indicating the necessary call to action required by the end user.

AFFORDANCE PERCEPTION

Affordance perception is the act of perceiving the correct action capability associated with a particular affordance. Due to the binary nature of affordance theory, this is not always so clear-cut. Often, an end user's perception of an affordance is influenced by, at minimum, one of the following—1) the artefact's physical features, 2) the end user's capabilities, 3) the end user's goal, and 4) the external information provided to the end user prior to using the artefact (Pozzi et al, 2014). Based on the insight identified by theorist Marshall McLuhan, certain technology artefacts are perceived as an extension of the human body (ex. glasses extend a person's sight) (Overhill, 2012).

Norman's definition of affordance strongly focuses on the idea that to correctly perceive the intended action associated with an affordance, the end user must have a level of familiarity with the artefact (Bourlamaquai and Dong, 2014; Norman, 2013). All artefacts have a range of affordances associated with them that aren't immediately open to perception (Hutchby, 2001; Gaver, 1991), and in turn, it is the job of the end user to correctly associate the affordance with its intended action(s). Therefore, the concept of affordance and its existence takes the place of a relationship between the end user and the artefact.

Considering the elephant and chair example noted in the Theory of Affordance section, affordance perception is relative. To reiterate, a chair may afford an adult or child the option of sitting, but that same affordance is not present for a heavier organism (i.e. an elephant) (Borghi et al, 2012). This indicates the relative nature of affordance theory through the difference in characteristics between a human adult and an elephant. In regards to the chair referred to in the example, the end user perceives the chair's affordance of sitting, yet also considers the potential restrictions associated with the artefact. In other words, the end user may consider the following: "Am I able to sit in that chair? Does it afford me the option of sitting? What are the limitations of that artefact? Does it afford standing? If it does afford sitting, how long can I sit on it?"

Pols (2012) expanded on Gibson's definition of affordance in order to be more inclusive of the complexity of everyday actions. In the case of a digital edition the basic opportunity afforded to the end user is the affordance of touching the screen. Yet, when analyzed further, there are many affordances that are triggered through that simple action (ex. image manipulation). A single path, activated by a number of actions and affordances, can become overly complex depending on the affordances triggered along the way. When identifying what can act as a trigger for an affordance, Pols notes four types of actions, later expanded on by Smith, Brand, and Kinash (2013): 1) Deliberate and purposeful action (i.e. flipping a light switch); 2) Consequential action (ex. touching the letters M, R, and P on a mobile phone can trigger the shortcut "Major Research Paper"); 3) Multiple actions (ex. browsing an image gallery); and 4) Social action, defined further as "an action which is intentional under the terms of its social consequences" (p. 816).

AFFORDANCE AND FUNCTIONAL DESIGN

In the field of HCI, Waller (2012) identifies the necessity of collaboration between design principles and affordance theory. Implementing affordance theory as a key consideration of layout and design allows the end user the opportunity to accurately perceive the intended affordance. This is essential for an artefact built for function, rather than fashion. Consider a digital magazine. The level of success regarding the overall interaction is relative to the end user. Through the use of Adobe Digital Publishing Suite (DPS) many art directors have implemented a number of features for their personal digital edition that are not activated when

the issue is uploaded to the mobile platform, therefore creating a false affordance. Consider this, the in-

**Image 1—24 Mini Makeovers
(Good Housekeeping)**



app navigation bar designed for the magazine's individual app needs to be removed in order for the issue to function properly via a publishing platform like Next Issue. However, certain design elements always remain in the page layout (see Image 1).

A common issue regarding design is the assumption that aesthetics are more important than usability. Norman (2013) argues that the aesthetic appeal is only part of the artefact's success. By maintaining a co-existing relationship between aesthetics and usability, the artefact can present a higher success rate regarding user experience (Norman, 2013; Xenakis and Arnellos, 2013). Gaver (1991) notes the different perceptions regarding the intended action capability of a door handle, based on design. A vertical door handle often implies pulling, while a horizontal plate stretched across the door indicates that the end user must push the artefact to open the door.

When analyzing user experience in association with the HCI field, many designers take the three-click rule into consideration. The rule states that in order to optimize the end user's experience with a website, it should take no more than three clicks to access any information (Porter, 2003; Cad, 2015). After analyzing over 8,000 clicks, Porter (2003) noted that there was no correlation between number of clicks the end user made and the level of success in finding their desired content. On the other hand, the idea of the three-click rule is beneficial regarding usability and overall organization (Thompson and Wassmuth, 2001). Due to the increased stretch of content provided by digital editions of magazine media, the end user should be able to easily find what they are looking for.

Overbeeke and Wensveen (2003) examined the collaboration of aesthetics and affordance theory. They narrowed down their research to focus on two sense modalities—vision and haptics. Through consistent interaction, the two modes connect through a number of unique combinations that lead the end user to determine the correct functionality of the desired affordance. As emphasized by Forlizzi and Battarbee (2004), one of the most frequent interactions that take place between the end user and an artefact is on a cognitive level. In turn, a number of studies have argued that affordance

theory is linked to more than just functionality; affordance theory is also associated with the end user's cognitive process (Overbeeke and Wensveen, 2003; Forlizzi and Battarbee, 2004; Karapanos et al, 2009).

WHY IS THE THEORY OF AFFORDANCE APPROPRIATE?

The theory of affordance framework is appropriate for this study because of the direct relationship between the end user and the artefact. The different medium used must present the end user with a unique experience when compared to the print version. Therefore, determining what affordances are incorporated and how are key components to understanding the degree of interactivity applied to the digital magazine.

Affordance actualization, defined as the action taken by the end user as he or she engages with a perceived affordance (Leonardi, 2011), can affect the artefact's interaction with the end user. Upon reviewing the literature at hand, I concluded that the actualization of affordances was dependent on a number of factors, including (but not limited to) the following: 1) technology configuration and features; 2) the degree of effort the end user must invest in the interaction themselves; 3) the end user's ability and understanding of the process; and 4) the end user's overall goal (Bernhard, Recker, and Burton-Jones, 2013; Bourlamaquai and Dong 2014; Pozzi et al 2014).

Based on the studies noted above, I identified three conclusions regarding the implementation of affordance theory: 1) due to the lack of a consistent definition of affordance, researchers have deviated from the original meaning proposed by Gibson and altered the definition to fit their specific need; 2) despite the importance of affordance perception, a number of researchers dismissed the idea. This was often found in research related to information and organizational systems; and 3) the design of an artefact, associated with the affordance is a key component of a successful interaction. If the end user is unable to perceive the desired action, then the affordance is considered to be unsuccessful, or

hidden. However, if the end user perceives an affordance that does not exist then design is considered to be unsuccessful and the affordance is considered to be false.

RESEARCH OBJECTIVES

This MRP is an exploratory study of how the application of the theory of affordance impacts the current state of magazine media. This study specifically looks at whether or not there is a correlation between the number of individual paid subscribers associated with a magazine's brand and the number of affordances identified in their digital magazine. The increased growth of tablet technology, alongside the perceived popularity of digital magazines, has pressured a number of magazine media brands to adopt the approach prior to developing a impactful strategy for implementation (Hughes, 2013).

In order to get a better understanding of why some digital magazines outperform others I want to explore the current state of digital magazines, using the Next Issue application as my platform of choice. This particular study aims to answer the following research question(s):

1. What affordances are present on Next Issue?
 - a. How can the affordances identified be efficiently grouped using affordance theory?
 - b. Which affordances are most frequently used?
2. Are subscription rates correlated with digital affordances, with higher rates for publications identifying a greater number of affordances and vice versa?
 - a. Are the most common affordances represented in magazines containing high subscription rates?

METHODOLOGY

COLLECTION OF DATA

CONTENT ANALYSIS

Content analysis is defined as a “methodology for analyzing the content of a variety of data” (Harwood and Garry, 2003, p. 479). This concept has been broken down into a number of subsets, including media content analysis. In addition, Lasswell, Lemer, and Pool (1952) further defined the concept of content analysis as “a technique which aims at describing, with optimum objectivity, precision, and generality, what is said on a given subject at a given time” (p. 34). It has frequently been used as a method of analysis in a diverse selection of fields, including: education, psychology, linguistics, anthropology, history, and media (Harwood and Gary, 2003; Krippendorff, 1989).

In order for a content analysis study to be considered valid it must adhere to set of six standards of scientific criteria: “1) objectivity; 2) an a priori design; 3) reliability; 4) validity; 5) generalizability; 6) replicability; and 7) hypothesis testing” (Neuendorf, 2002, p. 10-13). Each standard listed above is a key component to completing a successful and unbiased content analysis. Therefore, the key findings post-completion must be summarized in the content analysis, instead of being reported. This is to ensure that the correct inferences are drawn from the results (Neuendorf, 2002). Based on previous works of content analysis, Neuendorf (2002) defines all methods of content analysis as four set approaches: 1) descriptive; 2) inferential; 3) psychometric; and 4) predictive. Using the descriptive approach as the baseline of content analysis, Neuendorf (2002) outlines the key function of content analysis—to provide descriptive insight into the messages and images of mass media content. This can be completed and analyzed in both a qualitative and quantitative format.

Content analysis is an appropriate method to use because it has been frequently used as a method of analyzing media in a systematic and objective manner (Macnamara, 2005; Timberlake,

Pechmann, Tran et al., 2011; Berger, 2013). From the 1920s and 1930s where media content analysis was introduced as a way to study propaganda, to the 1950s where it evolved into a research methodology for media communications, media content analysis is a primary research method regarding mass communications (Mcnamara, 2005). No study exploring affordances of digital magazines has been published; as such using content analysis to describe the landscape of affordances is a primary aim of the study.

Krippendorff (1989) identifies the strengths of content analysis within the following statement—“they reveal some properties of their distant producers or carriers, and they have cognitive consequences for their senders, their receivers, and their institutions in which their exchange is embedded” (p. 403). This is important for this study because it aims to identify the current state of properties associated with the digital publication, as well as the potential future impact for both the sender (end user) and the receiver (publisher).

CIRCULATION DATA

This research study analyzed 128 of the magazines found on the Next Issue platform (see Appendix A). The circulation data was collected from the Alliance of Audited Media (AAM) database (Alliance for Audited Media, n.d.). To ensure that the values are accurate and up-to-date, the most recent publisher’s statements (December 2014) collected by the AAM were analyzed. Every publisher’s statement contains the brand information (name, publisher, frequency, field served), as well as the total average paid & verified⁵ circulation values for both print and digital versions of the magazine. To stay within the scope of this paper, paid circulation rates for digital magazines were the primary value examined.

⁵ In comparison to paid circulation, verified circulation is “defined as subscription copies designated by publishers for readership in public places or intended for individual use by recipients who are likely to have a strong affinity for the content of the magazine” (Alliance for Audited Media, n.d., p. 1).

AFFORDANCES

Through the use of media content analysis every magazine was analyzed from cover to cover. In turn, every feature⁶ was written down and coded with either a 1 (contains the affordance) or 0 (does not contain the affordance). Not only does the dichotomous code provide the complete number of affordances present in a particular publication, but also it affords the option of analyzing the frequency of a single affordance throughout the set. To minimize the level of bias present in the findings, I chose to omit the affordances navigate internally, zoom in, and download from the total number of affordances. These three affordances are a part of the Next Issue platform and therefore present in 100% of the publications reviewed. In turn, the total number of affordances analyzed in this study is 20. Once complete, all features were analyzed and grouped based on their corresponding affordance.

For the purpose of this study every affordance was identified based on its primary function. When referring to a link as an affordance I defined the direction and purpose of that specific link. By categorizing the purpose of the affordance(s), the intent associated with the capability of the artefact is directly observable. For example, in the case of visiting a website, the purpose is categorized under “Extend Content.” By linking to a relevant website, the affordance aims to expand the level of information available to the end user.

Post-analysis all affordances were categorized and grouped in relationship to its perceived function. This method of categorization is appropriate for this study due to the high variety of affordances present. One of the outcomes of the research is to provide a new framework for including affordances in digital publications, using affordance theory as the backdrop. This categorization is specific to the field, and will help digital publishers identify what types of interactions they are creating.

⁶ Every affordance is represented in more than one way. All of the features identified as part of the enhanced magazine (ex. linked cover lines) were grouped into affordances based on the action (ex. linked cover lines→ navigate internally).

SAMPLE SIZE AND POPULATION

To ensure a consistent testing structure throughout the study, I selected the June 2015 issue of each magazine to be the test subject. Out of the 182 magazine brands currently located on the Next Issue platform, 54 of the magazines in the dataset were not studied; 49 magazines were not found in the AAM database and 5 did not contain a copy of the magazine's June 2015 issue. In addition, the overall population for this study was fairly homogeneous in the sense that all of the magazines were consistent in regards to output and file format. Any limitations, in association to the platform, are widespread across all of the magazines. Therefore, narrowing down the level of variability of the overall sample size.

PLATFORM

Next Issue Media, a subscription-based mobile application, was selected for this study as the distribution provider. Backed by a number of large media organizations, including: Time Inc.; Condé Nast, a division of Advance Publications Inc.; Hearst Corporation; Meredith Corporation; News Corporation; and Rogers Communications Inc. of Canada; the digital platform offers unlimited access to over 180 consumer publications worldwide. The software as a service (SaaS) platform launched in 2009 yet the first iPad application was released to the public in 2012 (Trachtenberg, 2014). In addition to providing direct access to the publications chosen for this study, Next Issue allows for a steady comparison between digital editions and digital replicas.

Provided with the option to incorporate interactive elements to the digital publication, magazine publishers hold complete control over the level of interactivity available (A. Panchal, personal communication, June 11, 2015). In order for the magazine to appear as an interactive digital edition on the Next Issue platform, the creative director must overlay all interactive elements over their static counterparts when laying out the page design. Due to the limitations placed by the Next Issue platform, certain interactive features developed in Adobe DPS conflict when uploaded to Next Issue, causing the

appearance of false affordances (C. White, personal communication, June 29, 2015). In addition to the system's embedded features, every publication can implement digital-only bonus features (ex. hyperlinks, crowdsourced voting, alternate image features) present within the issue.

The interaction between the end user and a digital magazine is learned behaviour (Lamb and Desrosiers, 2013). Due to the limited timespan allotted for the completion of this study, external participants were not brought in to help with user testing. However, industry professionals were consulted regarding the functionality and development of the Next Issue platform and Adobe DPS. In addition, the primary focus of this study was to categorize existing affordances and determine whether or not the number of affordances in a digital magazine was in relationship with the number of subscribers.

FINDINGS AND DISCUSSION

Data collection took place between May 19 and June 15. After thoroughly analyzing all of the magazines described in this study, the final number of affordances was 23; however, three were imposed by the platform on each publication and therefore removed from analysis in order to prevent bias. The findings presented in this paper are divided into the following sections:

- 1) Descriptive Statistics;
- 2) What Are the Affordances on Next Issue;
- 3) How Can the Affordances Identified be Efficiently Grouped Using Affordance Theory;
- 4) Are Subscription Rates Correlated With Digital Affordances; and
- 5) Are the Most Common Affordances Represented in Magazines Containing the Highest Number of Digital Subscriptions?

The affordances analyzed throughout this study take into consideration Pols definition of affordance, as they consist of more complex actions than the affordance of touching a screen. After further examining the definitions provided by Pols, the affordances identified in this study are in line with his description of consequential actions⁷ (Pols, 2012). Using the example of a digital magazine, a consequential action would be the act of turning the page by swiping right to left on the screen. The action of swiping right to left acts as a trigger, and in turn activates the action of the page turning.

DESCRIPTIVE STATISTICS

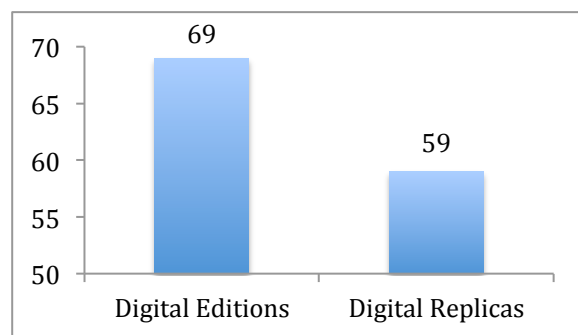
This study examines the affordances present within 128 magazines of the 183 magazines, as of June 2015, located on the Next Issue platform. One hundred and twenty eight magazines were selected as the population for this study due to two limitations—1) the use of the AAM database, and 2) the selection of Next Issue as the testing platform. Compared to the 48 magazines not audited by the AAM,

⁷ Pols definition of consequential actions refers to the identification of affordance based on the end result of that action.

seven of the brands did not have a June 2015 issue available. Therefore, the 55 magazines were excluded from the analysis.

As shown in Figure 1, there is a 59 to 69 ratio between the number of digital replicas and the number of digital editions analyzed. This indicated that 46 percent—almost half—of the magazines analyzed in this study were digital replicas. This is based on the analysis presented by this study and may not be representative of all digital magazines. The

Figure 1—Comparison of Digital Editions to Digital Replicas



definition of digital edition states that the digital publication must provide the end user with a unique experience with the magazine. A digital replica, on the other hand is a static digital copy of the print publication.

In order to properly identify the difference between a digital edition and a digital replica, all affordances targeted towards internal navigation and system features were not included in the data analysis. These navigation features, as previously mentioned, are imposed on all of the publications by the Next Issue platform (see Appendix B). They provide the end user the capability to navigate throughout the magazine, download the issue for offline browsing, and zoom in to a specific section of the page. Many of these features are found under the affordance *navigate internally* and are discussed further under Utility.

Table 4 shows a comparison between average number of subscriptions and the number of affordances present in a single issue. Based on the mean value of digital subscriptions, I determined that there is a difference of 7,391 digital subscriptions between the mean value of digital editions and mean value of digital replicas. This is important to note because it indicates that the average number of subscriptions between the two types of magazines is less than 10,000 subscriptions apart. In terms of

subscription values, ten thousand is a relatively low value, thus indicating how close the mean difference is; however, outliers are known to influence mean values. In the case of this study, the mean value was influenced for both digital editions and digital replicas.

Table 4 Analysis of Magazine Data Based on the Value of the Affordance

Number of Affordances	Average Number of Digital Subscriptions	Number of Magazines in Sample	Minimum Range of Digital Subscriptions	Maximum Range of Digital Subscriptions
0	52,123	59	226	220,339
1	0	0	0	0
2	113,406	2	31,184	195,627
3	0	0	0	0
4	54,826	4	31,074	90,021
5	61,355	4	24,836	125,769
6	49,426	7	22,070	109,666
7	46,605	19	553	90,745
8	53,210	15	7,594	141,628
9	49,524	12	7,572	154,496
10	81,841	4	45,459	115,649
11	115,650	2	137,753	173,546
12	37,007	1	37,007	37,007

Due to the selective sample size and use of a subscription-based platform for testing, this study is not generalizable to the magazine publishing industry as a whole. However, the results can be used as a starting point for further research.

The 128 magazines analyzed for the purpose of this study were split into 13 genre-specific categories (see Table 5). However, for the purpose of this analysis only the 69 magazines containing

digital affordances were examined. The magazine content determined the categorization of the specified magazine genre and the field served. Due to the fact that the AMA survey was used to aid magazine selection for this study, the sample size per genre varies significantly, with the lowest value being 1 and the greatest value being 11.

Table 5 Analysis of Affordances Based on Genre

Genre	No. of Magazines in Sample	Average Subscription Rate	Average No. of Affordances (Rounded to the nearest interval)
Automotive	2	45,238	4
Business & Finance	5	35,027	9
Celebrity & Entertainment	4	71,089	6
Fashion & Style	9	34,976	7
Food & Cooking	3	72,977	8
Health & Fitness	4	97,854	7
Home & Gardening	11	53,756	8
Kids & Parenting	1	19,520	9
Lifestyle	10	82,888	8
Current Affairs	6	54,109	8
Science & Technology	2	83,567	9
Sports & Recreation	7	41,880	8
Travel & Regional	5	51,377	6

WHAT ARE THE AFFORDANCES ON NEXT ISSUE?

OVERALL

Based on the data collected throughout this study (see Appendix B) the top three implemented affordances were *read entire article* (97 percent), *view additional content* (93 percent), and *view website* (86 percent), with each affordance consisting of more than one feature. *Read entire article* is

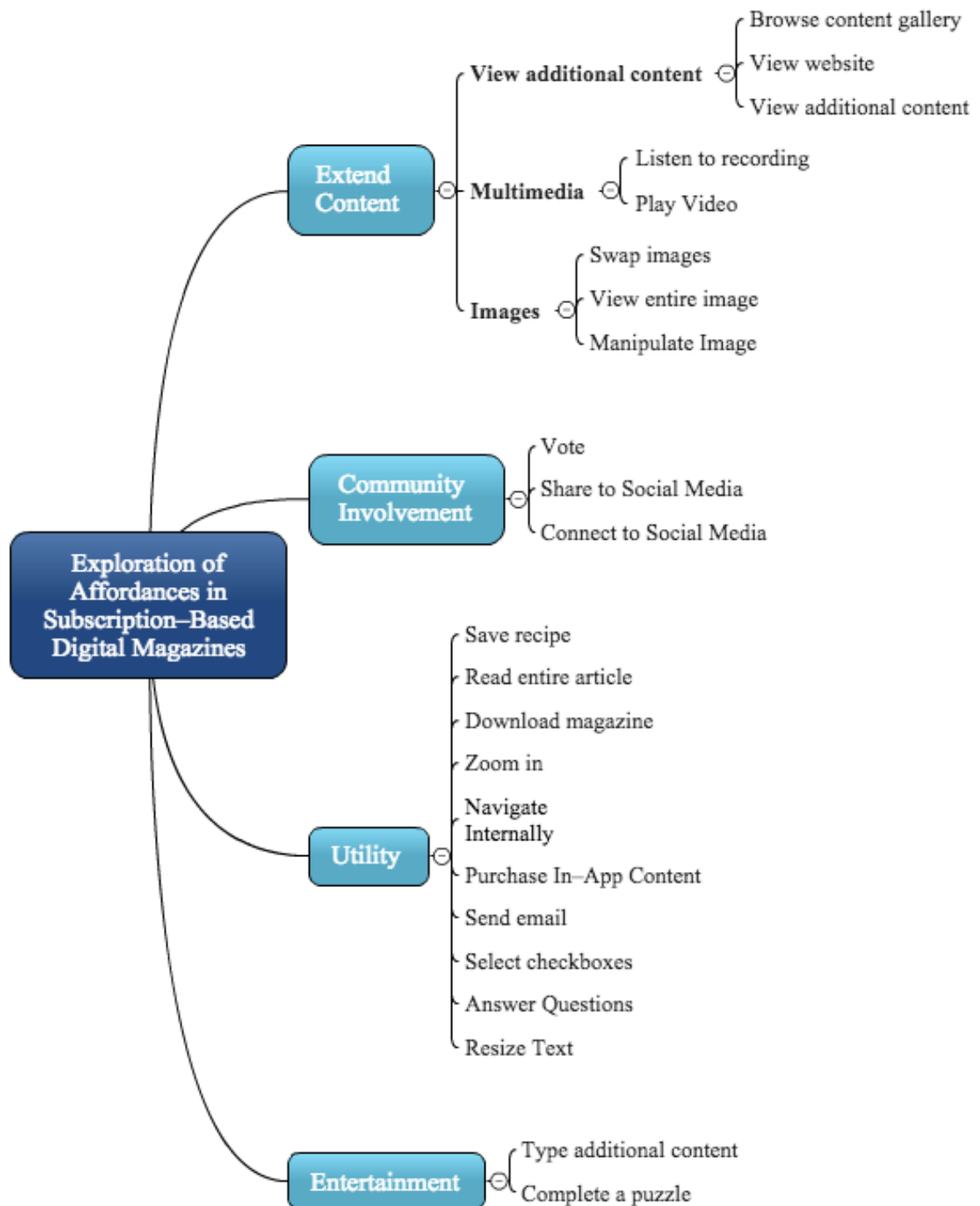
composed of two features—scrollable content box and a long scrolling page. The *view additional content* affordance is composed of six features—popup content, popup photo captions, popup credits, automatic changing content⁸, and scheduled content⁹. *View website* is composed of five features—hyperlinks, linked text (to brand website), linked images (to brand website), linked text (to external website), linked text (to external website). All of the features previously mentioned will be discussed further in their respective sections. It is important to note that all of the affordances were collected based on the content present via the editorial pages in the digital edition.

The four categories (see Figure 2) identified as the basis for this framework were determined based on the primary functionality of each affordance. In addition, each function was observed regarding the area of the magazine it targeted. For example, the affordance *listen to recording* was classified as an extension of content due to its role in not only extending the story through audio, but also by targeting more than one of the five senses in the process. On the other hand, share to social media is classified as an affordance under community involvement. This not only increases the magazine's reach, but also affords the end user the opportunity to connect with the existing community. Utility, in comparison, presents its sole purpose on the functionality of the affordance. In the case of in magazine shopping, the end user is able to purchase the content (often clothing) present on the page through the click of a button. A separate application (ShopAdvisor) opens within the application and presents the end user with a single function—purchase the item. Last but not least, entertainment was selected to categorize all affordances that were not used for the extension of content, functionality, and community involvement. When examined further, the final category consisted of affordances that provided no further function than to entertain the end user.

⁸ Automatic changing content consists of a autoplay slideshow that continues to change while the end user has the active screen open.

⁹ Scheduled content consists of content that appears in a specific order and on a scheduled time pattern. For example, the June 2015 issue of Esquire contained a video cover of Jason Statham with alternating images.

Figure 2—*Mindmap of Affordance Categorization*

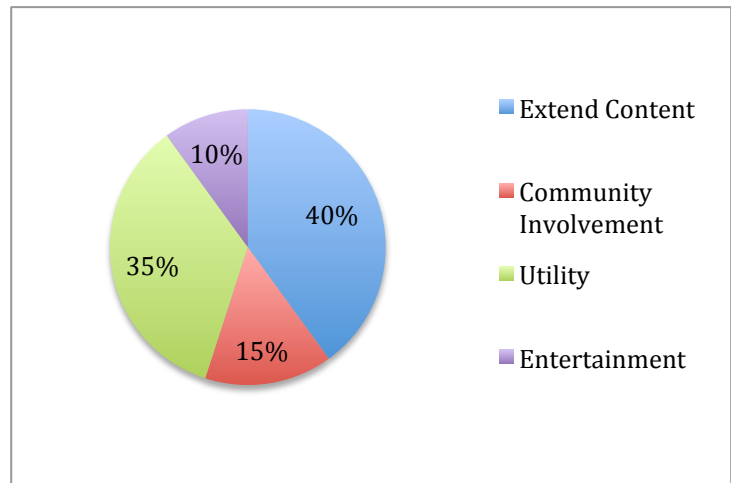


HOW CAN THE AFFORDANCES IDENTIFIED BE EFFICIENTLY GROUPED USING AFFORDANCE THEORY?

The second set of data analyzed looked at whether or not there was an association between the number of digital subscriptions and a specific category of affordances. As a contribution to scientific literature, this study organizes affordances into

four distinct categories: Extend Content, Community Involvement, Utility, and Entertainment (see Figure 3). In addition, all of the categories were only analyzed in regard to the 69 digital editions. Digital replicas were not considered because they do not offer any interactivity, thus the lack of affordances in

Figure 3—Affordance Categorization



these issues would skew the results. In addition to the four categories analyzed below, the affordances identified throughout this study are cross-examined against the categorizations noted by Gaver and Forlizzi and Battarbee (See Table 6).

As aforementioned under Methodology, all affordances were coded and categorized based on their primary function. This approach is appropriate for the purpose of this study because it not only builds on the previously established frameworks within this field, but also allows for the development of a new framework specific to the magazine publishing industry. All categories and their results are described in the following section, along with additional details in Appendix B.

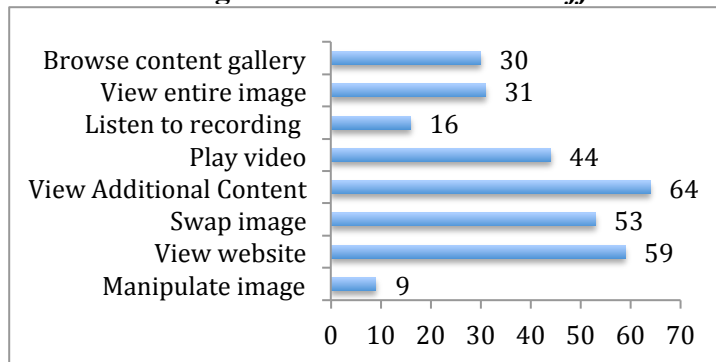
EXTEND CONTENT

This category is an aggregation of affordances that extend the content present on the page. It consists of: images, videos, multimedia content, links, and buttons, and cumulatively accounts for 40

percent of the affordances identified. Based on the data collected, in order for an affordance to be considered a successful extension of the magazine’s content, it must meet two conditions:

- The digital features presented must extend the content presented on the page, be it through multimedia content, additional text, links, etc.; and
- The publication must allow the end user to engage with the interactive and multimedia content on their own accord.

Figure 4—Extend Content Affordances



The direct extension of content is primarily applicable through a digital platform¹⁰. Through Next Issue’s platform the magazine brand is given the necessary freedom to establish as many (or as few) interactive features as they’d like. In regards to content extension, these features include navigation to external sites, image manipulation, viewing additional content, and multimedia content.

BREAKDOWN OF DATA

Throughout this study, content was extended primarily through links, images, and multimedia content. The top three affordances within this section included: *view additional content* (93 percent), *view website* (86 percent), and *swap image* (77 percent).

As the most frequently implemented affordance, view additional content played a significant role in extending the end user’s reach to related content. It is made up of six features—popup content, popup photo captions, automatic content change, tabs, and timed content¹¹—with popup content and popup photo captions tied for most frequent at 83 percent each.

¹⁰ However, through the incorporation of augmented reality (AR) and video-in-print advertising, print media is actively competing in the same space. In 2012, Marie Claire UK inserted a 2.7 mm thick video screen (BBC, 2009) into their October print issue. The video automatically played when opened to the correct page (Battan, 2012).

¹¹ For the purpose of this study timed content is defined as content that appears, within a specific sequence, after the current page has loaded. An example of this would be a video cover.

Compared to its print counterpart, a digital magazine lends itself more favourably to the expansion of content through the click of a button. In the case of popup content, the digital magazine allowed for the addition or removal of overlay content, therefore allowing the end user the option of interacting with the feature. For example, in the June 2015 issue of Entertainment Weekly, popup content was used to enhance a page layout containing a number of celebrities through the use of soundbite descriptions (see Image 2).

External navigation (i.e. to a website) is a subsection of “Extend Content” and not “Utility” as it strengthens a specific argument in the present article. Much like View Additional Content, the affordance of visiting a website is signified in a number of ways—hyperlinks, linked text and images to websites other than the brand website, and linked text and images to the brand’s website. Text and images linked to a website not belonging to the specific brand are also classified under Extend Content due to the percentage of magazines that link to external websites in their editorial content. Consider LOULOU, a Rogers Media publication, for example; a significant portion of the magazine is attributed to shopping, therefore many items (both textual and image-based) are linked to their corresponding distributor.

**Image 2—
This Week’s Best Soundbites
(Entertainment Weekly)**



Swap image, identified in 77 percent of digital editions, is an affordance that allows the end user to alternate between two select images. Incorporated into the page layout by adding a button in Adobe DPS (R. Swietlik, personal communication, July 21, 2015), this affordance is often used to provide a different angle of a specific image. This affordance is incorporated into the page layout by adding a button in Adobe DPS. This allows the user to alternate between two (or more) images (ex. image gallery).

On the other hand, Manipulate Image (see Image 3) was the least commonly implemented affordance throughout the dataset, appearing in only 13 percent of the analyzed magazines. Compared to a singular feature

(i.e. video), the affordance of image manipulation was signified in four different ways—image rotation, erase image by wiping screen, change image feature, and photo scrubbing¹². Every feature lend itself to the extension of content in a different way that best suited the feel of the story. Altering part of an image through the click of a button is a quick and easy interactive feature implemented through Adobe DPS. However, when examined in terms of situational context, the simple action has the opportunity to engage the reader in a unique way.

COMMUNITY INVOLVEMENT

Community Involvement, accounting for 12 percent of the affordances identified in this study, is targeted towards affordances aimed at enhancing the end user's relationship with the brand through

**Image 3—
Play Your Best | Swing Sequence
(Golf Digest)**



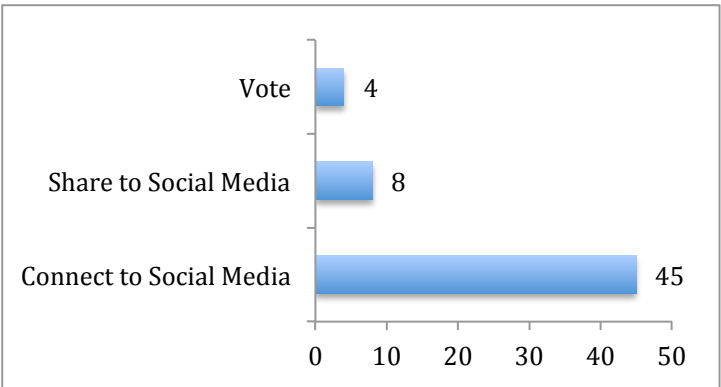
¹² Similar to video and audio scrubbing, photo scrubbing is the act of moving alongside a photo to locate a particular moment in time.

social media and crowdsourcing. The affordances noted within this section include: vote, connect to social media, and share to social media. In addition to impacting the user experience in a different way, every affordance is represented differently throughout the magazine, as discussed in the section below.

BREAKDOWN OF DATA

As shown in Figure 5, the most frequently identified affordance within community involvement

Figure 5—Community Involvement Affordances

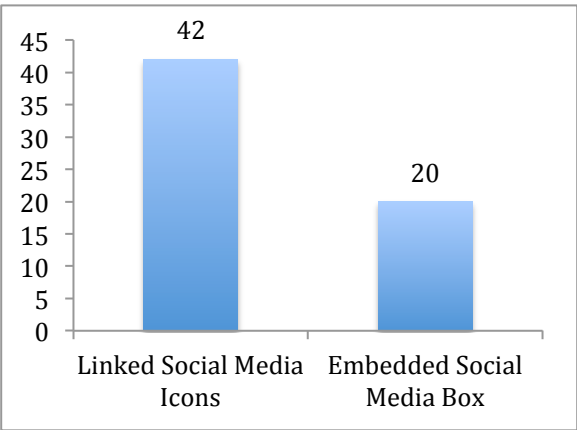


was *connect to social media*. Unlike *vote* and *share to social media*, *connect to social media* is compiled of two features—linked social media icons and an embedded social feed (see Figure 6). The use of linked social media icons, such as the Twitter logo, was

one of the most frequently implemented features (61 percent) within this study (see Appendix C). Connecting the magazine to the brand's social channels, or even the social channels of the magazine's key personnel, affords the end user the opportunity to expand their knowledge of the brand past a single-issue copy.

However, when examining the other two affordances considered in this category (Vote and Share to Social Media), there was a clear distinction not only in terms of popularity, but also usability. *National Geographic* was one of the eight magazines that afforded end users the option of sharing a feature article or piece of the magazine via social media. In order to accurately analyze the sharing process, High Science, one of the feature articles, was shared to Twitter

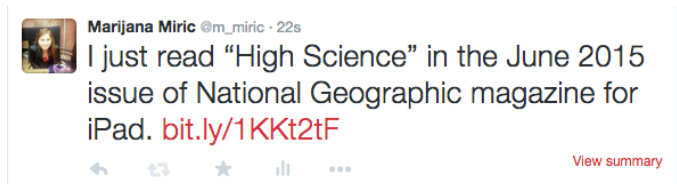
Figure 6—Connect to Social Media Features



(see Figure 7) by the researcher. The tweet not only identified that the article was from the digital edition of the magazine, but also provided a link for others to read along.

In addition, the final affordance within this category was vote (6 percent). As a way of reaching out to their readers and finding out what they deemed most important, Sports Illustrated inserted a poll near the back of the June 8, 2015 issue. This poll allowed the end user to vote on the cover story for the following week's issue¹³. Not only

**Figure 7—
Shared Story Tweet**



did they allow the reader to have a more personal connection with the brand, but also gave the magazine a deeper look into what their target audience wanted to read.

UTILITY

Functionality and navigation are important features to consider when analyzing any product, let alone a digital magazine. This category accounted for 35 percent of the affordances identified within this study. Internal navigation (i.e. navigating from cover to cover) is able to take place throughout a variety of ways—navigation bar, page flipping, hyperlinks, and linked text and images. Every one of these features affords the end user the ability to navigate throughout different areas of the magazine.

BREAKDOWN OF DATA

As noted above, internal navigation is not limited to a single strategy. In addition to horizontal scrolling, where the end user moves their finger right to left to flip the page and continue the editorial, Next Issue affords the use of a vertical scroll bar where the end user is able to extend the content of the story by scrolling up and down through an embedded box. This allows the information presented in the story to be contained and for the reader to mitigate the potential for distraction. The most frequently

¹³ Compared to the usual monthly magazine format, Sports Illustrated is published on a weekly basis.

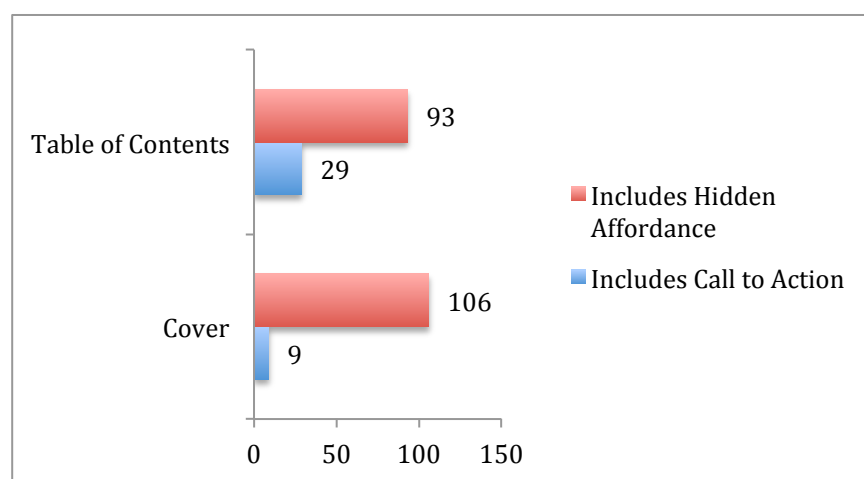
implemented affordance in this section was read entire article (97 percent) followed by send email (62 percent).

Out of all the affordances identified in this study, read entire article is shared with the brand's print counterpart. Every print issue affords the end user the option to read the entire article by flipping to the next page and continuing the editorial; however, the digital edition targets the affordance in a different manner. Unlike the print publication, which is limited to a static design, the digital issue affords the end user the option of reading the editorial content in one of two ways—long scrolling page or an embedded box. When examined against the magazines present in this study, an embedded box proved more popular, maintaining an increase of 10 percent over a long scrolling page. As noted in the previous paragraph, both design features lend themselves favourably toward long-form journalism, yet one more so than the other. A long scrolling page only applied to 39 percent of the magazines analyzed, yet when applied to a story, versus an extension of a service page (ex. Table of Contents), the content expanded over the course of three pages, at minimum and provided the space for more content. When analyzed in terms of the embedded box, the level of inclusion within magazines increased 10 percent, to a total of 49 percent. However, based on the design, the embedded box containing an in-article scroll bar poses less potential for distraction (Cohen and Burns, 2012) on the part of the end user. This is due to the fact that the content is contained in a singular location versus extended over a number of pages.

The second most frequent affordance in this category, send email, was composed of a single feature. However, this interaction is viewed as a learned skill throughout digital technology. The email icon is ubiquitous in design across all platforms, in turn increasing the likelihood of a successful interaction. Clicking on a linked image or email address automatically connects the end user to the system's default mail application (ex. Mail app). By allowing the end user to connect directly through the application, the end user is able to reach their destination more easily.

It is important to note that three of the affordances classified under “Utility” were not included in the overall analysis, in order to prevent bias. *Navigate internally*, *zoom in*, and *download* are all affordances identified within this study that each held a value of 100 percent. In addition, all three of the affordances are classified as system features in Next Issue, thus making them ubiquitous across the platform.

**Figure 8—
Hidden versus Perceived Affordances**



In the case of navigate internally, this affordance was represented throughout the study in five different ways—linked cover lines, linked table of contents, linked body copy, linked images/buttons, and internal navigation buttons¹⁴—with the most frequently implemented

being a linked table of contents (95 percent). However, only nine (eight percent) of 115 digital magazines containing the affordance of internal navigation by means of a linked cover presented a call to action for the end user (see Figure 8). However, while some magazines explicitly stated, "tap any headline to jump to a story," others were more concealed and targeted a specific couple of headlines. To give an example, *Cosmopolitan's* June 2015 cover (see Image 4), featuring Zooey Deschanel, targeted a headline connected to the development of the cover (i.e. Zooey Cover Shoot Video. Tap Here!). The 106 magazines that did not inform the end user of the necessary action presented the end user with a hidden affordance due to the fact that he or she is required to interpret the necessary action based on the level of interactivity present throughout the remainder of the magazine. This is unlikely

¹⁴ These buttons differed from regular navigation buttons due to the fact that they served the purpose of navigating within a specific story.

for new Next Issue users as the cover is the very first interaction and can easily be missed. As such, icons or text instructions are very important for new users. However, those who are used to navigating the platform are likely to tap on headlines without specific instruction (R. Swietlik, personal communication, July 21, 2015)

ENTERTAINMENT

Entertainment accounts for 10 percent of the affordances identified in this study, thus making it the least implemented category. Many design features are added to a digital magazine for no purpose except to entertain the end user. This study consisted of two affordances that fell under the category of entertainment—type additional content and complete a puzzle—as neither of these affordances extended to provide the end user with an alternative purpose.

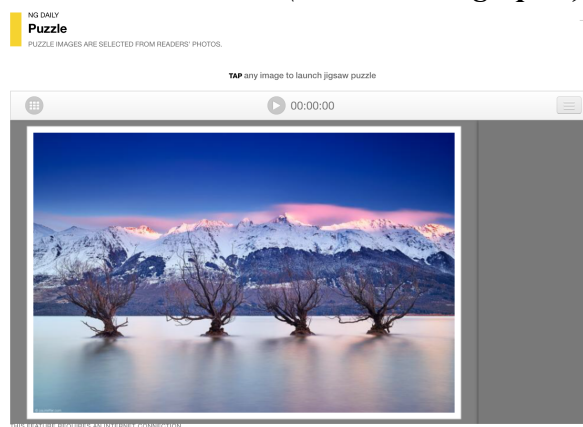
BREAKDOWN OF DATA

When examined against the remainder of affordances identified in this study, entertainment consisted of only two affordances. Due to the fact that each affordance contained a single magazine within its selection, neither affordance is higher in popularity. Under the affordance of type additional content, found in *O, The Oprah Magazine*, the end user was afforded the option of typing additional content (in this case self-declared labels) for the purpose of interpreting their life in a number of ways.

Image 4—
“ZooeY Cover Shoot Video. Tap Here!”
(Cosmopolitan)



Image 5—
Puzzle
(National Geographic)



By providing the space and functionality for the end user to interact with the content, the end user is able to have a more immersive experience. However, when observed in terms of putting together a puzzle (see Image 5), the end user is presented with a different ways of interacting with the content in front of them.

A CLOSER LOOK AT THE ORIGINAL CATEGORIZATION OF AFFORDANCES

This paper grouped affordances into three specific categories—perceived affordances, hidden affordances, and false affordances. The goal of this section is to describe and identify how these three categories relate to the affordances determined throughout the course of this research. In order to properly determine the frequency of these categories, only the 69 magazines containing affordances were studied. In addition, Pols (2012) definition of consequential action, describing an action based on its outcome, directly affects the level by which an end user is able to perceive the intended affordance.

The affordances analyzed throughout this study fell into, at minimum, one of the three categories. Despite not being considered as a valid affordance for the overall analysis, navigate internally was examined for this section. For example, linked cover lines, a common feature noted throughout this study, expressed both perceived and hidden affordances for the 114 magazines containing linked covers.

PERCEIVED AFFORDANCES

Affordance perception is one of the key components of affordance theory. However, its definition has been discussed and argued by numerous scholars. This study examined the definitions outlined by Gibson and Norman. While Gibson believed that an affordance could be perceived through the artefact's surroundings, Norman argued that the only possible way to perceive an action was through direct perception. Therefore, the intended action must be clearly identified for the end user.

Using direct perception as a guideline, 35 percent of magazine brands took lack of user knowledge into consideration and provided a legend near the front of the book. This proved useful when examining features not familiar to the average reader, such as photo scrubbing. In the case of linked cover lines, out of the 114 magazines containing linked cover lines, only nine magazines (8 percent) provided a call to action for the end user. However, in the case of a video, the icon associated with *play video* is considered to be ubiquitous across all digital platforms.

“Functional fixedness,” a term coined in 1945 by Duncker, identifies the well-known limitation associated with an individual’s cognitive bias to perceive an object’s action capability in a traditional manner (Eysenck, 2001). When compared to the use of digital textbook (or e-book), Heider, Laverick, and Bennett (2009) argued that the digital edition should be viewed as an interactive tool that can be used to take content beyond the printed word. However, in order for that to be a viable option, the affordance must be clearly identified for the end user. Unless the affordance is directly perceivable by the end user, the artefact takes on its most basic form (Smith et al, 2013). When examined against the limitations of this study, the most basic form would be a touch screen.

HIDDEN AFFORDANCES

Unlike perceived affordances, hidden affordances are defined as affordances that exist, but lack clear identification in the eyes of the end user (McGrenere and Ho, 2000). In the case of this study, the most significant hidden affordance occurred when analyzing the features located under the affordance *navigate internally*. Even though this affordance was not analyzed in the overall analysis, it is a significant factor when examining the frequency of hidden versus perceived affordances.

Compared to the feature Linked Table of Contents (95 percent), Linked Cover Lines, another feature under Navigate Internally, was noted in 89 percent of the complete list of 128 magazines.

However, only 24 percent of magazines containing a linked Table of Contents and 8 percent (9 magazines) of magazines containing a linked cover presented the end user with a call to action.¹⁵

One of the most utilized affordances noted under Utility was read entire article. This affordance was split into two features—a long scrolling box and an embedded box. Compared to the affordance of navigating internally throughout the magazine, only 5 percent of magazines containing the read entire article affordance did not include a call to action. However, stylistically, unlike the affordance of navigating throughout the magazine, the call to action for the read entire article affordance is able to fit more seamlessly into the page layout.

FALSE AFFORDANCES

Unlike perceived and hidden affordances, false affordances provide the end user with the illusion of potential action. Due to the limitations presented by the Next Issue platform, a number of features developed in Adobe DPS were removed when the file was uploaded, but the designer failed to remove the signifier from the page. This affected 20 percent of magazines analyzed in this study that contained affordances.

Based on a study completed in 2014, “the range of interactivity of the final product is determined by the output file type, the type of channel the content can be deployed to, and the robustness of the solution itself” (Infotrends, 2014, p. 7). In turn, this can significantly impact what type of interactivity is applied, as well as what type of affordance is triggered. The magazine publishing industry is composed of 60 to 80 primary companies that provide brands with the necessary software to digitize their print materials in order to create a unique experience for the end user. However, the focus of this study is on Adobe DPS due to its connection with Next Issue and popularity. Unlike most other digital publishing software, Adobe DPS does not optimize a static PDF for digital, but instead provides the brand with the opportunity to develop specialized digital files (Infotrends, 2014). However, Next

¹⁵ This statistic is comprised of both digital editions and digital replica magazines.

Issue was not able to support all of the affordances that DPS provided, leading to false affordances being present.

The affordances considered to be false afforded the end user the opportunity to perform many of the same actions afforded by the Next Issue platform, alongside a few additional features. These features included scrapbooking recipes, images, and products into a library, as well as bookmarking specific tips or articles that stood out in the issue. Out of the 24 magazines that included a legend, 58 percent included false affordances. According to Gaver (1991), in order for the end user to properly reject an affordance as false, it must not be perceptible by the end user. In the case of a digital magazine, users are shown a call to action, which can be classified as a perceived affordance. However, when the interaction is not successful, the affordance is classified as a false affordance. In the case of magazine media, this is often the case when a call to action is made (i.e. Click here!).

COMPARISON AGAINST TECHNOLOGY–SPECIFIC CATEGORIZATIONS

Categorizing affordances to fit the requirements of a specific industry is not new. To determine the effectiveness of the developed categories, each of the affordances were analyzed against the categories put forward by Gaver and Forlizzi and Battarbee. In addition, only the 69 digital editions were used for this analysis, as the remaining consisted of digital replicas, which lack affordances beyond what is provided by the platform.

Gaver (1991) grouped complex technological affordances into two categories—sequential affordances and nested affordances (see Table 6). This concept translates well throughout this study due to the number of sequential events that occur while reading a magazine. For instance, the June 2015 cover of Time magazine was an animated image that acted as a video to emphasize the title—*Who Killed Summer Vacation?*. The video acted as the hook, yet when the end user clicks on the link they are taken directly to the article.

Table 6 *Gaver’s Categorization of Technological Affordances*

Sequential Affordance	Nested Affordance
Definition <i>A sequential affordance</i> takes place when the use of one affordance leads to the discovery of a second	Definition <i>A nested affordance</i> is when two (or more) affordances are grouped spatially
Example A rock climbing wall affords gripping. In turn, it affords climbing.	Example By itself a glass affords holding a liquid. In addition, on its own, water affords the option of quenching thirst. The nested affordance is drinking.

I used the categories identified by Gaver, in addition to Forlizzi and Battarbee, as additional variables to consider in this study. As noted above, Gaver categorized affordances into two groups—sequential and nested—while Forlizzi and Battarbee (2004) categorized user–product interaction into three distinct groups—fluent, cognitive, and expressive. The frameworks identified by Gaver and Forlizzi and Battarbee were selected for comparison, against the categories created during this study, as each framework examines how technology relates to user interaction in a unique manner. This is important, as user interaction is one of the key components associated with a design and development of a digital magazine. Gaver’s categorization is important to consider as it is directly targeted toward affordances, while Forlizzi and Battarbee evaluate the impact of the overall interaction between the end user and the artefact. Table 7 examines all three categorizations in terms of how they connect to the affordances identified in this study.

Table 7 Analysis of Affordances Based on Previously Established Frameworks

Affordance	MRP Categorization	Gaver	Forlizzi and Battarbee
Read Entire Affordance	Utility	Nested	Cognitive
View Additional Content	Extend Content	Sequential	Fluent
View Website	Extend Content	Sequential	Fluent
Swap Image	Extend Content	Sequential	Fluent
Connect to Social Media	Community Involvement	Sequential	Expressive
Play Video	Extend Content	Nested	Cognitive
Send Email	Utility	Nested	Fluent
View Entire Image	Extend Content	Nested	Fluent
Browse Content Gallery	Extend Content	Sequential	Cognitive
Listen to Recording	Extend Content	Sequential	Cognitive
Purchase In-App Content	Utility	Sequential	Cognitive
Share to Social Media	Community Involvement	Sequential	Expressive
Manipulate Image	Extend Content	Nested	Cognitive
Answer Questions	Extend Content	Nested	Cognitive
Save Recipe	Utility	Sequential	Expressive
Vote	Community Involvement	Nested	Expressive
Select Checkboxes	Utility	Nested	Fluent
Type Additional Content	Entertainment	Sequential	Cognitive
Complete Puzzle	Entertainment	Nested	Cognitive
Resize Text	Utility	Nested	Cognitive

ARE SUBSCRIPTION RATES CORRELATED WITH DIGITAL AFFORDANCES, WITH HIGHER RATES IDENTIFYING A GREATER NUMBER OF AFFORDANCES AND VICE VERSA?

A scatterplot was output using SPSS in order to determine whether or not there is a linear or nonlinear relationship between the number of digital subscription rates and the number of affordances. Figure 9, visually represents the nonlinear relationship between the overall number of digital subscriptions and affordances, when analyzed against all 128 magazines. Figure 10 visually represents

the nonlinear relationship between the number of digital subscriptions and affordances, when analyzed against all 69 digital editions.

Based on the visual representation shown in Figures 9 and 10, it can be inferred that there is no linear correlation between the overall number of digital subscriptions and the number of affordances found in a digital magazine. Further, each category was also analyzed independently, however the relationship remained non-linear.

In addition to analyzing the relationship between the variety of affordances and the number of digital subscriptions in regards to the framework developed during this study, I analyzed two previously established affordance frameworks. Each affordance identified in this study was categorized as sequential or nested (Gaver, 1991) and cognitive, fluent, or expressive (Forlizzi and Battarbee, 2004). All five of the scatterplots output (see Appendix D) during this analysis solidified the fact that there was no direct relationship between the variables.

Figure 9—Analysis of all 128 Digital Magazines

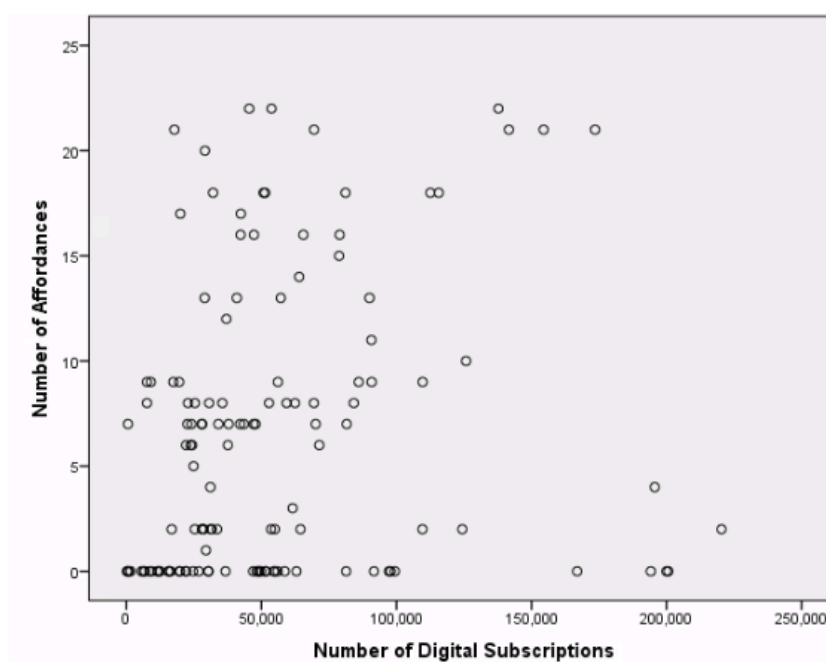
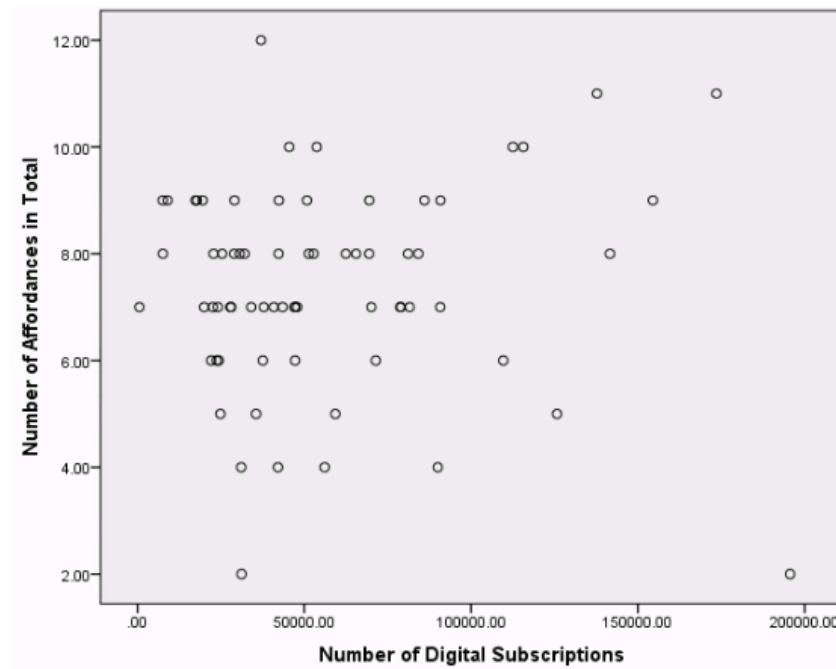


Figure 10—Analysis of all 69 Digital Editions



Out of the 128 magazines analyzed throughout this study, only 15 magazines, including both digital replicas and digital editions, contained a digital subscription value greater than 100,000. Based on the analysis performed, the average number of affordances present throughout the most popular magazines in this study is 5 affordances. However, 40 percent of the magazines analyzed in this section are considered to be digital replicas, as they do not contain any affordances.

The data sample analyzed in this section of the study indicates a high level of popularity towards digital replica magazines. For example, the highest digital subscription value found in this data sample is 220,339 and belongs to Shape magazine. This magazine, despite the high subscription rate, contains none of the affordances analyzed in this study. We see from this regression analysis that there is no indication that a high subscription rate implies that the number of affordances present in the magazine will be high.

Out of the 128 magazines analyzed during this study, 80 magazines, including both digital replicas and digital editions, contained a digital subscription value less than 50,000. Fifty thousand was

selected as the limitation for this analysis due to the fact that the average number of digital subscriptions across all 128 magazines was 53,688 subscriptions. Based on the analysis performed, the average number of affordances found in the magazines containing a digital subscription value of less than 50,000 is four affordances.

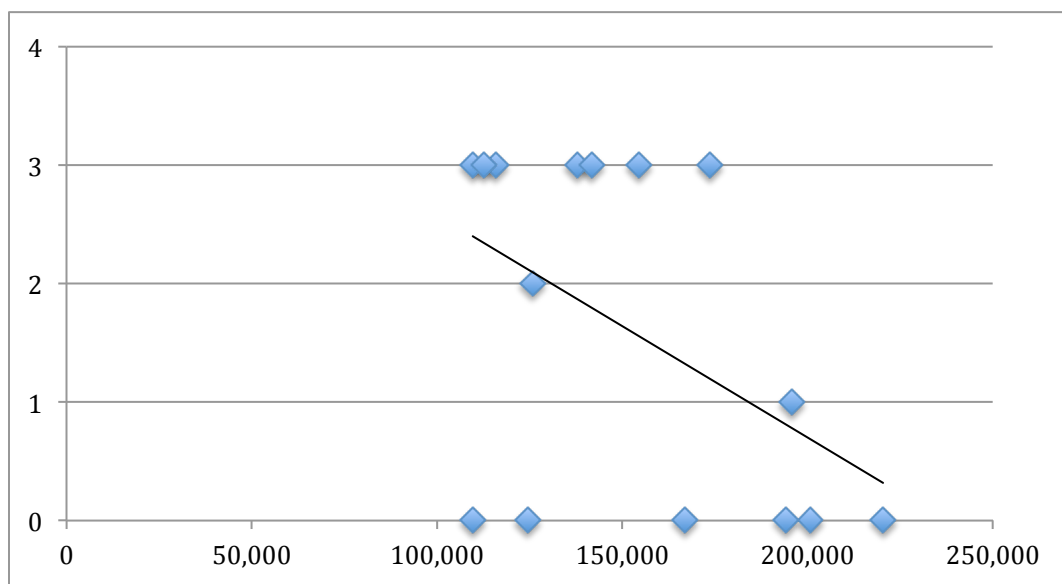
As indicated in Appendix E, 46 percent of the magazines analyzed in this section were classified as digital replicas. When analyzed in terms of the total number of digital editions, 79 percent of magazines contained seven or more affordances throughout. This indicates that a greater percentage of magazines identified a more diverse range of affordances. However, the range of digital subscriptions varied from 7,572 subscriptions to 47,837 subscriptions, when excluding the single outlier of 553 subscriptions.

ARE THE MOST COMMON AFFORDANCES REPRESENTED IN MAGAZINES CONTAINING HIGH SUBSCRIPTION RATES?

The three most common affordances in this study are *read entire article*, *view additional content*, and *view website*. These specific affordances were analyzed against the 15 magazines containing digital subscriptions over 100,000. This analysis was performed using both digital replicas and digital editions. As noted in Figure 11 only nine of the magazines in this analysis are considered to be digital editions.

The scatterplot (see Figure 11) indicates that there is no relationship between the two variables. The high number of magazines, containing all three affordances or none at all, influenced the trendline. This, in turn, produced the illusion of a negative correlation.

Figure 11—*Analysis of the Most Popular Digital Editions and Affordances*



RESEARCH CHALLENGES

PLATFORM (NEXT ISSUE)

One of the primary limitations associated with this study was the use of Next Issue as a singular platform. I chose to use Next Issue because it represents a media trend in providing a variety of content via a single subscription (Señor, Wilpers, and Giner, 2015; Infotrends, 2014; Honeywill and Carpenter, 2003) Next Issue is often described to new users as “The Netflix of Magazines.” The decision to research a single platform may limit the generalizability of results to magazines that are off platform. In addition Next Issue does limit the choice of publication as well. Only magazines published by Time Inc., Condé Nast, Hearst Corp, Meredith Corp, News Corp, and Rogers Communications Inc. of Canada, are available via the Next Issue application. However, Next Issue supports a large majority of the features available to digital magazines and has a broad number of publications. As such it provides for a better controlled study.

DEVELOPMENT (ADOBE DPS)

In order to be considered a digital edition, as well as provide the end user with a unique experience, the magazine must contain interactive elements. As one of the most popular and widely used design tools available, Adobe DPS is the tool of choice for many magazines. However, due to the availability of features and a developing design standard, many magazines have adopted a cookie cutter appearance regarding their page design. This software currently supports over 2,000 established publications (Infotrends, 2014). In addition, certain interactive elements provided by Adobe DPS, on behalf of the development of a native application, are unable to be implemented on specific distribution platforms, such as Next Issue.

FAMILIARITY WITH PRODUCT

The lack of user testing and evaluation associated with determining the necessary data has the potential to have skewed the results. Due to the fact that I have a certain level of familiarity with digital magazines, I was able to better perceive hidden affordances than someone who has never browsed a digital magazine. However, many brands compensated for the presumed lack of user knowledge by including a icon glossary defining all used affordances and their signifiers.

CONCLUSIONS

This paper focused on exploring the state of digital magazines through the lens of affordance theory. Twenty affordances were identified and analyzed in this study. They were then grouped into four distinct categories as a way of developing a new framework specific to the magazine industry. These affordances were grouped based on their primary purpose, clearly indicating what affordances were incorporated most frequently.

The framework developed by this study consists of four groups—extend content, community involvement, utility, and entertainment. Extend content was identified as the most frequently implemented while entertainment was the least. Based on an overall regression of the variety of affordances, as well as analysis for each category, there is no relationship between digital subscriptions and the variety or type of affordances present in a publication. As such, a future study should investigate whether optimizing digital publications has value for the magazine, or whether digital replica copies are sufficient. In addition, since subscription rates are not impacted by the variety of affordances present, and almost half of the magazines were digital replicas, future research should examine whether or not there is value in developing robust digital editions, or if effort should be placed elsewhere.

To ensure that the affordances were categorized properly, all 20 affordances were analyzed against a number of different frameworks, including 1) Gibson's original categorization of hidden, perceived, and false affordances, 2) Gaver's categorization of technological affordances, and 3) Forlizzi and Battarbee's human–artefact interaction. When analyzed against the categories established in Gibson's original definition, there were a number of hidden and false affordances present throughout the study. Compared to the perceived affordances, the noted hidden affordances were often due to the fact that the art director did not include a call to action or signifier. However, the application of hidden

affordances can also be the result of a long-lasting digital presence and the assumption that the everyday reader understands how to interact with the publication.

Most magazines uploaded to the Next Issue platform are developed using the Adobe DPS software. However, due to certain technological issues, specific features, often implemented for use in a native application, conflict with the Next Issue platform. This, in turn, causes the appearance of a false affordance. As aforementioned, a false affordance signifies the existence of an affordance, but lacks the action capability. Overall, this concept was noted in 20 percent of the digital editions present. Some of the most common affordances that were unable to be activated were: favouriting an item, viewing favourited items in a library, and assembling story items into a scrapbook.

The design and development of a digital edition has not yet been standardized. This paper identified and introduced a select number of affordances currently in use throughout the magazine publishing industry. Each affordance contributed to the development of the story in a different way. By addressing the purpose of each affordance, and its contribution to the magazine, a unique strategy can be developed using this framework. After all, in order for a digital magazine to be successfully perceived as a digital edition, it must provide the end user with a unique and immersive experience throughout (Kon et al, 2011).

Appendix A: Collection of Magazine Data

	Magazine Title	No. of Digital Subscriptions	Variety of Affordances	Genre
1	Automobile	54,872	0	<i>Automobile</i>
2	Car and Driver	59,291	5	
3	Hot Rod	48,165	0	
4	Motor Trend	99,368	0	
5	Road and Track	31,184	2	
6	Truck Trend	5,619	0	
7	Bloomberg Business Week	62,950	0	<i>Business & Finance</i>
8	Canadian Business	24,069	7	
9	Entrepreneur	54,558	0	
10	Fast Company	62,443	8	
11	Fortune	22,548	7	
12	Inc.	49,835	0	
13	Money	29,070	9	
14	MoneySense	37,007	12	
15	Entertainment Weekly	56,099	4	<i>Celebrity & Entertainment</i>
16	HELLO! Canada	27,847	6	
17	OK! Weekly	166,916	0	
18	People	90,745	7	
19	STAR	200,670	0	
20	Us Weekly	109,666	6	
21	Allure	28,968	8	<i>Fashion & Style</i>
22	Flare	25,365	7	
23	Harper's Baazar	36,676	0	
24	InStyle	53,712	10	
25	LOULOU	28,080	7	
26	LOULOU (FR)	553	7	
27	Lucky	25,291	0	
28	Marie Claire	47,088	6	
29	More	53,558	0	
30	Nylon	97,827	0	
31	Redbook	42,111	4	
32	People Style Watch	37,570	5	
33	Seventeen	29,457	0	
34	Siempre Mujer	814	0	
35	Teen Vogue	11,435	0	
36	Town & Country	21,926	0	
37	Vogue	51,339	7	
38	W Magazine	12,474	0	
39	All Recipes	46,927	0	<i>Food & Cooking</i>
40	Bon Appétit	42,367	8	

Appendix A: Collection of Magazine Data

41	Cooking Light	50,794	9	
42	Eating Well	81,365	0	
43	Every Day with Rachael Ray	55,940	0	
44	Food & Wine	26,795	0	
45	Food Network Magazine	125,769	5	
46	Rodale's Organic Life	6,749	0	
47	Saveur	15,571	0	
48	Vegetarian Times	44,998	0	
49	Diabetic Living Magazine	11,851	0	<i>Health & Fitness</i>
50	Health	27,934	0	
51	Men's Health	141,628	8	
52	Prevention	90,021	4	
53	Self	47,222	6	
54	Shape	220,339	0	
55	Weight Watchers	64,469	0	
56	Women's Health	112,544	9	
57	Architectural Digest	37,851	6	<i>Home & Gardening</i>
58	Better Homes & Gardens	127,753	11	
59	Country Living	42,283	7	
60	Dwell	30,390	0	
61	ELLE Décor	47,837	6	
62	Good Housekeeping	65,513	8	
63	HGTV Magazine	71,430	5	
64	Canadian House & Home Magazine	9,034	8	
65	House Beautiful	52,787	7	
66	Maison & Demure	421	0	
67	Real Simple	78,745	7	
68	This Old House	32,741	5	
69	Traditional Home	24,685	0	
70	Veranda	24,346	5	
71	Better Homes & Gardens Wood	9,414	0	
72	Family Circle	61,520	0	<i>Kids & Parenting</i>
73	Family Fun	31,591	0	
74	Parents	33,566	0	
75	Today's Parent	19,520	8	
76	Working Mother	194,167	0	

Appendix A: Collection of Magazine Data

77	All You	28,555	0	<i>Lifestyle</i>
78	Brides	8,482	0	
79	Details	16,358	0	
80	Chatelaine	43,472	7	
81	Châtelaine	7,594	8	
82	Cosmopolitan	173,546	11	
83	Cosmopolitan for Latinas	6,409	0	
84	Esquire	70,078	7	
85	Essence	22,782	8	
86	Glamour	45,459	10	
87	GQ	84,184	8	
88	Martha Stewart Living	54,984	0	
89	Martha Stewart Weddings	19,870	0	
90	Maxim	195,627	2	
91	Men's Fitness	97,208	0	
92	Men's Journal	31,074	4	
93	O, The Oprah Magazine	115,649	10	
94	L'Actualite	7,572	9	<i>Current Affairs</i>
95	Macleans	30,633	8	
96	New York Magazine	58,598	0	
97	Reader's Digest Canada	1,512	0	
98	Rolling Stone	47,222	0	
99	Sélection du Reader's Digest	226	0	
100	The New Yorker	90,812	9	
101	Time	69,472	9	
102	Vanity Fair	78,941	7	
103	Popular Mechanics	81,121	7	<i>Science & Technology</i>
104	Popular Photography	51,718	0	
105	Popular Science	109,613	0	
106	Shutterbug	49,002	0	
107	Smithsonian	16,775	0	
108	Wired	86,012	9	
109	Bicycling	34,066	7	<i>Sports & Recreation</i>
110	ESPN The Magazine	124,367	0	
111	Field & Stream	28,324	0	
112	Golf Digest	40,870	6	

Appendix A: Collection of Magazine Data

113	Golf Magazine	17,769	8	
114	Outside	49,080	0	
115	Runner's World	69,429	8	
116	Running Times	22,127	0	
117	Sports Illustrated	32,084	8	
118	Sportsnet	17,371	9	
119	Yoga Journal	81,568	7	
120	Backpacker	91,658	0	<i>Travel & Regional</i>
121	Coastal Living	19,507	0	
122	Condé Nast Traveler	24,836	5	
123	Midwest Living	15,771	0	
124	National Geographic	154,496	9	
125	National Geographic Traveler	30,313	0	
126	Southern Living	35,525	5	
127	Sunset	19,959	6	
128	Travel & Leisure	22,070	6	

Appendix B: Analysis of Affordances

<i>Magazine Title</i>	<i>Extend Content</i>	<i>Community Involvement</i>	<i>Utility</i>	<i>Entertainment</i>
Car and Driver	1	0	1	0
Road & Track	1	0	1	0
Canadian Business	1	1	1	0
Fast Company	1	1	1	0
Fortune	1	1	1	0
Money	1	1	1	0
MoneySense	1	1	1	0
Entertainment Weekly	1	0	1	0
HELLO! Canada	1	1	0	0
People	1	0	1	0
Us Weekly	1	0	1	0
Allure	1	1	1	0
Flare	1	1	0	0
InStyle	1	1	1	0
LOULOU	1	1	1	0
LOULOU (FR)	1	1	1	0
Marie Claire	1	1	1	0
Redbook	1	1	1	0
People Style Watch	1	1	1	0
Vogue	1	1	1	0
Bon Appétit (FR)	1	1	1	0
Cooking Light	1	1	1	0
Food Network Magazine	1	1	1	0
Men's Health	1	1	1	0
Prevention	1	0	1	0
Self	1	1	0	0
Women's Health	1	1	1	0
Architectural Digest	1	1	1	0
Better Homes & Gardens	1	1	1	0
Country Living	1	1	1	0
ELLE Decor	1	1	1	0
Good Housekeeping	1	0	1	0
HGTV Magazine	1	1	1	0
Canadian House & Home Magazine	1	1	1	0
House Beautiful	1	1	1	0
Real Simple	1	1	1	0
This Old House	1	0	0	0
Veranda	1	1	1	0
Today's Parent	1	1	1	0

Appendix B: Analysis of Affordances

Chatelaine	1	1	1	0
ChŠtelaine	1	1	1	0
Cosmopolitan	1	1	1	0
Esquire	1	1	1	0
Essence	1	1	1	0
Glamour	1	1	1	0
GQ	1	1	1	0
Maxim	1	1	0	0
Men's Journal	1	0	1	0
O, The Oprah Magazine	1	1	1	1
L'Actualite	1	0	1	0
Maclean's	1	0	1	0
Rolling Stone	0	0	0	0
The New Yorker	1	1	1	0
Time	1	1	1	0
Vanity Fair	1	1	1	0
Popular Mechanics	1	1	1	0
Wired	1	1	1	0
Bicycling	1	1	1	0
Golf Digest	1	1	1	0
Golf Magazine	1	1	1	0
Runner's World	1	1	1	0
Sports Illustrated	1	1	1	0
Sportsnet	1	1	1	0
Yoga Journal	1	1	1	0
Cond_ Nast Traveler	1	0	1	0
National Geographic	1	1	1	1
Southern Living	1	1	1	0
Sunset	1	1	1	0
Travel + Leisure	1	1	1	0

Appendix B: Analysis of Affordances

EXTEND CONTENT

	<i>Manipulate image</i>	<i>View website</i>	<i>Swap image</i>	<i>View Add. Content</i>	<i>Play video</i>	<i>Listen to recording</i>	<i>View entire image</i>	<i>Browse content gallery</i>
Car and Driver	0	1	1	1	0	0	0	0
Road & Track	0	0	0	1	0	0	0	0
Canadian Business	0	1	0	1	1	0	0	1
Fast Company	0	1	1	1	1	1	0	0
Fortune	0	1	0	1	1	0	0	1
Money	0	1	1	1	1	0	0	1
MoneySense	1	1	1	1	1	1	1	0
Entertainment Weekly	0	1	1	1	0	0	0	1
HELLO! Canada	0	1	1	1	1	0	0	1
People	0	1	1	1	0	1	0	0
Us Weekly	0	1	1	1	0	0	1	1
Allure	0	1	1	1	1	0	0	1
Flare	0	1	1	1	1	0	0	0
InStyle	0	1	1	1	1	0	1	1
LOULOU	0	0	0	1	1	1	1	0
LOULOU (FR)	0	0	0	1	1	1	1	0
Marie Claire	0	1	0	1	1	0	1	0
Redbook	0	0	0	1	0	0	0	0
People Style Watch	0	0	0	1	0	0	1	0
Vogue	0	1	1	1	1	1	1	0
Bon Appétit	0	1	1	1	1	0	0	1
Cooking Light	0	1	1	1	1	0	0	1
Food Network Magazine	0	1	0	1	1	0	0	0
Men's Health	0	1	1	1	1	0	1	1
Prevention	0	1	1	1	0	0	0	0
Self	0	1	1	1	0	0	0	1
Women's Health	0	1	1	1	1	0	0	1
Architectural Digest	0	1	1	1	0	0	1	0
Better Homes & Gardens	1	1	1	1	1	0	1	1
Country Living	0	1	1	1	0	0	0	0
ELLE Decor	0	1	1	1	1	0	0	0
Good Housekeeping	0	1	1	1	0	0	1	1
HGTV Magazine	0	1	0	1	0	0	1	1
Canadian House &	0	1	1	1	1	0	1	0

Appendix B: Analysis of Affordances

Home Magazine								
House Beautiful	0	1	1	1	0	1	1	0
Real Simple	0	1	1	1	0	0	0	1
This Old House	0	1	1	1	1	0	0	1
Veranda	0	1	0	1	0	0	1	0
Family Circle	0	0	0	0	1	0	0	0
Today's Parent	0	1	1	1	1	0	0	1
All You	0	0	0	0	1	0	0	0
Chatelaine	0	1	1	1	1	0	0	0
Châteline	0	1	1	1	1	0	0	1
Cosmopolitan	0	1	1	1	1	1	0	1
Esquire	0	1	1	1	1	0	0	0
Essence	0	1	1	1	1	0	0	0
Glamour	0	1	1	1	0	0	0	0
GQ	0	1	0	1	1	0	1	1
Maxim	0	1	0	0	0	0	0	0
Men's Journal	0	0	1	1	0	0	1	0
O, The Oprah Magazine	0	1	1	1	1	0	1	1
L'Actualite	0	1	1	1	1	0	1	1
Maclean's	0	1	1	1	1	1	1	0
Rolling Stone	0	0	0	0	1	1	1	0
The New Yorker	0	1	0	1	1	1	1	0
Time	0	1	1	1	1	1	1	1
Vanity Fair	0	1	1	1	0	0	1	0
Popular Mechanics	0	1	1	1	0	0	1	1
Wired	0	1	1	0	1	1	1	0
Bicycling	1	1	1	1	0	0	0	0
Field & Stream	0	0	0	0	1	0	0	0
Golf Digest	1	0	1	1	1	1	0	0
Golf Magazine	1	1	1	1	0	0	1	0
Runner's World	0	1	0	1	1	0	1	1
Sports Illustrated	0	1	1	1	0	0	0	1
Sportsnet	0	1	1	1	1	0	1	1
Yoga Journal	0	1	1	1	1	0	0	1
Cond_Nast Traveler	0	1	1	1	0	0	0	0
National Geographic	1	1	1	1	1	0	1	0
Southern Living	1	1	1	1	0	0	0	0
Sunset	1	0	1	0	0	1	0	0
Travel + Leisure	1	0	1	0	0	1	0	0

Appendix B: Analysis of Affordances

COMMUNITY INVOLVEMENT

	<i>Connect to Social Media</i>	<i>Share to Social Media</i>	<i>Vote</i>
Car and Driver	0	0	0
Road & Track	0	0	0
Canadian Business	1	0	0
Fast Company	1	0	0
Fortune	0	1	0
Money	1	0	1
MoneySense	0	0	1
Entertainment Weekly	0	0	0
HELLO! Canada	1	0	0
People	0	0	0
Us Weekly	0	0	0
Allure	1	0	0
Flare	1	0	0
InStyle	1	0	1
LOULOU	1	0	0
LOULOU (FR)	1	0	0
Marie Claire	1	0	0
Redbook	1	0	0
People Style Watch	1	1	0
Vogue	1	0	0
Bon Appétit (FR)	1	1	0
Cooking Light	1	0	0
Food Network Magazine	0	0	0
Men's Health	1	0	0
Prevention	0	0	0
Self	0	0	0
Women's Health	1	0	0
Architectural Digest	1	0	0
Better Homes & Gardens	0	1	0
Country Living	1	0	0
ELLE Decor	0	0	0
Good Housekeeping	0	0	0
HGTV Magazine	0	0	0
Canadian House & Home Magazine	1	0	0
House Beautiful	1	1	0
Real Simple	1	0	0
This Old House	0	0	0

Appendix B: Analysis of Affordances

Veranda	<i>1</i>	0	0
Today's Parent	<i>1</i>	0	0
Chatelaine	<i>1</i>	0	0
Châtelaine	<i>1</i>	0	0
Cosmopolitan	<i>1</i>	0	0
Esquire	<i>1</i>	0	0
Essence	<i>1</i>	0	0
Glamour	<i>1</i>	0	0
GQ	<i>1</i>	0	0
Maxim	<i>1</i>	0	0
Men's Journal	<i>0</i>	0	0
O, The Oprah Magazine	<i>1</i>	0	0
L'Actualite	<i>0</i>	0	0
Maclean's	<i>0</i>	0	0
Rolling Stone	<i>0</i>	0	0
The New Yorker	<i>0</i>	1	0
Time	<i>1</i>	0	0
Vanity Fair	<i>1</i>	1	0
Popular Mechanics	<i>0</i>	0	0
Wired	<i>1</i>	0	0
Bicycling	<i>1</i>	0	0
Golf Digest	<i>1</i>	0	0
Golf Magazine	<i>0</i>	0	0
Runner's World	<i>1</i>	0	0
Sports Illustrated	<i>1</i>	0	1
Sportsnet	<i>1</i>	0	0
Yoga Journal	<i>1</i>	0	0
Cond_ Nast Traveler	<i>0</i>	0	0
National Geographic	<i>0</i>	1	0
Southern Living	<i>1</i>	0	0
Sunset	<i>1</i>	0	0
Travel + Leisure	<i>1</i>	0	0

Appendix B: Analysis of Affordances

UTILITY

	<i>Read entire article</i>	<i>Select checkboxes</i>	<i>Answer Q/A</i>	<i>Send email</i>	<i>Purchase In-App Content</i>	<i>Save Recipe</i>	<i>Resize Text</i>
Car and Driver	<i>1</i>	0	0	1	0	0	0
Road & Track	<i>1</i>	0	0	0	0	0	0
Canadian Business	<i>1</i>	0	0	1	0	0	0
Fast Company	<i>1</i>	0	0	1	0	0	0
Fortune	<i>1</i>	0	0	0	0	0	0
Money	<i>1</i>	0	0	1	0	0	0
MoneySense	<i>1</i>	1	0	1	1	0	0
Entertainment Weekly	<i>1</i>	0	0	1	0	0	0
HELLO! Canada	<i>1</i>	0	0	0	0	0	0
People	<i>1</i>	0	0	1	0	0	0
Us Weekly	<i>1</i>	0	0	0	0	0	0
Allure	<i>1</i>	0	0	0	0	0	0
Flare	<i>1</i>	0	0	1	0	0	0
InStyle	<i>1</i>	0	0	1	0	0	0
LOULOU	<i>1</i>	0	0	0	1	0	0
LOULOU (FR)	<i>1</i>	0	0	0	1	0	0
Marie Claire	<i>1</i>	0	0	1	0	0	0
Redbook	<i>1</i>	0	0	1	0	0	0
People Style Watch	<i>1</i>	0	0	0	1	0	0
Vogue	<i>1</i>	0	0	1	0	0	0
Bon Appétit (FR)	<i>1</i>	0	0	0	0	1	0
Cooking Light	<i>1</i>	0	0	1	0	1	0
Food Network Magazine	<i>0</i>	1	0	1	0	1	0
Men's Health	<i>1</i>	0	0	0	1	0	0
Prevention	<i>1</i>	0	0	0	0	0	0
Self	<i>1</i>	0	0	1	0	0	0
Women's Health	<i>1</i>	0	0	1	1	0	0
Architectural Digest	<i>1</i>	0	0	1	0	0	0
Better Homes & Gardens	<i>1</i>	0	0	1	0	1	0
Country Living	<i>1</i>	0	1	1	0	0	0
ELLE Decor	<i>1</i>	0	0	1	1	0	0
Good Housekeeping	<i>1</i>	0	1	1	0	0	0
HGTV Magazine	<i>1</i>	0	0	1	0	0	0
Canadian House & Home Magazine	<i>1</i>	0	0	0	0	0	0

Appendix B: Analysis of Affordances

House Beautiful	<i>1</i>	0	0	0	1	0	0
Real Simple	<i>1</i>	0	0	0	1	0	0
This Old House	<i>1</i>	0	0	0	0	0	0
Veranda	<i>1</i>	0	0	1	0	0	0
Today's Parent	<i>1</i>	1	0	1	0	0	0
Chatelaine	<i>1</i>	0	0	1	0	0	0
Châtelaine	<i>1</i>	0	0	1	0	0	0
Cosmopolitan	<i>1</i>	0	0	1	1	0	0
Esquire	<i>1</i>	0	0	1	0	0	0
Essence	<i>1</i>	0	0	1	1	0	0
Glamour	<i>1</i>	0	1	1	1	0	0
GQ	<i>1</i>	0	0	1	0	0	0
Maxim	<i>0</i>	0	0	0	0	0	0
Men's Journal	<i>1</i>	0	0	0	0	0	0
O, The Oprah Magazine	<i>1</i>	0	0	1	0	0	0
L'Actualite	<i>1</i>	0	1	1	0	0	0
Maclean's	<i>1</i>	0	0	0	0	0	0
Rolling Stone	<i>1</i>	0	0	0	1	0	0
The New Yorker	<i>1</i>	0	0	1	0	0	1
Time	<i>1</i>	0	0	0	0	0	0
Vanity Fair	<i>1</i>	0	0	1	0	0	0
Popular Mechanics	<i>1</i>	0	0	1	0	0	0
Wired	<i>1</i>	0	0	1	1	0	0
Bicycling	<i>1</i>	0	0	1	0	0	0
Golf Digest	<i>1</i>	0	0	0	0	0	0
Golf Magazine	<i>1</i>	0	1	1	0	0	0
Runner's World	<i>1</i>	0	1	0	0	0	0
Sports Illustrated	<i>1</i>	0	0	0	0	0	0
Sportsnet	<i>1</i>	0	1	0	0	0	0
Yoga Journal	<i>1</i>	0	0	0	0	0	0
Cond_ Nast Traveler	<i>1</i>	0	0	1	0	0	0
National Geographic	<i>1</i>	0	0	1	0	0	0
Southern Living	<i>1</i>	0	0	0	0	0	0
Sunset	<i>1</i>	0	0	1	0	0	0
Travel + Leisure	<i>1</i>	0	0	1	0	0	0

Appendix B: Analysis of Affordances

ENTERTAINMENT

	<i>Type additional content</i>	<i>Complete a puzzle</i>
Car and Driver	0	0
Road & Track	0	0
Canadian Business	0	0
Fast Company	0	0
Fortune	0	0
Money	0	0
MoneySense	0	0
Entertainment Weekly	0	0
HELLO! Canada	0	0
People	0	0
US weekly	0	0
Allure	0	0
Flare	0	0
InStyle	0	0
LOULOU	0	0
LOULOU (FR)	0	0
Marie Claire	0	0
Redbook	0	0
People Style Watch	0	0
Vogue	0	0
Bon Appétit	0	0
Cooking Light	0	0
Food Network Magazine	0	0
Men's Health	0	0
Prevention	0	0
Self	0	0
Women's Health	0	0
Architectural Digest	0	0
Better Homes & Gardens	0	0
Country Living	0	0
ELLE DŽcor	0	0
Good Housekeeping	0	0
HGTV Magazine	0	0
Canadian House & Home	0	0
House Beautiful	0	0
Real Simple	0	0
This Old House	0	0

Appendix B: Analysis of Affordances

Veranda	0	0
Today's Parent	0	0
Chatelaine	0	0
Châtelaine	0	0
Cosmopolitan	0	0
Esquire	0	0
Essence	0	0
Glamour	0	0
GQ	0	0
Maxim	0	0
Men's Journal	0	0
O, The Oprah Magazine	1	0
L'Actualite	0	0
Macleans	0	0
Rolling Stone	0	0
The New Yorker	0	0
Time	0	0
Vanity Fair	0	0
Popular Mechanics	0	0
Wired	0	0
Bicycling	0	0
Golf Digest	0	0
Golf Magazine	0	0
Runner's World	0	0
Sports Illustrated	0	0
Sportsnet	0	0
Yoga Journal	0	0
Condé Nast Traveler	0	0
National Geographic	0	1
Southern Living	0	0
Sunset	0	0
Travel + Leisure	0	0

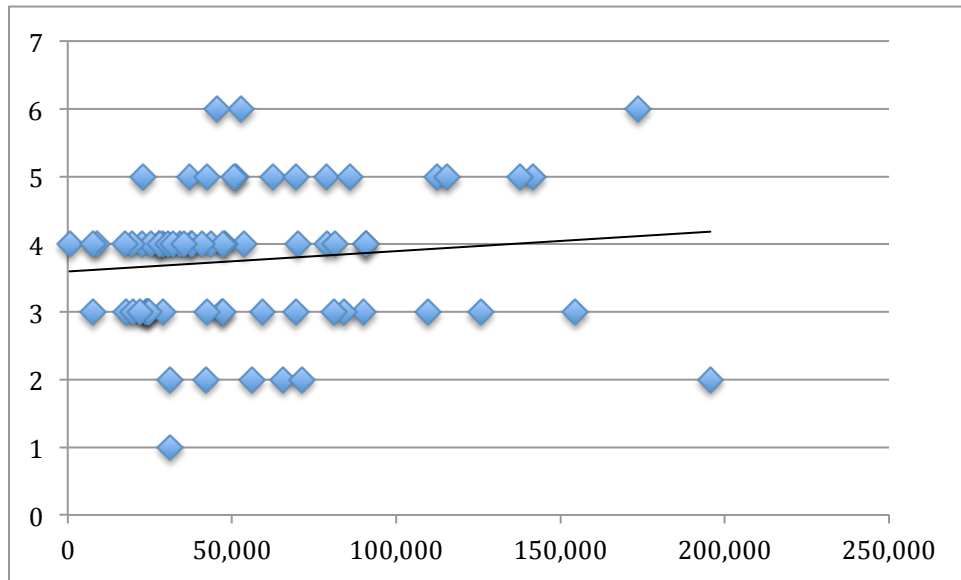
Appendix C: Frequency Distribution

Affordance	Category	Frequency	Percentage
Read Entire Affordance	Utility	67	97
View Additional Content	Extend Content	64	93
View Website	Extend Content	59	86
Swap Image	Extend Content	53	77
Connect to Social Media	Community Involvement	48	67
Play Video	Extend Content	44	64
Send Email	Utility	44	62
View Entire Image	Extend Content	31	45
Browse Content Gallery	Extend Content	30	43
Listen to Recording	Extend Content	16	23
Purchase In-App Content	Utility	14	20
Share to Social Media	Community Involvement	9	13
Manipulate Image	Extend Content	9	13
Answer Questions	Utility	7	10
Save Recipe	Utility	4	6
Vote	Community Involvement	4	6
Select Checkboxes	Utility	3	4
Type Additional Content	Entertainment	1	1
Complete Puzzle	Entertainment	1	1
Resize Text	Utility	1	1

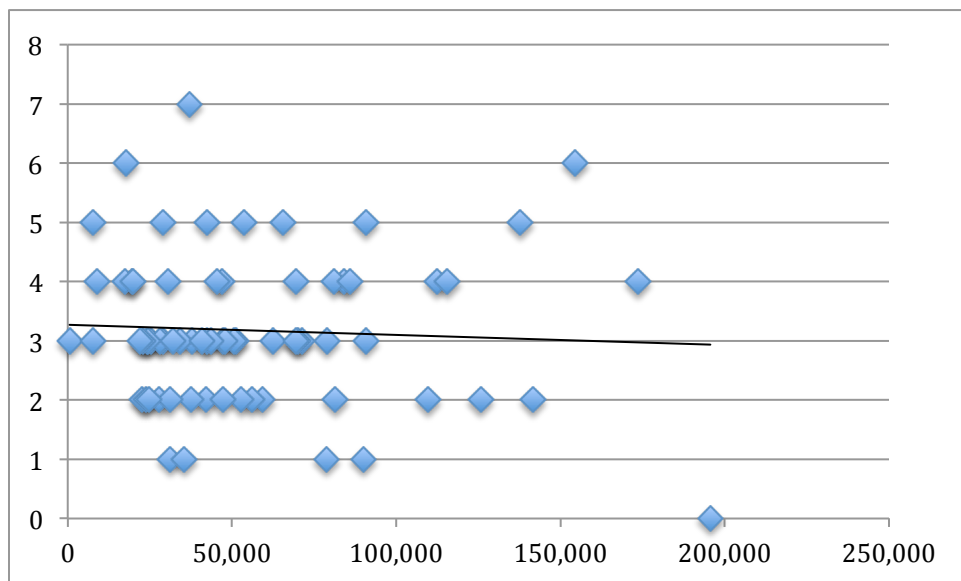
Appendix D: Scatterplots

GAVER'S CATEGORIZATION

Sequential Affordances



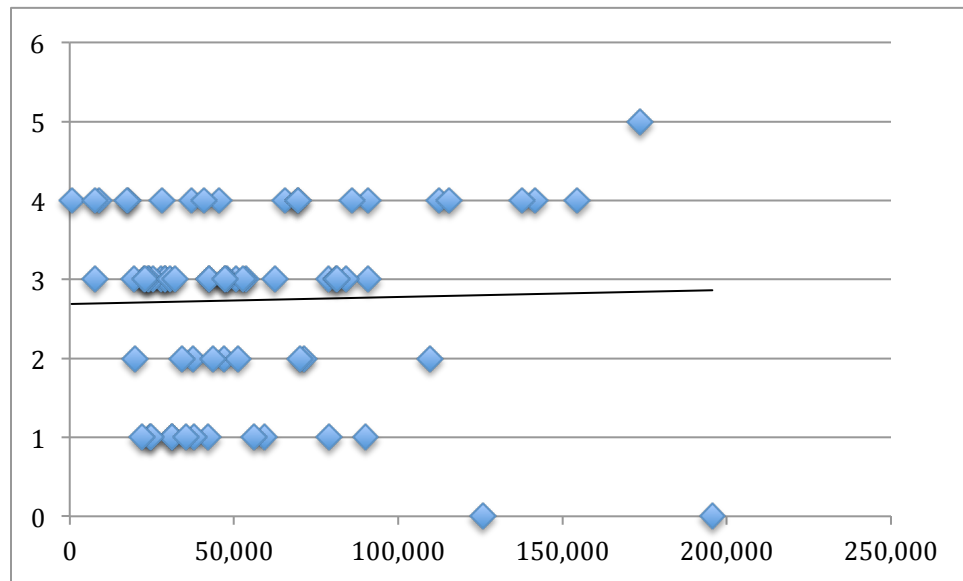
Nested Affordances



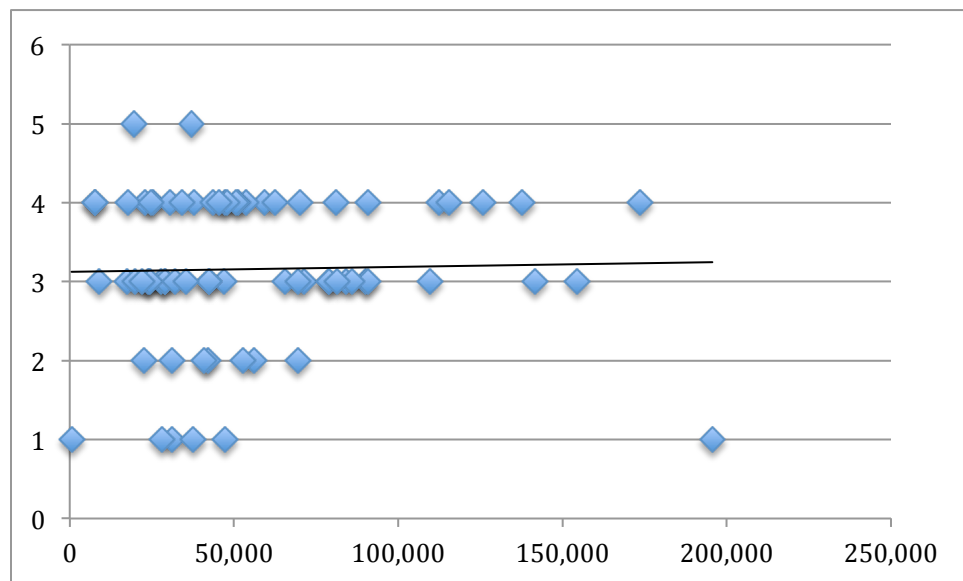
Appendix D: Scatterplots

FORLIZZI AND BATTARBEE'S CATEGORIZATION

Cognitive Affordances

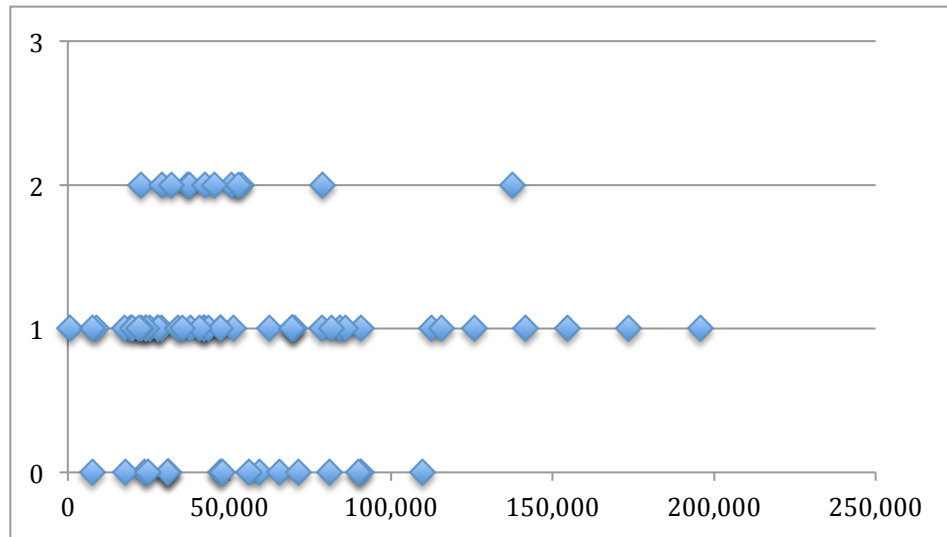


Fluent Affordances



Appendix D: Scatterplots

Expressive Affordances



Appendix E: Analysis of Magazines Containing Digital Subscriptions >50,000

	Value	Percentage	Min. Range of Digital Subscription	Max. Range of Digital Subscription
Less than 50,000 Digital Subscriptions				
Total No of Magazines Analyzed	80		226	49,835
Number of Digital Replicas	37	46	226	49,835
Number of Digital Editions	43	54	553	47,837
Number of Magazines Containing 1–3 Affordances	1	2	31,184	31,184
Number of Magazines Containing 4–6 Affordances	8	19	22,070	42,111
Number of Magazines Containing 7–9 Affordances	29	67	553	47,837
Number of Magazines Containing 10+ Affordances	5	12	37,007	45,459
Less than 10,000 Digital Subscriptions				
Total Number of Magazines Analyzed	13		226	9,414
Number of Digital Replicas	9	69	226	9,414
Number of Digital Editions	4	31	553	9,034
Number of Magazines Containing 1–3 Affordances	0	0	0	0
Number of Magazines Containing 4–6 Affordances	0	0	0	0
Number of Magazines Containing 7–9 Affordances	4	31	553	9,034
Number of Magazines Containing 10+ Affordances	0	0	0	0

REFERENCES

- Alang, N. (2013). Why the next issue app is not the future of publishing. *Globe and Mail*. Retrieved from <http://www.theglobeandmail.com/technology/digital-culture/why-the-next-issue-magazine-app-is-not-the-future-of-publishing/article14639381/>
- Alliance for Audited Media (n.d.) Media Intelligence Center. Retrieved from <http://abcas3.auditedmedia.com/MICenter/Home/Index?s=0db73e82-05c6-410e-bee0-15f524b147ad&v=YES#0>
- Alliance for Audited Media (n.d.) Verified Circulation Guide. Retrieved from <http://auditedmedia.ca/resources/guides-and-evaluation-forms/consumer-magazines/verified-circulation-guide/>
- Association of Magazine Media. (2014). MPA Factbook.
- Ashton, E. (1993). The newspaper of the future: A look beyond the front porch. Proceedings of the Fourteenth National Online Meeting 1993. Edited by Martha E. Williams, Learned Information, Inc., New York, 4-6 may 1993. Medford, New Jersey, Learned Information, Inc., 1993, p.11-16
- Battan, N. (2012, September 11). Marie Claire claims uk first with video ad in October issue. *Media Week*. Retrieved from <http://www.mediaweek.co.uk/article/1149150/marie-claire-claims-uk-first-video-ad-october-issue>
- BBC. (2009). Video appears in paper magazines. Retrieved from <http://news.bbc.co.uk/2/hi/technology/8211209.stm>
- Berelson, B. (1952). Content analysis in communication research. New York: Hafner.
- Berger, A. A. (2013). *Media and communication research methods: An introduction to qualitative and quantitative approaches*. SAGE Publications, Incorporated.
- Bernhard, E., Recker, J. C., & Burton-Jones, A. (2013). Understanding the actualization of affordances: A study in the process modeling context.

- Blankenship, D. (2014, November 24). Modern magazine media format definitions. *Advonte Media*. Retrieved from <http://advontemedia.com/getinspired/modern-magazine-media-format-definitions/>
- Borghi, A. M., Flumini, A., Natraj, N., & Wheaton, L. A. (2012). One hand, two objects: Emergence of affordance in contexts. *Brain and cognition*, 80(1), 64-73.
- Bolter, J. (1991). *Writing space: The computer, hypertext, and the history of writing*. Hillsdale, N.J.:Lawrence Erlbaum.
- Bradner, E., Kellogg, W. A., & Erickson, T. (1999, January). The adoption and use of ‘Babble’: A field study of chat in the workplace. In *ECSCW’99* (pp. 139-158). Springer Netherlands.
- Burlamaqui, L., & Dong, A. (2014). The Use and Misuse of the Concept of Affordance. In *6th Int. Conf. Design Computing and Cognition, June* (pp. 23-25).
- Cad, J. (2015, May 14). 7 habits of great web designers. *TNW News*. Retrieved from <http://thenextweb.com/dd/2015/05/14/7-habits-of-great-web-designers/>
- Cohen, S., & Burns, D. (2012). *Digital Publishing with Adobe InDesign CS6*. Adobe Press.
- Cooley, M. (2000) Human-centered design. In R. Jacobson (Ed.). *Information Design*. (pp. 59–81). The MIT press.
- Cull, B. W. (2011). Reading revolutions: Online digital text and implications for reading in academe. *First Monday*, 16(6).
- Ellis, R., & Tucker, M. (2000). Micro affordance: The potentiation of components of action by seen objects. *British journal of psychology*, 91(4), 451-471.
- Eysenck, M. W. (2001). *Principles of cognitive psychology*. Psychology Press.
- Fisher, R. A. (1925). *Statistical methods for research workers*. Genesis Publishing Pvt Ltd.
- Forlizzi, J., & Battarbee, K. (2004). Understanding experience in interactive systems. In *Proceedings of the 5th conference on Designing interactive systems: processes, practices, methods, and techniques* (pp. 261-268). ACM.

- Fortunati, L., & Taipale, S. (2014). The advanced use of mobile phones in five European countries. *The British journal of sociology*, 65(2), 317-337.
- Gaver, W. W. (1991, April). Technology affordances. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 79-84). ACM.
- Gibson, J. J. (1977). The theory of affordances. *Hilldale, USA*.
- Gordon (2011). The case for advertising in interactive digital magazines.
- Guidone, L. M. (2000). The magazine at the millennium: Integrating the Internet. *Publishing Research Quarterly*, 16(2), 14-33.
- Hartson, R. (2003). Cognitive, physical, sensory, and functional affordances in interaction design. *Behaviour & Information Technology*, 22(5), 315-338.
- Harwood, T. G., & Garry, T. (2003). An overview of content analysis. *The Marketing Review*, 3(4), 479-498.
- Heider, K., Laverick, D., & Bennett, B. (2009). Digital Textbooks: The Next Paradigm Shift in Higher Education?. *AACE Journal*, 17(2), 103-112.
- Hillesund, T. (2010). Digital reading spaces: How expert readers handle books, the Web and electronic paper. *First Monday*, 15(4).
- Honeywill, P., & Carpenter, D. (2003). *Digital Magazine Design: With Case Studies*. Intellect Books.
- Hu, J. (2012). Qualified Affordance-based Design. (Thesis). Clemson University, South Carolina
- Hughes, M. (2013). Monetizing the digital revolution. [CDS Global, a Hearst Company.]
- Hutchby, I. (2001). Technologies, texts and affordances. *Sociology*, 35(2), 441-456.
- Infotrends. (2014). *Digital platform publication market overview*. [White Paper] Retrieved from <http://landing.adobe.com/dam/downloads/whitepapers/63408.en.infotrends-digital-publishing-report.pdf>

- Invitto, S., Faggiano, C., Sammarco, S., De Luca, V., & De Paolis, L. T. (2015) Interactive Entertainment, Virtual Motion Training and Brain Ergonomy.
- Joo Chung, C., Kim, H., & Hyun Kim, J. (2010). An anatomy of the credibility of online newspapers. *Online Information Review*, 34(5), 669-685.
- Karapanos, E., Zimmerman, J., Forlizzi, J., & Martens, J. B. (2009). User Experience Over Time: An Initial Framework.
- Kon, M., Gosalia, S., & Portelette, E. (2011). A New Digital Future for Publishers?. *Oliver Wyman Group*.
- Krippendorff, K. (1989). *Content analysis: An introduction to its methodology*. Sage.
- Lamb, Y. R., & Desrosiers, K. (2013). The Seven Sisters and Their Siblings Go Digital: An Analysis of Women's Magazine Content on Websites, iPads, and Cell Phones. *Social Media: Pedagogy and Practice*, 128.
- Lasswell, H. D., Lerner, D., & de Sola Pool, I. (1952). *The comparative study of symbols: An introduction* (No. 1). Stanford University Press.
- Liu, Z. (2006). Print vs. electronic resources: A study of user perceptions, preferences, and use. *Information Processing & Management*, 42(2), 583-592.
- Le Masurier, M. (2012). Independent magazines and the rejuvenation of print. *International Journal of Cultural Studies*, 1367877911432059.
- Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. *MIS quarterly*, 35(1), 147-167.
- Leyva, E. M. R. (2003). The impact of the Internet on the reading and information practices of a university student community: the case of UNAM. *New Review of Libraries and Lifelong Learning*, 4(1), 137-157.

- Lupyan, G. (2008). The conceptual grouping effect: Categories matter (and named categories matter more). *Cognition*, 108(2), 566-577.
- Macnamara, J. (2005). Media content analysis: Its uses, benefits and best practice methodology. *Asia Pacific Public Relations Journal*, 6(1), 1-34.
- Majchrzak, A., and Markus, M. L. 2012. "Technology Affordances and Constraints in Management Information Systems (MIS)," SSRN Scholarly Paper No. ID 2192196, Rochester, NY: Social Science Research Network.
- Maxwell, A. (2013). The Magazine Industry is Becoming Mobile.
- McGrenere, J., & Ho, W. (2000, May). Affordances: Clarifying and evolving a concept. In *Graphics Interface* (Vol. 2000, pp. 179-186).
- Michaels, C. F. (2010). Affordances: Four points of debate. *Ecological Psychology*, 15(2), 135-148.
- Mitchell, A., Christian, L., & Rosenstiel, T. (2011). The tablet revolution and what it means for the future of news. *Pew Research Center*.
- Neuendorf, K. A. (2002). *The content analysis guidebook* (Vol. 300). Thousand Oaks, CA: Sage Publications.
- Norman, D. A. (2013). *The design of everyday things*. Basic books.
- Oxford dictionary. (n.d.) *Magazine*. Retrieved from <http://www.oxforddictionaries.com/definition/english/magazine>
- Osiurak, F., Jarry, C., & Le Gall, D. (2010). Grasping the affordances, understanding the reasoning: toward a dialectical theory of human tool use. *Psychological review*, 117(2), 517.
- Overbeeke, K. C., & Wensveen, S. S. (2003, June). From perception to experience, from affordances to irresistibles. In *Proceedings of the 2003 international conference on Designing pleasurable products and interfaces* (pp. 92-97). ACM.

- Overhill, H. (2012). JJ Gibson and Marshall McLuhan: A survey of terminology and a proposed extension of the theory of affordances. *Proceedings of the American Society for Information Science and Technology*, 49(1), 1-4.
- Pesonen, E. (2014). The User Experience of Digital News: Reading and Authentication on Browser Optimized Versions and Digital Replicas.
- Pols, A. J. (2012). Characterising affordances: The descriptions-of-affordances-model. *Design Studies*, 33(2), 113-125.
- Porter, J. (2003). Testing the three-click rule. *User Interface Engineering*.
- Pozzi, G., Pigni, F., & Vitari, C. (2014). Affordance Theory in the IS Discipline: a Review and Synthesis of the Literature.
- Rowse, J., & Burke, A. (2009). Reading by design: Two case studies of digital reading practices. *Journal of Adolescent & Adult Literacy*, 53(2), 106-118.
- Ryberg, T. (2010). The Future of the digital magazine. Available online (retrieved 5 January, 2013): http://www.nada.kth.se/utbildning/grukth/exjobb/rapportlistor/2010/rapporter10/ryberg_teresa_10140.pdf.
- Santos Silva, D. (2011). The future of digital magazine publishing. *Information Services and Use*, 31(3), 301-310.
- Satell, (2013, October 19). Is big media trading digital dollars for analogue dimes. *Forbes*. Retrieved from <http://www.forbes.com/sites/gregsatell/2013/08/19/is-big-media-trading-digital-dollars-for-analog-dimes/>
- Schijns, J. M. C., & Smit, E. G. (2010). Custom magazines: where digital page-turn editions fail. *Journal of International Business and Economics*, 10(4), 24-37.
- Señor, J, Wilpers, J, and Giner, J.A. (2015). Innovation in magazine media 2015–2016 World Report.

- Smith, D., Brand, J., & Kinash, S. (2013). Turn on the book: Using affordance theory to understand the adoption of digital textbooks by university lecturers.
- Tecmark. (2014, October 8). Smartphone habits. *Smartphone usage statistics 2014 - UK survey of smartphone users*. Retrieved from <http://www.tecmark.co.uk/smartphone-usage-data-uk-2014/>
- Timberlake, D. S., Pechmann, C., Tran, S. Y., & Au, V. (2011). A content analysis of Camel Snus advertisements in print media. *Nicotine & Tobacco Research*.
- Thompson, D. R., & Wassmuth, B. L. (2001). Few newspapers use online classified interactive features. *Newspaper Research Journal*, 22(4), 16.
- Tomas, K. (2013). Virtual Reality: Why Magazines Should Adopt a Mobile-First Publishing Strategy. *Publishing research quarterly*, 29(4), 301-317.
- Trachtenberg, J. (2014, December 2). Digital–magazine service gets KKR funding. *The Wall Street Journal*. Retrieved from <http://www.wsj.com/articles/next-issue-a-digital-magazine-service-gets-kkr-funding-1417555373>
- Volkoff, O., & Strong, D. M. (2013). Critical realism and affordances: Theorizing it-associated organizational change processes. *Mis Quarterly*, 37(3), 819-834.
- Waller, R. (2012). Graphic literacies for a digital age: the survival of layout. *The Information Society*, 28(4), 236-252.
- Whirlpool EMA. (2013, November 26). *The difference between lean back and lean forward*. [PowerPoint Slides]. Retrieved from <http://www.slideshare.net/EMEAHQ/the-difference-between-lean-back-and-lean-forward>
- Woody, W. D., Daniel, D. B., & Baker, C. A. (2010). E-books or textbooks: Students prefer textbooks. *Computers & Education*, 55(3), 945-948.
- Xenakis, I., & Arnellos, A. (2013). The relation between interaction aesthetics and affordances. *Design Studies*, 34(1), 57-73.

- Yang, N. (2013, June 18). On The Rise: Adobe DPS. Retrieved from <http://www.editorandpublisher.com/PrintArticle/On-The-Rise--Adobe-DPS>
- Yoon, E. Y., Humphreys, G. W., & Riddoch, M. J. (2010). The paired-object affordance effect. *Journal of Experimental Psychology: Human Perception and Performance*, 36(4), 812.
- Ytre-Arne, B. (2011). 'I want to hold it in my hands': readers' experiences of the phenomenological differences between women's magazines online and in print. *Media, Culture & Society*, 33(3), 467-477.