Gestures and GIFs:

Examining the relationship between

Multimodal GIF/text utterances

and

Speech/gesture utterance systems

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in partial fulfilment of the requirements for the degree of
Master of Science Interactive Digital Media

Declaration

I declare that the work described in this research paper is, except where otherwise stated, entirely my own and has not been submitted as an exercise for a degree at this or any other university.

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Table of Figures

Figure 1 Pudi and Glover Agree 23
Figure 2 Homer retreats backwards 24
Figure 3 The crowd approves of Supa Hot 25
Figure 4 Lincoln's Face Morphs 26
Figure 5 Harrison Ford Shrugs 27
Figure 6 Sinise is Sad 28

Table of Contents

1 Introduction 1

2 Literature Review 3

2.1 Meaning and Modalities: Describing Multimodal Literacy 3

2.2 Internet Studies: Who we are when we're online 4

2.3 Cognitive Science: Understanding Gesture 5

2.4 Critical Theory: The Spectacle and Capital 7

2.5 Fine Art and Visual Culture: Understanding the Affect of the Loop and the GIF 8

2.6 Film Studies: Understanding Moving Images 9

3 Defining the Visual Culture of the GIF 11

3.1 The Technical History of the GIF: 1987-2015 12

3.1.1 The Birth of .gif: a mechanism for the storage and transmission of raster-based graphics information 12

3.1.2 The maturation of the GIF: Embedded images in the World Wide Web 13

3.1.3 The Death of .gif: HTML5 Video as a container for GIFs 14

3.2 Conclusion: What are GIFs 15

4 Statement of Methodology 17

4.1 Preliminary Research Methods 18

4.2 Source Material 19

4.2.1 Natural Reaction GIFs 19

4.2.2 Rhetorical Reaction GIFs 19

4.3 Analytical framework 20

4.3.1 Multimodal analysis through SFL 20

4.3.2 An SFL Approach to Gesture 21

5 A Textual Analysis of Collected GIF/Text Utterances 23

5.1 Natural Reaction GIFs 23

5.1.1 Danny Pudi and Donald Glover nod and gesture in agreement, from Community 23
5.1.2 Homer Retreats Into A Hedge 24
5.1.3 “Supa Hot Fire” 25
5.2 Rhetorical Reaction GIFs 26
5.2.1 Morphing Abraham Lincoln Portraits 26
5.2.2 Harrison Ford Shrugs, from Star Wars 27
5.2.3 Gary Sinise Is sad at a New Year’s Celebration, from Forrest Gump 28
5.3 Gestural Observations 28
6 Conclusions 31

1 Introduction

On the 5th of March, 2015, satirical news website Clickhole.com published an article claiming that Neill Blomkamp's sci-fi thriller *Chappie* would be the first feature length film to be relased by Sony pictures as a series of animated GIFs.(Clickhole, 2015) Though obviously the comedy of this piece of writing is born from its hyperbole, there is an undeniable truth buried within. Namely, the GIF has become a ubiquitous communication vector. Our daily media consumption is littered with short looping images. Several news outlets make use of GIFs in their reporting of current events. From primetime television, to the race for leader of the free world, (Rugnetta, 2012) the GIF has touched virtually every aspect of popular culture which is mediated by the internet.

In April of 2015 popular GIF sharing website Giphy.com announced a partnership with Facebook. This partnership resulted in integration between Giphy's GIF hosting and sharing service and Facebook's *Messenger* app, allowing for moving images to be embedded in a conversation stream. (Giphy, 2015) This symbiosis between an application meant explicitly for facilitating text based communication between parties via the internet and a service which hosts and indexes animated GIFs speaks volumes not only about the ubiquity of the GIF, but also to the undertheorised utility of the GIF as a means of communication through a visual modality. As visual material becomes easier to reproduce across digital networks we find digital communication shifting from a purely linguistic modality to a meaning system that encompasses many modalities, not least the visual, as the GIF shows us.

Though it is often tempting to view such shifts brought about by digital affordances as being unprecedented, there exists a versatile and robust model to understand social communication through visual means. Since before the advent of the internet, or the television or the motion picture film, humans have employed the visual modality as a means of communication. John Napier closes his treatise on gesture in human interaction by stating

> *If language was given to men to conceal their thoughts, then gesture's purpose was to disclose them.* (Napier, 1980)

As digital communication technologies offer us greater and greater affordances to choose not just who we communicate with but how we convey our intentions, a necessity grows to understand the ever more

complex interrelations in terms we can comprehend and relate to established models of communicative behaviour. These models need to be actively generated to reflect modern usage trends of digital networks, rather than forcing digital networks into rigid models. There is a wealth of insightful research in the field of gesture as visual communication that is readily applicable to the visual communication patterns that are developing as we speak. There is an untapped potential for understanding that can be realised by synthesising this research with research in the field of online communication. There is no field that offers quite as many opportunities to contextualise and comprehend visual communication patterns in new media in the same way that gesture does. It is with this in mind that this research into the relationship between gesture and animated GIFs is undertaken, with the assumption that GIF related sharing patterns have developed in the way that they have in order to compensate for a deficit in text based communication paradigms as they become ever more ubiquitous a part of human existence.

This paper examines the idea of the animated GIF as a proxy for gesture in computer mediated communication. Specifically it examines usages of "reaction GIFs" and analyses their functions as components of multimodal utterances. Here we adopt a multidisciplinary approach to the animated GIF, examining chiefly its social functions and its impact on modern visual culture while still giving credence to its technical background. Through observing functional similarities in the transmission of information both in terms of natural language and in terms of computer mediated communication we examine a link between gesture, specifically the type of gesture known as the *iconic* gesture and the reaction GIF. No effort here is made to create a lexicon of reaction GIFs or to establish a canon of semantic agreement. Rather, it is our goal to establish that the meanings conveyed in a case by case basis are functionally similar to the meanings conveyed by gesture in natural speech.

2 Literature Review

Relevant ideas from the fields of internet studies, film studies, sociology and cognitive science.

The landscape of internet culture is one that evolves at a rate an order of magnitude faster than scholarly writing will allow. Therefore, while there is no shortage of writing on the subject of computer mediated communications and the patterns thereof, it can be somewhat difficult to source research relating specifically to current patterns of online content sharing. Therefore, some of the richest sources of writing on the subject of GIFs, their aesthetic and function are not necessarily scholarly literature, but rather in writings by artists and practitioners of both the sharing of GIFs and the creation of works of GIF art. Beyond the specific subject of the GIF however, there are of course several other relevant concepts that are sufficiently well documented in scholarly literature. As previously notated, sharing patterns through other modalities that combine image and text have been extensively researched. Furthermore there are concepts in the rhetoric of film studies that relate to the affect of the GIF and the perception of the moving image. The concept of images mediating social relationships between people was heavily theorised by Guy Debord in the 1960s and is a concept that must be engaged when discussing multimodal communication for which image is a semiotic carrier. Furthermore, current strategies have been described for the analysis and comprehension and description of the multimodal literacies that computer mediated communication demands. When attempting to understand the GIF in the context of gesture, there are also several concepts from the field of cognitive science that are relevant, as well as recent research on the topics of viewpoint in gesture when communicating narrative information. The task of examining the GIF then is one that requires a synthesis of concepts from several diverse and disparate fields. It is only by engaging with all the theoretical frameworks which can and have been used to explain and theorise the GIF that a comprehensive survey can be undertaken and hence can a complete understanding be gathered.

2.1 Meaning and Modalities: Describing Multimodal Literacy

But in order to gain an understanding of the GIF it is necessary to first establish a language for the analysis of the GIF as part of the multimodal communications in which we will find it. Writing in *The Handbook of Research on New Literacies* (Corio et al. 2008) Len Unsworth notes the problematic landscape of the comprehension of multimodal texts using existing frameworks. The rapid evolution of new media technology has dissolved the distinctions between image, text, audio, moving image. This, writes Unsworth, has given rise to the need for a metasemiotic approach to understanding literacy in a multimodal context. The deictic nature of multimodal texts requires not only a comprehension of the semiotic inferences of the monomodal aspects of a text taken in isolation but also an understanding of the

meanings that arise from the semiotic interplay of mixed modalities. Unsworth proposes the Systemic Functional Linguistics (SFL) model conceived by Michael Halliday as a basis for establishing a meta-language for the discussion and comprehension of multimodal texts. In defence of SFL Unsworth highlights the value the SFL paradigm places on "the complete 'interconnectedness' of the linguistic and the social.

Halliday's model gives credence to different sign/meaning paradigms and examines the ways in which they interact. Rather than observing only the relation between signs and language, Halliday proposes that language is but one of several interrelated semiotic systems. Other semiotic systems, wherein a relationship is inferred between a reproducible artefact, a word, an image, a sound, or a gesture, are given equal credence. All semiotic systems can then further be understood in terms of the social metafunctions they carry out in communication. (Halliday, 1985) These metafunctions are *ideational, interpersonal,* and *textual* and form the basis through which all clauses can be understood. The *ideational* metafunction carries the nature of the events or order or organisation being communicated. When considering the *ideational* function of a clause, it is thought of as a representation. The *interpersonal* function of a clause carries meaning relating to the relationship between the speaker/creator of the clause and the receiver/audience of the clause. In the context of the interpersonal function the clause is considered to be an exchange. Finally, the *textual* function of the clause is concerned with the thematic/rhematic distinction of information conveyed by the clause. The clause in this instance can be thought of as a message. These metafunctions do not exist in a hierarchy and all carry equal importance when assessing the semiotic content of an utterance. Such an approach is vital when conceptualising online communications which more so now than ever afford users opportunities to combine a staggering array of different methods of communication. Specifically of interest are the methods by which the visual modality is engaged by interlocutors in computer-mediated communication.

2.2 Internet Studies: Who we are when we're online

Though studies dealing specifically with the use of the animated GIF as performance or communication are hard to come by, the use of image to augment computer-mediated communication has been documented before. Patterns of use of emoji, or graphical symbols denoting emotional states in instant messaging contexts for example have been established and documented. (Bays, 2009) Several patterns of emoticon use have been observed through analysing communication over instant messaging clients that follow pseudo grammatical formulae. Bays has described the use of emoji as "a kind of emotional meta language, like a visual prosody used to frame discourse and aid understanding relying on a culturally identifiable and persistent visual form." As well as describing the use of still image additions to text Bays

also describes the use of animated imagery in the limited capacity allowed by the MSN messenger client, as was the focus of her study. Though the graphics interchange format serves as a container and conduit for some of these animated images, they are intrinsically limited, and do not fit the cultural definition of GIF in any meaningful way. Bays' work paves the way for discussing online communication in a way that reflects its relationship with real communication.

Gesture, as we will see is a deliberate attempt to convey information using a visual modality. The notion of what actions are performed deliberately when communicating online is somewhat easier to document, though also problematic in its own right. What limited actions are being performed physically, sitting in front of a screen, applying pressure to a set of keys are not strictly analogous to the scope of performance possible in online communication. This notion of online interaction as performance is one that is crucial to our understanding of online analogies for gesture. To theorise the notion of an online gesture, it is necessary to examine the performative nature of online communication, both in public sharing and private communication. This has been explored by Brenda Danet in her survey of performative behaviours realised through Internet Relay Chat (IRC). (Danet, 2001) Making a case study of a rendition of William Shakespeare's Hamlet performed over IRC (*ibid,* p 107) describes the social conditions that need to be met for participants in CMC to participate in performatory actions. Danet described the intrinsic requirements for these performances in terms of a series of layered frames, nested within one another. Within each frame, participants in the Hamnet performances collectively agreed to several social systems, assumptions about their interlocutors and the limit of possible, acceptable actions. What Danet describes here is an abstraction, a direct mapping of an online behaviour to a counterpart rooted in natural human interaction. This idea of conceptualising digital communication patterns in terms of their counterparts in natural speech is critical to our understanding of the GIF as gesture in this context.

2.3 Cognitive Science: Understanding Gesture

An understanding of natural interaction is however incomplete without an understanding of co-speech gesture. Because both co-speech gestures and sign language make use of the visual modality to communicate meaning, the co-speech gesture has been heavily theorised by deaf studies theorists and cognitive scientists alike. Beyond exploring a definition of co-speech gesture and examining the theoretical history, it is useful for us to look at research around certain scenarios in which co-speech gestures are beneficial.

A vast amount of information is conveyed through the visual modality during social interaction. Even when motionless, silent, humans unwittingly convey through a variety of nonverbal cues "their intentions, interests, feelings and Ideas". (Kendon, 2004, p1) Adam Kendon defines gesture as an utterance communicated through a visual modality. "Utterance" is a term that Kendon uses borrowed from the work of Erving Goffman, which is used here to refer to any "action or complex of actions that is treated by the participants within the interactional occasion … as 'giving information' in this sense'. (*Ibid,* p. 7) Hence it is used to distinguish between social information which is unconsciously communicated and that which is intentionally and deliberately communicated.

Kendon goes on to provide a definition of gesture. Gestures he says "are those aspects of another's actions that, having these features [deliberate expressiveness], then to be directly perceived as being under the guidance of the observed person's voluntary control and being done for the purposes of expression, rather than in service of some practical aim."(*Ibid,* p. 15) In other words, gesture is *i)* a visual utterance, which is *ii)* undertaken consciously and voluntarily with the aim of *iii)* conveying meaning.

Gesture is but one of the many forms of utterance human beings are capable of, the most obvious of which being speech. Moreover, the interaction between these modalities is intrinsic to interpersonal communication. Again, Kendon cites studies he undertook in the 1980s in which he proposed that the spoken utterance and the kinesic utterance (gesture) were produced by the same mechanism. (*Ibid* p.77, Kendon 1980)

Following Kendon's research establishing the existence of a relationship between gesture and speech, David McNeill was responsible for much research in the field of co-speech gesture and their communicative capabilities. (McNeill, 1992) Research on communication through the visual modality is, naturally more largely preoccupied with the field of sign language. Often, however useful comparisons can be drawn between the strategies employed by signers and gestureres. It has been discovered, for example that similar strategies are employed by both signers and users of co-speech gestures to convey viewpoint in narratives. (Quinto-Pozos and Parrill, 2014) When conveying narrative event, both signers and gesturers engage in one of two modes when relaying the information; they will either assume the viewpoint of a character within a narrative or the viewpoint of an external observer. (McNeill, 1992) Character viewpoint (CVPT) gesturing is typically used when describing characters manipulating objects, depicting a character's emotional reaction or for depicting a character's upper body movements, while an Observer Viewpoint (OVPT) is typically adopted to convey spatial relations between characters or characters in transit.

Though co-speech gestures are understood to be created by the same mechanism that gives rise to speech, it is worth noting also the effect that co-speech gestures have when digesting information. Studies have found that the use of co-speech gestures, even those unrelated to or discordant with the speech of the gesturer can influence neural activity in the regions in the brains of observers associated with the processing of semantic information. Thus, co-speech gestures serve an important role in disambiguating a speaker's intentions and over all "contribute to the communication process". (Dick et al., 2009) Difficulty arises however when discussing the reproduction of man made images as a way to mediate relationships between people.

2.4 Critical Theory: The Spectacle and Capital

When describing the possibility that short looping images are being used to communicate emotion as a gestural meta-language, it is impossible not to consider the *Society of the Spectacle* as theorised by Guy Debord, a relationship between people mediated by images. Debord opens his manifesto on image claiming, "Everything that was once directly lived is now merely represented in the distance." (Debord, 1967) Debord's critique of society has become ever more apt as the information age has proceeded to replace real life tangible processes and interactions with ever more complex abstractions, rife with the potential to alienate the people from one another. But, while many aspects of Debord's spectacular society as critique of media culture during the latter half of the 20th century still ring true today, it is perhaps worth noting the ways in which the information age has shaped our interactions, and perhaps mitigated the society of the spectacle in some ways while heightening its effects in others. Debord's thesis has its root in Marxist theory. Images are the root of commodity, and hence are the means by which commodities are fettishised. (Marx, 1887) Marx describes this in terms of the greater value placed on a table than the raw materials that created it: namely wood and labour. It is from its form itself Marx claims that this perceived value comes from. Marx expresses the same sentiment as Debord, that alienation between citizens is fostered by perceiving the social processes involved in the means of production as being inherently based on their economic value.

The economic value of internet culture is however an incredibly nuanced and diverse issue. Though the operation of internet-enabled devices has an intrinsic economic cost, the transmission of units of culture, beyond the sunk costs of energy and data transmission, is effectively costless. We are, in effect living in a transitional period of cultural economics. In the years since the inception of the internet a post-scarcity cultural economy has developed. Nowhere is this more evident than in GIF culture, which has in its aesthetic thoroughly embraced its "cheapness". As we will see in later chapters, not only is the GIF

typically associated with both lowered cultural and economic capital, but also as cultural vectors, they are traditionally authorless. No single creator can take responsibility for something that has been shared, disseminated or indeed performed by an entire community. The transmission of the GIFs, similar to the sharing of memes becomes less about the image as commodity and more about the novelty or creativity imbued by context. GIFs have very little to do with the associations to their original context, but rather serve to communicate their meaning by feature of their instantaneous context. As Michael Rugnetta notes, the GIF is "a thing to be repeated and taken at face value without a relationship to other ideas."(Rugnetta, 2012) In a personal interview Jason Eppink, whose show *The Reaction GIF: Moving Image as Gesture* serves as a source of material for this study, posited that many of those who share GIFs are unaware of the original context from which the image is sourced. (Eppink, 2015) The argument could be made then that the image as commodity is not necessarily what is mediating the communication between people, but rather the inventive use of context. Certainly if it is to be believed that remixing is the native art form of the internet(Stalder, 2014) then perhaps the image, rather than mediating the our relationships in GIF communication, serves merely as a vessel for the transmission of personal meaning born of the deictic function of computer mediated communication. But to asses whether or not this is the case it is necessary to examine the aesthetic of the GIF and explore its history as an art form and a medium of self-expression, both in its creation and in its recontextualisation.

2.5 Fine Art and Visual Culture: Understanding the Affect of the Loop and the GIF

Critical writing on the subject of GIFs is somewhat limited. Most writing on the subject is undertaken in an informal context, or in the context of gallery displays of GIF art. Several artists have expressed opinions on the GIF, praising its versatility or novelty as a medium of expression. In August of 2008 New York based artist Tom Moody, writing for art website ArtFCity.com, declared that "Animated GIFs have evolved over the last several years into a kind of ubiquitous 'mini-cinema,' entirely native to the personal computer and the World Wide Web." Moody is a visual artist, with a fine art background, whose visual work centers mostly on deprecated or obsolete softwares. Blogger, entrepreneur and web theorist Anil Dash stated in the year 2011 that though it was estimated that 1.3 billion tickets were sold to motion pictures in the United States, that, by his own estimate over 3.3 billion silent films would be consumed by internet users across the US. He was referring, of course, to the number of GIFs being viewed everyday, taking blogging website tumblr as an indication of GIFs viewed per capita, and eventually likening the GIF to the "pop music of moving images". Mike Rugnetta has described the GIF both as "emotional shorthand" and as "visual popcorn". (Rugnetta, 2012) He has further described the GIF as a "prominent feature of contemporary visual culture." (Rugnetta, 2014)

GIF artist Sally McKay has written an in depth piece on the affect of looping image sequences in the context of "gallery GIF" making specific reference to the work of GIF artists like Moody and Lorna Mills.(Mc Kay, 2008) McKay draws on the work of Brian Massumi to explain the emotive qualities of the GIF in terms of Massumi's research into affect. We will see shortly what this means in the larger context of the moving image. But though her critique is involved, its focus is somewhat narrow in that it focuses only on the GIF as high art and not as a creation without an author that can be freely shared free from context. Eppink writing in the *Journal of Visual Culture* provides a brief yet comprehensive canon and chronology of the animated GIF in a more colloquial sense. (Eppink, 2014) Tracing the GIF from its origins as a network transmission standard, to its development as an art form. Eppink's research into reaction GIFs lead to the creation of an interactive gallery show in the Museum of Moving Image in 2014 titled *Reaction GIFs: Moving Image as Gesture.* The GIFs assembled by Eppink for this show form the basis for one of the case studies presented in chapter 5. But while the GIF has often been theorised from a fine art context, notably from the point of view that it represents an enhancement of the still image there is an alternate perspective, which yields just as much insight into the origins of the GIF, that is the conceptualisation of the GIF from a cinematic perspective.

2.6 Film Studies: Understanding Moving Images

While the GIF has often been theorised as an augmentation of still image art forms, there are several grounds for theorising it as a reduction, or a limitation of the moving image. As the GIF is a purely visual medium, that is it contains no audio compliment, there are interesting parallels between descriptions of early cinema and the GIF. The following quote from drama critic Adolphe Brisson (1860-1925) writing on the subject of motion picture, notes some of the temporal features of the art that had not been possible before the technology of the moving image was developed. (Abel, 1992, p. 51)

> *"To observe, select, fix, and stylize living gestures and momentary phenomena – that is the task [cinema] has set for itself. It aspires not only to reproduce current affairs but to animate the past, to reconstruct the great events of History, through the performance of the actor and the evocation of atmosphere and milieu."*

Brisson's rhetoric about the temporal nature of cinema is echoed in more refined and measured terms by André Bazin. (Bazin, 1971) Just as in linear sequences of moving images, the looped GIF is an artform that manipulates our perception of time. However, as Sally McKay notes in considering the affect of the animated GIF, the loop has a powerful affective capability. Drawing on the work of social theorist Brian Massumi, she posits that the profound affect of the looped GIF creates, as Massumi would have it, a kind

of “temporal sink”, a refuge from time within which not just an image but a complete and whole moment is preserved.

We can already start to see a common rhetoric being used to talk about both the GIF and the advent of photographic cinema. Particularly worth noting, is Brisson’s reference to gesture. As a critic of the dramatic, Brisson was concerned primarily with the depiction of actors on the screen. His observation that cinema ought to “select, fix and stylize living gestures” is uncannily similar to Rugnetta’s description of the concept of the “instant” in relation to the GIF. Therefore we might say that the GIF is the ultimate expression of the “fixed gesture” Brisson describes. The powerful affective quality of the loop heighten the awareness of the viewer and more keenly highlight that which is moving, i.e. the deliberate communication of meaning through the visual modality. Michael Punt makes a similar observation from his analysis of the parallel narratives of the histories of digital media and early cinema. He draws connections between the aesthetic of Edison’s Kinetoscope and that of the GIF drawing attention to their shared prediction for the “compelling repetition of the palindrome”. (Punt, 2008) In this context, it is useful now to examine the history of the GIF’s technical limitations as a method for constructing a coherent definition of the GIF in terms of its visual characteristics. As we shall see, defining the GIF in terms of the Graphics Interchange Format is no longer sufficient as a method for understanding the GIF as a unit of culture.

3 Defining the Visual Culture of the GIF

Exploring the lasting impact of the Graphics Interchange Format on the visual culture of the Internet.

[Orthographical note: In defining the GIF in this section an effort here is made to draw a distinction between the cultural significance of the GIF as a form of visual culture and the GIF as a digital standard for the transmission of images. These two concepts, as we will see are not necessarily mutually inclusive. Where such a distinction is unclear from the context the author has elected to use "GIF" to refer to the cultural phenomenon and "Graphics Interchange Format" or ".gif" to refer to the technical specification for image encoding and decoding.]

In 2014, the popular image sharing website Imgur launched a feature known as GIFV that allowed users to upload longer GIFs. Imgur promised that dissemination of the uploaded images would be smoother and more reliable. This increase in speed and stability was only possible because Imgur was no longer displaying GIFs as .gif files, but rather as embedded .mp4 videos. Imgur were not the first to display GIFs in more robust video formats,[1] but they were the first to address the significance of their decision. "GIFs are no longer about .GIFs–" posited Sarah Schaaf, public liaison of Imgur.

> *"The culture of the GIF now trumps the file format. With Project GIFV, Imgur is reimagining the looping GIF video with all the richness it deserves as a key piece of Internet culture."(Schaaf, 2014)*

It is both necessary and useful at this point to construct a definition of what we will term as an animated GIF going forward. Rather than being defined as a specification for encoding and decoding images there is a great deal more utility in understanding the GIF as a visual culture that developed in the context of the limitations and restrictions of the early internet. As we will see, there exist several cultural and colloquial conventions in GIF culture that, though motivated by the limitations and restrictions of the Graphics Interchange Format itself, exist today as cultural mandates.

We will undertake a brief survey of the history of the GIF in this section, detailing its inception and adoption in limited detail. We will make a point of flagging key points contained within the 1987 and 1989 standards published by CompuServe which define the technical limitations of the Graphics Interchange Format so that we might better understand the origin of several aspects of GIF culture. Having explored the technical origins of the GIF as a file format, we will examine the cultural resonances of the animated GIF. We will explore the *visual* conventions of the GIF as well as the *contextual*

[1] Gfycat.com for example had existed for a year previously. The service was based entirely around serving GIFs more quickly through use of HTML5 video. Imgur, Giphy and several other GIF hosting websites all support HTML5 playback, alongside embedded .gif files.

conventions. *Contextually* we will examine the relationship between image and text in environments in which .gif files were historically presented. Furthermore we will explore the internet as the GIFs native environment. *Visually*, we will explore characteristics that make a sequence of moving images intrinsically GIF-like: namely the reduced colour palette and the loop. Having defined these aspects of GIF culture, we will examine ways in which they are transmitted without use of the Graphics Interchange Format in the modern internet.

3.1 The Technical History of the GIF: 1987-2015

3.1.1 The Birth of .gif: a mechanism for the storage and transmission of raster-based graphics information

CompuServe developed the Graphics Interchange Format in 1987. This specification, GIF87a, was amended and updated in 1989 with the GIF89a specification. The GIF89a specification added the a facility to define a colour from the colour palette as being transparent, and, perhaps most importantly, allowed for the definition of frame timings to be specified, which effectively gave .gif files the capacity to contain animated image sequences.

The GIF87a (CompuServe, 1987) standard established a transmission technique for losslessly communicating raster image data in a way that did not require explicitly compatible hardware. Rather it was the responsibility of a decoder to be able to interpret a data stream, reflecting the stated purpose of the standard to to remove the burden of assuring compatibility at a hardware level from the transmission protocol. The standard establishes, as one of its early concerns, that the Graphics Interchange Format be interoperable with " a variety of graphics hardware" (*Ibid*, p. 3). There are several more references to the interactive environments in which it was imagined the format would be implemented "either as standalone programs or as part of a communications package". (*Ibid*) Though the standard allows the encoding of multiple images occupying the same area on a virtual screen there was no facility that allowed animation per se. "There is no pause between images. Each is processed immediately as seen by the decoder."(*Ibid*)

Though the local colour maps defined in the GIF87a standard went a long way towards contributing to the "lo-fi" or "cheap" aesthetic that the GIF would become known for, most of the fundamental aspects of the standard that had the greatest impact on the visual language of the GIF arose from subsequent developments. The first of these developments was CompuServe's GIF89a standard. Via the extensible blocks described in the GIF87a standard, CompuServe introduced two new features, the Delay Time and the Transparency Index. The transparency index allowed a colour within either the Global colour map of

a data stream or the local colour map of a graphic within a data stream to be defined as being transparent. When this "colour" was encountered as part of the raster data of the graphical component of the image the corresponding pixel of the display device is not modified and processing goes on to the next pixel."(CompuServe, 1989, p.16)

Furthermore, and most interestingly for our purposes, the Delay Time feature allowed developers to specify a delay between graphics in terms of hundredth of a second divisions. Rather than immediately processing the entirety of the data stream instantaneously, a compliant decoder would process a graphic until it had encountered an extension block describing a delay time. It would then, having rendered the graphic described in that portion of the data stream, proceed to render the next graphic. Thus, it was possible to transmit moving images via the Graphic Interchange Format. Though Compuserve published no further revisions or extensions of this standard, the most well-known and ubiquitous deployments of the Graphics Interchange Format had yet to be realised.

3.1.2 The maturation of the GIF: Embedded images in the World Wide Web

Beyond describing how standalone encoders and decoders ought be structured, CompuServe also described how the graphics interchange format might be incorporated into larger applications. "As an embedded protocol, GIF may be part of larger application protocols, within which GIF is used to render graphics." (CompuServe, 1989). A method from reading data streams from local files is also described. These two featured paved the way for the Mosaic browser to embed images within documents on the world wide web. NCSA's Mosaic browser, released in 1993, is widely credited with popularising the web. It was lightweight and easy to install on windows systems. Critically, for our purposes, it was the first browser that supported embedding images within a web page.(Berners-Lee, 1996) The embedding of images in web pages, critically in the same screen in which text was viewed was instrumental in developing the culture of the GIF. Mosaic would later be renamed as Netscape Navigator, which would define another key aspect of the GIF. Through the application extension protocol described in the GIF87a specification, the Netscape Communications Corporation defined an extension to the GIF protocol that allowed developers to specify if an animated GIF graphic was to loop, and if so how many iterations were to be completed. Up until this point an animated GIF would complete its animation only once. This extension, which still bears the ASCII characters "NETSCAPE" in the extension blocks of every looped GIF on the internet, gave rise to the loop, which is so instrumental as a constituent of the visual language of the GIF. Though .gif files are still used to this day in web pages to display short looping animations,

other technologies are emerging that are better suited to playing back moving image sequences in browsers.

3.1.3 The Death of .gif: HTML5 Video as a container for GIFs

Today, though .gif files are still commonly used in web pages, more and more services are attempting to offer the same features of the GIF by embedding HTML5 videos in pages. Though, aesthetically there is virtually no difference between silent looping sequences of moving images displayed in web pages via either method, to make clear the distinction between file format and cultural unit we will explore here, briefly, critical differences between the two techniques in technical terms.

The Graphics Interchange Format, as we will see, employs a lossless compression algorithm to achieve smaller file sizes. The technique employed is the Lempel–Ziv–Welch (LZW) compression algorithm, first described in 1984.(Welsh, 1984) LZW compression is an effective method for compressing data with redundant or repeated patterns. Put simply, the LZW algorithm constructs a dictionary of repeated strings of characters such that, should they occur again later in the file they can be referenced again with smaller storage overheads. For data streams that are diverse and non-repeating, the LZW compression algorithm is not just ineffective, but can increase the size of files. In the case of raster image data however, when several bits are typically repeated to create what an observer perceives as regions of a specific colour, LZW provides effective compression.

Support for HTML5 video formats is an incredibly broad topic, worthy of a research paper in and of itself. At the time of writing however, it can be said with a limited degree of certainty, based on browser support and penetration that the dominant format for HTML5 video is the .mp4 container encoded using the International Telecommunication Union's H.264 codec.[2] (ITU-T, 2014) H.264 employs lossy compression on video streams, meaning that it is impossible to reconstruct with 100% accuracy the original material that is compressed via this algorithm. H.264's compression is an order of magnitude more complex than LZW and only makes sense in the context of compressing moving image sequences. It uses a combination of techniques such as ignoring elements in a given frame that are identical to the previous frame and calculating and approximating the movement vectors of regions between frames. Critically, the compression algorithm is tailored to compressing sequences of moving image data, and as such can offer greatly reduced file sizes and speed of playback for a nominal reduction in quality when compared to .gif files with similar numbers of frames.

[2] At time of writing CanIUse.com reports that over 90% of browsers support .mp4 videos encoded using H.264 http://caniuse.com/#feat=mpeg4

Since early 2014, image-hosting services have been hosting "GIFs" by creating a facility for users to embed image sequences as .mp4 or WebM videos. The first notable site to provide this service was Gyfycat.com. Citing faster loading times and reduced file sizes, the website flourished and other image hosting sites followed suit, most notably Imgur.com. This distinction will be instrumental in differentiating the technical construction of the Graphics Interchange Format from the cultural phenomenon of the GIF in subsequent sections.

3.2 Conclusion: What are GIFs

As we have shown the visual language of the GIF is no longer tied in any meaningful way to the technical limitations of the Graphics Interchange Format, though it is in these limitations that we find an explanation of the cultural conventions surrounding the GIF. Through our survey of the past and present of the GIF we have been able to ascertain the following about the typical context of the GIF. Firstly, the architecture of the GIF is constructed in a way that facilitates transmission across internet networks. Generally perceived in online and interactive environments since the inception of the GIF file format. The GIF87a and GIF89a standards are rife with examples of such considerations. Furthermore, since the creation of the Mosaic browser, GIFs have been presented in line with text. Their default environment is one of being embedded within a web page, and not viewed as a document in their own right, without some kind of contextual accompaniment presenting it.

Visually the GIF is defined by its limited colour palette of 256 colours as predicated by the colour maps in the GIF standard. Furthermore, since the extension of the format in Netscape Navigator 2.0 the loop has been a critical constituent of the visual language of the GIF. It is not just the aesthetic of the loop that defines the GIF, but rather the repetition of a specific and discrete instant. There is an aesthetic that underlies the selection of moments for their distinct and visually identifiable movements. "Amongst all the surrounding instants" writes Rugnetta, "We want to loop this instant."(2014) As we saw from our survey of music videos, this aspect of choice of visually distinct and interesting motion is a defining feature of the visual language of the GIF, regardless of the context in which it is presented. These features that are crucial to the Visual language of the GIF are no longer imposed by the technology. Rather, these are self-imposed restraints. Moving image sequences that obey some but not all of these conventions are not likely to be read as GIFs. As Michael Punt notes in his paper *Parallel Histories; Early Cinema and Digital Media*, "the cinema was shaped more by its uses than by the technological features of moving pictures."(2008) So too, is the GIF, more a product of its cultural use than its technical limitations.

Moving image sequences that are too long, or have too rich a colour palette or do not loop are not seen as being GIFs, regardless of the format used to convey them.

4 Statement of Methodology

A rationale for the collection of reaction GIFs from various sources and contexts and a method for the analysis of said GIFs and their textual accompaniments

This section will define the methodology employed for researching the gestural functions of the reaction GIF. This research was conducted in two stages. Firstly, preliminary research as to the nature of GIFs was required, which lead to the conceptualisation of the methodological framework. This involved analysis and synthesis of the relevant literature and an interview session with Jason Eppink, the only person to the knowledge of the author to have theorised a connection between gesture and the animated GIF to any meaningful extent. This research informed a methodology, the goal of which was to analyse a corpus animated GIFs being used with the intention of examining a link between gesture and the GIF. This required the gathering of a body of reaction GIFs, which was broadly representative of the settings in which GIFs are used with communicative intent. Rather than undertake a population based survey, or an ethnography of a particular website or community, it was deemed to be far more effective and beneficial to carry out purposive sampling of pre-existing communities which self-identified as being GIF users. A non-probabilistic sampling method was chosen because it was not our aim to establish that GIFs were being used in online communication. Rather, our goal was a qualitative survey of some of the characteristics that this use has undertaken, and its analogous counterpart in natural speech. For our purposes we examined GIFs that were transmitted with a textual compliment as a way to better understand their communicative context. The GIF and the text description/accompaniment were treated as a single unit of transmission or a "turn" of communication, similar to Bays' 2009 study of emoticon use in instant messaging. (Bays, 2009) Throughout the paper these transmitted units will be referred to as *utterances.* Each utterance was analysed as a single interrelated system.

The reaction GIFs selected were sorted into two categories based on common functions, settings and thematic material. These categories are referred to as *natural* reaction GIFs and *rhetorical* reaction GIFs. These distinctions do not refer to the material contained in the GIFs analysed, but rather their context and their metafunctions as transmitted units of communication. These distinctions are not predicated on the material contained in the GIFs themselves but rather are a feature of the context in which they are found. These GIFs were selected from public, one to many, and anonymised communication sources, such that the only analysis undertaken would be a textual analysis of the messages themselves.

Having established a corpus of GIF text pairs categorised in terms of their context, the utterances were coded according to their communicative metafunctions. The main focus was the systemic relationship

between the visual material (the GIFs themselves) and the textual material (captions, descriptions and tags depending on the category in question) and the meaning that is generated from the synthesis of the two as a single message. This was carried out using a Systemic Functional Linguistics (SFL) approach. Specifically, the analysis focused on examining uses of GIFs that were functionally similar to uses of gesture in natural language, with a view particularly to examining the concept of viewpoint in the transmission of narrative information. Using SFL, rather than any other semiotic or linguistic framework allows for the interaction between components of communication to be examined in a more complete way.

4.1 Preliminary Research Methods

As part of the preliminary survey, research from a wide variety of fields and disciplines was synthesised to craft a more complete conception of the animated GIF as a cultural artefact. While exploring the animated GIF in the context of gesture, it became apparent that the concept was under-theorised in most spheres, with the exception of a gallery show curated by Jason Eppink in 2014 in the Museum of the Moving Image, New York. Eppink's show, titled *The Reaction GIF: Moving Image as Gesture* was the forerunner of a construction of a link between GIF and gesture. As part of the preliminary research carried out, an interview was undertaken with Eppink on the 30th of April 2015. The goal of this interview was to establish what concepts Eppink had found useful in his analysis of the reaction GIF and to further research best practices for theorising the GIF. When selecting source material for research, it was initially conceived that case studies would be undertaken on a site by site basis, analysing a cross section of the animated GIFs being shared on a given website. Closer inspection however revealed this to be an ineffective method of analysis for several reasons. Firstly, it was found that a common lexicon of GIFs existed across several communities spread over multiple sharing websites, such that the distinguishing *where* something had been said became irrelevant. Furthermore, and more crucially it proved to be far more compelling to examine GIFs in terms of two main functions: *rhetorical,* and *natural*

These two categories, *rhetorical* and *natural,* are borrowed from Eppink's own work. The excerpt from the interview reproduced below describes Eppink's rationale for the distinction.

> *[In a rhetorical reaction GIF] Someone posts a hypothetical situation and in that same post responds with an animated GIF. The converse of that is the actual reaction GIF that is used in actual conversation as the voice for the person in that moment, or the gesture in that moment. With hypothetical [rhetorical] reaction GIFs there's a value placed on novelty. There's a tendency to frame new gifs that you haven't seen before. … Whereas with actual reaction GIFs there were many that I would see over and over that were canonized, or part*

> *of a set that other people would recognise and use a lot, that I would see over and over.* (Eppink, 2015)

The *rhetorical* reaction GIF as Eppink terms it is inherently more flamboyant a genre. It is performative and overt, and while it unmistakably follows a similar inter-semiotic pattern as *natural* reaction GIFs the emphasis is on creating humor in the unlikely marriage of absurd hypotheticals and appropriate, often novel images. Conversely, for Eppink's show, the GIFs selected were ones that Eppink, and internet users who actively used GIFs as communication, had deemed to be naturalised. These GIFs had a more well worn pattern of textual association, such that we can start to see a rudimentary, yet evocative lexicon evolve, a cannon of signs accepted by a community to have a fixed grammatical meaning, even if it resists definition in language.

4.2 Source Material

A purposive sampling method was employed for this study. (Palys, 2008) This method has proved effective especially when examining online communities and their behaviours, specifically when examining such populations by other, probabilistic methods would have proved costly and inefficient. (Barratt, Ferris and Lenton, 2014) Furthermore, purposive sampling was the most appropriate tool for the task at hand given that the existence of the sharing of online GIFs was not disputed, and the task of the research was not to establish any common factor amongst those sharing GIFs. Rather, the research undertaken sought to examine and evaluate qualitative features of the ways in which reaction GIFs were being shared. In selecting sources, cases were selected which did not deviate from normal sharing patterns, sampling the most typical cases, where possible.

4.2.1 Natural Reaction GIFs

The GIFs analysed under the heading of "natural reaction GIFs" are taken from Jason Eppink's gallery show in the Museum of the Moving Image. Eppink collected these GIFs from the the /r/gifs subreddit of reddit.com. Users were petitioned to submit a GIF along with an explanation of its appropriate use in conversation. "Think of it this way," prompts Eppink in his original call to action(2014a), "If you had to describe how reaction gifs are used in Reddit comment threads to your grandmother, which ones would you show her and how would you describe what they mean?" For our purposes we will analyse a selection of the GIFs submitted, taking, as the contextual component the textual description submitted along side the GIF.

4.2.2 Rhetorical Reaction GIFs

In selecting reaction GIFs for his gallery show, Eppink made a distinction of avoiding what he termed *rhetorical* reaction GIFs. Rhetorical in this sense is an adaptation of the term *rhetorical question* and does

not refer to the platonic notion of rhetoric. These posts are inventive hypothetical situations conceived to give new context to particular GIFs. *Rhetorical* reaction GIFs are not intended to be read as part of a dialog and do not require a response. They are single turns of communication that are introduced apropos of nothing and do not necessarily demand a response from an interlocutor. Typically, the textual component accompanying *rhetorical* reaction gif is prefaced with the acronym MFW (My Face When) or HIFW (How I Feel When). Emphasis is placed not on adhering to conventions and assigning an appropriate GIF to a context. Rather a heightened, fictitious or impossible context is supplied that re-contextualises the visual material of the GIF to humorous effect. There is an emphasis placed on novelty, and the subversion of rather than the adhesion to convention.

For the purposes of this study reaction GIFs and their captions were selected from the /r/reactiongifs forum of reddit.com. A cross section of GIFs and captions were collected from the most popular images of the 6th of May 2015 for analysis. GIFs selected all depicted a human subject, and depicted facial or whole body gestural material. Posts were selected from the most popular content with a view to give a view of the consensus of a community engaged actively in the critique of such material. As such, utterances selected represent a degree of novelty and spontaneity rather than a pragmatic communicative intent. Though, in terms of their textual metafunction the theme of all of theses posts are the same, (that is the "I" of the poster/performer, and beyond that the their reactions or feelings), the rheme always vary wildly, and it is on the rhematic development that we will evaluate the textual function of these pairs.

4.3 Analytical framework

4.3.1 Multimodal analysis through SFL

From the sources described a series of text/GIF pairs will be selected. The text and GIF will be treated together as a single utterance or communicative unit. A Systemic Functional Linguistic model will be used to analyse the meaning carried by its three metafunctions, its *ideational* function, its *interpersonal* function and its *textual* function, as proposed by Len Unsworth as being a foundation for a metalinguistic framework for analysing multimodal texts. (Unsworth, 2008) The SFL analysis will be carried out in the context of establishing whether a definite viewpoint is being conveyed in the animated GIF portion of the utterance analysed which could be said to represent the viewpoint of the speaker, and furthermore, whether the viewpoint implied mimics what would be expected in face to face interaction. From this, we will be able to infer if a relationship exists between the reaction GIF and viewpoint gestures in the transmission of narrative information in CMC and real world contexts respectively. In an attempt to understand the resonances and information transmitted in the most complete way possible. GIF/text pairs will be examined as a whole. Through analysing the *ideational*, *interpersonal* and *textual* functions of

GIF/text systems, we will attempt to create a semiotic comprehension of utterances as multimodal communications.

Ideationally we will be concerned with discerning the literal sense of the communication as a whole, examining what ideas are expressed both in the linguistic portion of the communication, in the visual portion of the communication and finally as a complete system of meaning generation. Unsworth describes ideational analysis of visual and linguistic texts falling into one of three categories. Ideationally, we will broadly examine whether the textual and visual components of the transmissions in *concur*, *complement* or *diverge*. An ideationally concurrent image/text pair would for example depict the same event. Though there may be semiotic redundancies between both modalities, on the whole they would construct a coherent ideational whole. A complementary image/text pair would involve images that do not necessarily depict the same ideational concepts, but that cohere and concur with one another. Finally, a divergent image/text pair depicts contradictory or completely unrelated ideas.
Textually the image/text pairs will be examined in terms of their *thematic* content, i.e. the known quantity or the subject of discussion, and their *rhematic* content, i.e. the new information conveyed about the theme by the image/text utterance. Finally, *interpersonal* functions of visual and linguistic multimodal texts are analysed as being either *interactive,* wherein information is either offered or demanded or *evaluative* wherein commentary is given on "the truth of what is represented linguistically. (*Ibid*)

4.3.2 An SFL Approach to Gesture

By engaging with the text/image pairs in terms of these three metafunctions and their sub-definitions we will seek to examine the portrayal of a viewpoint as a gateway to examine gesture in these utterances. To accomplish this it is useful to attempt to analyse some examples of co-speech gestures in an SFL context, as a way of exploring how a speech/gesture system might be understood as a single utterance. Here we will examine recorded co-speech gestures taken from examples David McNeill uses in while categorising gesture in *Hand and Mind* (1992). The subjects McNeill uses to illustrate types of gesture were asked to describe scenes from supplied narrative material.

He firstly makes an example of a subject describing "a scene from a comic book story in which a character bends a tree back to the ground" as an example of *iconic gesture*. The speaker employed two modalities, to convey this information; speech and co-speech gesture. The verbal utterance, "and he bends it way back", and the gestural utterance, described by McNeill as using the hand "to grip something and pull it from the upper front space back and down near the shoulder", exist together as a single system of utterance. *Ideationally* there is a *concurrence.* The speaker is linguistically describing the physical

bending of a tree, while engaging the visual modality to convey an abstraction of the same. There is redundancy across both modes; specifically the concept of "bending" is reproduced in both modalities. But at the same time new ideational information is gleaned from synthesising both modalities. *Textually* the theme of the utterance is the agent, the character that performed the action, and the rheme is the bending of the tree. Finally *interpersonally,* there is an *interactive* function that is the speaker is a donor of information, describing the events depicted to an interlocutor.

Going on to describe *metaphoric* gesture, McNeill makes an example of a subject describing a cartoon. The verbal utterance, "it was a Sylvester and Tweety cartoon", is accompanied by a raising of the hands offering "the listener an 'object'". *Textually* the theme is the cartoon itself and the rheme is the information about the cartoon, namely its subject matter. The *interpersonal* function is again *interactive*. *Ideationally* however the gesture is a *complement* to the meaning of the spoken utterance. As we can see, the SFL model for describing image/text relationships can be applied equally well to gesture/speech systems. Furthermore it informs our analytical framework when investigating similarities between GIF/text systems and gesture/speech systems.

5 A Textual Analysis of Collected GIF/Text Utterances

5.1 Natural Reaction GIFs

5.1.1 Danny Pudi and Donald Glover nod and gesture in agreement, from Community

Figure 1 Pudi and Glover Agree

Description of appropriate use:
"Whenever someone makes a great point"

Ideational function: This sequence is taken from the NBC comedy programme "Community". (Harmon et. al, 2009) The GIF depicts actors Donald Glover and Danny Pudi in the roles of Troy Barnes and Abed Nadir. The relationship of these characters is one of close friendship based on a mutual prediction for whimsy and frivolity. Here they are depicted agreeing nonverbally with a point made by a character off screen. There is an ideational coherence between the textual compliment and the visual component of the utterance. The description of the appropriate use of this GIF implies not only an approval of what has been said, but that the opinion or idea that is being reacted to is valid and appropriate in the context of the conversation. Though there is a degree of intermodal redundancy between the ideational function of text and image there is still more information to be understood by reading the GIF and the text as a system than individually. The image implies a degree of admiration and deference. Furthermore the concept of consensus is introduced.

The ideational content of this particular image becomes more difficult as it depicts a *deictic* gesture. Therefore, though the use of the GIF may be serving an *iconic* function, that is displaying how the poster would react, were they a physical character in the setting of discussion, it is a depiction of a gesture that is serves a deictic gesture, "familiar pointing", as McNeil calls it. (1992, p.18) The subjects are pointing, not at a specific object or referent, but rather to a space designated to refer to the idea in question while denoting their approval.

Textual function: The theme of this utterance is the person or entity to whom it is directed. The rheme of the utterance is the high quality of that person's argument and the speaker's agreement with it. Thematically this is a complex utterance, deictic as it is in its nature.

Interpersonal function: This utterance serves an *evaluative* function. The appropriate use case detailed is one of approval, hence evaluating the information given by an interlocutor as being appropriate or worthy of approval.

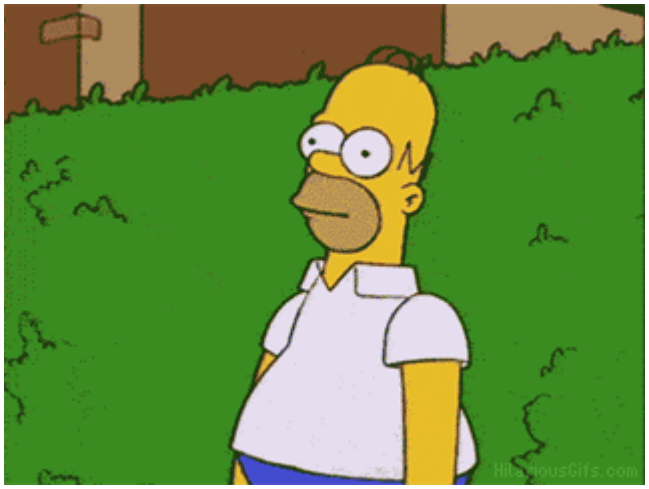

Figure 2 Homer retreats backwards

5.1.2 Homer Retreats Into A Hedge

Description of appropriate use:

"The poster wants to distance themselves from what's going on, either because a fight has broken out or because things got weird and uncomfortable."

Image Background:

This material is taken from *The Simpsons.* (Groening et. al, 1989) It depicts Homer Simpson retreating from an interaction with next door neighbour Ned Flanders. Homer appears not to walk but to glide and is slowly subsumed by the hedge behind him. This shot is intended as a semi-surreal visual joke, both because of the quality of Homer's movements and the unusual end result they accomplish.

Ideational Function: Ideationally there is a degree of cohesion between image and text when taken at face value. The text conveys a desire not to be associated with the statement to which it refers. The ideational overlap here however is much more minimal than in the previous example. Taken in isolation the image and its textual description have little common ground ideationally. However, together they paint a cohesive portrait of an interlocutor retreating from a discussion they no longer wish to take part in, both physically and metaphorically. Particularly the lack of expression on the depicted character's face makes it readily applicable ideationally to a number of contrasting situations.

Textual Function: Thematically this utterance too is deictic. Just in the way that Troy and Abed denote an approval of the previous post or comment, the theme of Retreating Homer is that from which he retreats.

The rheme of the sentence is the disapproval of the speaker's disapproval or desire to be distanced from the theme.

Interpersonal Function: Similar to the Troy and Abed GIF, this utterance as a system employs an evaluative function. It implies that the post, which is being referred to, is to be retreated from and not engaged with.

5.1.3 "Supa Hot Fire"

Description of appropriate use:

"When someone gets burned in a thread."

Figure 3 The crowd approves of Supa Hot

Ideational Function: There is a strong ideational cohesion between text and image in this example as well. The colloquial use of the word "burned" both implies a colloquial setting, similar to that depicted. There is overlap in the ideas expressed, but again, a substantial amount of new information is gleaned. The object of this utterance, the interlocutor to whom the utterance is directed has suffered a defeat we learn from the textual component. However the visual portion conveys that an overwhelming majority supports their defeat.

Textual Function: Once again the theme of this utterance is deictic, referring to the interlocutor to whom it is directed. The rheme is the approval and celebration in the wake of the objects defeat.

Interpersonal Function: Once again, this utterance serves an evaluative function in an interpersonal context, passing comment on previous utterances.

5.2 Rhetorical Reaction GIFs

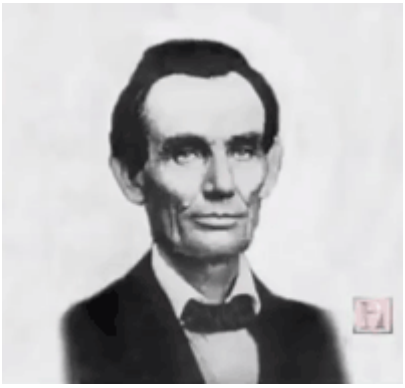

Figure 4 Lincoln's Face Morphs

5.2.1 Morphing Abraham Lincoln Portraits

Caption: "MRW an attractive girl walks by."

Ideational Function: This GIF depicts three portraits of American president Abraham Lincoln. Between each portrait, smoothing frames have been algorithmically generated as a visual effect. They suggest a coherence of the subject from portrait to portrait, and serve to show the statesman ageing. Ideationally, this utterance is noteworthy because its comic value stems from being ideationally divergent; the connection between portraits of Abraham Lincoln and "attractive girls" is non-existent. However, on closer inspection, gestural information can be inferred, albeit incorrectly, from the quality of the motion depicted in the GIF. Lincoln's right eyebrow appears to raise, as if intrigued. He then appears to retreat, as if to view an object or, we might surmise from the textual context, a person in the middle ground in more detail. A reference to Laura Mulvey's theory of the Male Gaze could be inferred, though it is more likely that this utterance is made in ignorance of Mulvey's theory, and is a perpetuation of the trend rather than a critique of it. (Mulvey, 1975) The comedy of the utterance is derived from the cognitive dissonance between the textual and visual information. The speaker is not, we presume Abraham Lincoln. Furthermore, the movement depicted is not a genuine human gesture. Rather, it is being observed that, if read as natural human motion, the GIF of the Lincoln portraits resembles a man gazing at an attractive female. However, a common ideational link is created between the concept of the speaker, represented as the first person possessive pronoun and the figure reproduced in the GIF by virtue of their coexistence in a single unit of communication.

Textual Function: The theme of this utterance is the speaker or poster, the "I" the first person singular. More specifically the theme could be said to be the "reaction" of the speaker. The rheme is the hypothetical manner in which the presumably male, heterosexual, speaker reacted to seeing an attractive female.

Interpersonal Function: Unlike the utterances from the previous section, this utterance has a decidedly *interactive* function. The speaker is conveying information, specifically how a character, in this case the first person singular, reacted in a hypothetical situation. The speaker is, in this case an information donor.

5.2.2 Harrison Ford Shrugs, from Star Wars

Caption:"MRW someone asks me why I remade this gif"

Figure 5 Harrison Ford Shrugs

Ideational Function: The humor of this post is derived from its recursive self reference. The user is proposing that, when asked why they had reproduced a GIF that already existed in another form, that their response, coincidentally, was exactly the same as the reaction depicted in said GIF. Ideationally, there is almost no overlap, to the point that the textual element and the visual element of the utterance are practically two clauses. An attempt to reproduce an approximation of the whole ideational content of the system might be "My reaction when someone asks me why I remade this GIF is to shrug my shoulders, because I have no explanation." Although there is very little ideational overlap, save for the inference that the subject is depicted in both modalities, both as the first person singular possessive pronoun and Harrison Ford respectively; there is still a coherence between the two modalities. The connecting idea, the speaker, unites the two modalities and creates coherence across both modalities.

Textual Function: The theme of the utterance once again, is the speaker, or the manner in which the speaker reacted to the situation introduced in the rheme of the utterance. The rheme is, once more the manner in which the speaker reacted to the situation detailed.

Interpersonal Function: Once again, there is an interactive interpersonal function to this utterance. The speaker is donating information to an audience, specifically, by explaining a reaction they had, or would have had in the proposed situation.

5.2.3 Gary Sinise Is sad at a New Year's Celebration, from Forrest Gump

Caption: "MR after a year and a half on reddit, and I finally see a comma in my karma."

Ideational Function: Again we have an almost completely disjointed image/text pair, united only by a single ideational constant. Here, the speaker wishes to remark on how unfulfilling they found it to achieve a reputational score of over 1,000 on the social link aggregation web site Reddit. Again, the textual element and the visual element are separate clauses, united only by the ideational constant of the speaker. The text element of the utterance depicts the situation and the second clause depicts the reaction. One might render both clauses in text in the following way "My reaction after a year and a half on reddit, and I finally see a comma in my karma is one of sadness in the face of what others might consider a cause for celebration."

Figure 6 Sinise is Sad

Textual Function: The textual functions are similar to other rhetorical GIFs as described above. The theme is the speaker's reaction, and the rheme is the depiction of the speaker in the described situation.

Interpersonal Function: Once again, this utterance is performative, realising an interactive function.

5.3 Gestural Observations

It is evident from the analysis above that there is a degree of functional uniformity amongst both types of reaction GIF/text pairs analysed. Beyond that, it was found that many of the functions of GIF/text systems bore a striking resemblance to the functions of gesture/speech systems described in section 4.3.2. Because of the plastic nature of textual communication there are some types of gesture that do not map easily to online communication environments. Most notable of the types of gesture that McNeil identified, (*iconic, metaphoric, beats, cohesives* and *deictics*) metaphorics, cohesives and beats particularly have a rigid temporal element. Metaphorics and cohesives involve the construction of spatial metaphors and symbolic

actions to convey interrelations between concepts and clauses. Beats convey a conversational rhythm and allow a consensus on the rate of exchange of information to evolve between interlocutors. No evidence for their facsimile could be found in GIF based communication. This could be due largely to their specificity, which would be impossible to reproduce with a limited lexicon of popular images, or to the fact that the time domain is not as rigid an ideational conduit in text based communication. Evidence was found for the use of GIFs in a manner similar to the use of *iconic* and *deictic* gesture. These will be explained below.

"Rhetorical" or performative reaction GIFs were found to be ideationally coherent. The information communicated in the visual modality had a limited overlap with the textual content, and by and large both tended to be almost separate clauses of the same utterance. Textually the utterances examined all had a common theme, but this could be largely attributed to the conventions of the forum from which they were collected, and not necessarily a feature of this method of constructing GIF/text utterances. Finally, interpersonally, all utterances were interactive, with the original poster of the image/text pair acting as a donor of information in the context.

The functions of the rhetorical reaction GIF as analysed here are almost identical to the functions of the iconic reaction GIF as described by McNeil. (1992, p 12) As described in section 4.3.2 analysing the functions of gesture and speech by viewing them as a single meaning system yields similar results. Not only are the use cases for iconic gestures similar to the scenarios in which rhetorical reaction GIFs are employed, but the linguistic functions they realise are also similar, specifically their ideational coherence, their interactive interpersonal function and their confinement of the theme to the linguistic modality, ie. the textual or spoken component of the utterance, while relegating much of the rhematic to the visual modality, ie. the GIF or the gesture.

When examining the functions of natural reaction GIFs, a different pattern of systemic functions became evident. Ideationally there was a coherence between textual descriptions of the GIFs and the GIFs themselves, with a greater degree of overlap perhaps than was evident in rhetorical reaction GIFs. Textually, their thematic material all referred to a previous utterance to which the GIF in question would be offered in response to. The rheme of the utterances was a reaction on the part of the speaker, assessing the quality or worth of the utterance. Following this there was strong evidence of an evaluative function being realised in an interpersonal context. There is however an abstraction that needs to be examined to completely understand the inference of the natural reaction GIF. Though, as its name suggests, the GIF is being posted as a "reaction" to a previous statement, it is worth exploring who is doing the reacting. It is

unlikely that the poster wishes to intimate that the characters depicted in visual material transmitted are reacting in the same way as the poster is. Rather, an equivalence is being created between the poster and the character or characters depicted. Hence, there is a strong case to surmise that natural reaction GIFs are serving as iconic gestures as well, in spite of their apparent functional dissimilarities.

6 Conclusions

In analysing the reaction GIF for gestural functions it was sought to establish a link between the patterns of online sharing most commonly associated with the GIF and the communication scenarios that most typically result in the spontaneous generation of co-speech gesture. The analysis of the GIF was carried out with several assumptions in mind. Firstly, it was assumed that GIFs were taken as inextricable from a communicated context, represented textually. Secondly, it was assumed that a single GIF/text unit was to be perceived as a deliberate utterance, that is a deliberate action committed within a social system that is considered to give information. Finally, it was assumed that parallels could be drawn between natural speech and computer-mediated communication. These parallels assumed a correlation between linguistic and visual modalities such that speech was taken as being analogous to text and facilitating an exploration of similarities in information conveyed through the visual modality. A systemic functional linguistics approach was adopted for the purposes of analysing multimodal communication. In analysing GIFs both in a performative or "rhetorical" context as well as in a "natural" context using an approach that observed their functions as part of a greater meaning system, several observations were made about the use of GIFs in online communication.

An analysis revealed several similarities between iconic gestures and the rhetorical reaction GIF. Utterances which contain iconic gestures bear a striking ideational resemblance to utterances which contain rhetorical reaction GIFs, in so far as that each modality, linguistic and visual, contain almost wholly separate clauses of a single concept. The linguistic modality is usually reserved for describing the context and setting of an action undertaken, whereas the visual modality is employed to convey the manner in which the action described was undertaken.

Furthermore, analysis of GIFs as a computer mediated communication form of gesture reveals a new gestural viewpoint, that has thus far not existed in our understanding of gesture. Rather than thinking merely in terms of observer viewpoint, character viewpoint or dual or hybrid viewpoint gestures, we have become aware of a type of "self viewpoint" gesture. That is to say, an abstraction of a semiotic concept pertaining ideationally to the self but expressed through instruments other than the physical body of the speaker. As digital modes of communication become more versatile and the communicative capabilities of platforms extend further and further into the visual modality, such proxies for the self will become more common. The gestural framework described herein describes a method by which these abstractions can be understood.

To adequately explore the uses of the GIF in computer mediated communication, more research is required. Specifically qualitative studies of identified public fora, which make heavy use of GIF based utterances, are required to definitively construct an undeniable link between the animated GIF and the gesture. Understanding such a link more fully could one day lead to a more concise cognitive model of online interaction.

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