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A Framework for Digital Emotions

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

by

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LIST OF ABBREVIATIONS

ARG   Alternative reality game

ATS   Affective tutoring system

CMC   Computer mediated communication

EIC   Expressive Internet communication

fMRI   Functional magnetic resonance imaging

HCI   Human-computer interaction

IGBP   It Gets Better Project

ITS   Intelligent tutoring system

SMS   Short message service

ABSTRACT

A FRAMEWORK FOR DIGITAL EMOTIONS

By Meghan Rosatelli, Ph.D.

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As new media become more ubiquitous, our emotional experiences in digital space are increasing exponentially as well. While there is much talk of "affective" computing and "affective" new media art, a disconnect exists between networked emotions and the popular media that they inhabit. This research presents a theoretical framework for assessing "digital emotions"—a term that describes the feedback process between digital technologies and the body with respect to short, networked inscriptions of emotion and the (re)experience of those inscriptions within the body and through digital space. Digital emotions display five basic characteristics that can be applied to a variety of media environments: (1) They describe a process of feedback that link short, emotive inscriptions in digital environments to users and their (re)experiences of those inscriptions; (2) This feedback process includes, but is not limited to, the inscriber, the medium, and the receiver and the emotive experience fuels the initial connectivity and any further connectivity; (3) The emotional value varies depending on the media, the community of users, and the aesthetic experience of the digital emotion; (4) Digital emotions influence our emotional repertoire by normalizing our paradigm scenarios; and (5) They are highly malleable based on changes in technologies and their ability to both expand

and contract emotional experiences in real time.

   The core characteristics of digital emotions are applied to three broad and overlapping categories: technology, community, and aesthetic experience. Each of these aspects of digital emotions work together, yet they exist along the massive spectrum of our online, emotional experiences—from our casual click of the "like" button to digital community artworks. Applied to digital spaces along this spectrum, digital emotions illuminate the feedback process that occurs between the media, the network, and the environment. The framework ultimately suggests that the process of digital emotions explicates emotions experiences that could only occur in digital space and are therefore unique to digital culture.

Introduction

The rapid evolution of new media over the past decade, from social networking to iPhone applications, has no doubt changed the way we communicate. Over seventy-four percent of American adults regularly use the Internet (roughly 163 million individuals) on 285 million wireless connections. User statistics spike when citing teens and young adults—over ninety-three percent regularly use the Internet, with approximately a third of those users communicating through short status updates. [1] Combined with the 1.5 trillion text messages sent in 2009, [2] declaring a twenty-first century communication revolution seems almost redundant.

Yet revolutions, if we agree that new media has incited one, disrupt more than existing hierarchies and cultures—they change our emotional lives as well. Historically, emotion existed as the unfortunate opposite of reason—a binary that propagated many other erroneous binaries, such as male and female, passive and active, or weak and strong. The consequence of such a devaluation still creeps into our digitally mediated lives and results in emotion being casually questioned, but often critically overlooked in relation to digital media conversation and scholarship. Yet everything from advertising to online dating is being affected by the need to emote in new ways within new media. Furthermore, recent interdisciplinary research on emotions describes a critical bodily reaction that dictates not only how we feel, but also who we are, and how we remember, reason and understand others. The recent discovery of mirror neurons, brain cells that automatically mirror action and emotion, suggests that we are hardwired

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[1] Pew Internet and American Life Project, http://www.pewinternet.org/ (accessed March 30, 2010).

[2] CTIA, CTIA–The Wireless Association Announces Semi-Annual Wireless Industry Survey Results, http://www.ctia.org/media/press/body.cfm/prid/1936 (accessed March 30, 2010).

to empathize and understand others. This innate ability to mimic everything from throwing a pitch to feeling happiness not only connects us to each other, but also builds a unique human culture. Our changing emotional landscape combined with recent scientific discoveries on emotion calls into question traditional knowledge of community, place, and self. We know that new socialization practices in cyberspace are changing our cultural landscape, but what are the consequences of this new culture on our emotional lives?

The parallel development of digital communication and emotion-based research also yields fascinating questions about our popular culture. How do emotions fit into the vast array of digital communication? How do we emote in digital space? What is lost in these media? What is gained? And perhaps most importantly, if emotions are inextricably tied to communication, culture, and our understanding of self, can digitally emoting fundamentally *change who we are*? This dissertation will examine the co-evolution of emotion studies and digital communication through the lens of popular culture by focusing on emotional experiences that occur, whether we recognize them as such or not, in our digital lives. While many researchers rightfully argue that new media continue to shape our culture, I will further argue that emotional experiences in select new media are shaping our emotional, and therefore rational, selves. As the line between digital space and the "real" world continues to blur in the midst of ubiquitous computing, and as the bodily distinction between "real" experiences and simulation continues to be questioned, the role of emotions in digital space foreshadows the function of emotions in our twenty-first century lives.

Perhaps the most expansive look at digital emotions comes from an artist and a computer engineer, not a social scientist or neuroscientist. In 2005, Jonathan Harris and Sep Kamvar launched the emotion collecting website *We Feel Fine*—a website that algorithmically collects

feelings from bloggers all over the world. *We Feel Fine* catalogues these feelings based on

various metrics and attempts to build community and understanding through empathy.

Recognizing the unprecedented collection of emotions from around the world, researchers at the

University of Pennsylvania and Stanford recently began conducting studies linking happiness

and age using the site's data. Digital community artworks, such as *We Feel Fine*, along with the

proliferation of emoticons, and many other uniquely evolving communication tools and media,

illustrate the scope of digitally communicated emotions and the exciting intersections of

scientific research. It is through these media that I investigate the integrated, changing landscape

of emotions in digital space and the possibility of distinctly digital emotions.

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When I began research on this project in late 2007, I focused on a handful of innovative

web-based artworks that display emotions in new and beautiful ways—websites such as *We Feel*

Fine. I describe *We Feel Fine*, and similar projects, as digital community artworks because they

represent an emerging emotional community online. Specifically, digital community artworks

are websites that collect and aesthetically arrange instances of human emotion with the goal of

building community through empathy. The broad scope of digital community artworks, and their

fascinating reflection of human emotion, inspired my inquiry into emotions in digital space. Yet

the connectivity of the web began to complicate the growing scope and influence of digital

community artworks, and I soon came to realize that these websites were inextricably tied to

other new media. Consequently the scope of the research now encompasses a wide spectrum of

digital media, from affective computing and social networking to digital community artworks.

This broader scope creates a dynamic, and more realistic, context for constructing a conceptual

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framework of emotions in digital space while showcasing the extent of our emotional experiences in digital media.

The theoretical scope of the research is equally inclusive. Research on emotions often combines elements of neuroscience, cognitive science, psychology, and sociology, yet emotion theories were once notoriously contradictory. Neuroscientists intuitively focus solely on the neuronal response to the environment when discussing emotions, while cognitive psychologists are more interested in the cognitive categories of emotion. Currently, embodiment theories of emotion attempt to bridge this micro/macro divide by examining the neuronal response in conjunction with what the individual feels. In a special edition of *Emotion Review* on embodiment theories, Paula Niedenthal and Marcus Maringer explain the various benefits of broadening the scope of emotion research beyond judgments or simple emotional responses.[3] According to Niedenthal and Maringer, embodiment theories understand emotion as a simulation or (re)experience of emotion, which deems emotional content researchable on an individual and cultural level. Because individuals literally recreate the emotional response, the body's response to stimuli becomes a credible source of emotional information—the object of thought is traceable. For example, if an individual "knows" anger, he or she will recreate a neurological angry response to trigger stimuli, such as watching an angry tirade on television. The experience becomes embodied because it is actually occurring as though the individual were engaged in the tirade. Embodiment theories allow for shifts in culture because they are dependent on the individuals emotional repertoire. Applied to the culture of digital media, the plasticity of embodiment theories allows for a more comprehensive discussion of emotional response as it pertains to individuals and the environment.

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[3] Paula M. Niedenthal and Marcus Maringer, "Embodied Emotion Considered," *Emotion Review* 1, no. 2 (April 2009): 122-128.

Embracing synaptic plasticity in conjunction with embodiment theories combines the (re)experience of emotion with the notion that individuals evolve based on these experiences. Understanding plasticity allows us to recognize ourselves as not only agents of change but *as* that change. Through what Ronald de Sousa calls "paradigm scenarios," various narrative structures (based on life experiences) "serve to define and differentiate each person's idiosyncratic repertoire of emotions."[4] Memory retains what is emotionally significant, so these paradigm scenarios are evolving, plastic, and highly influenced by the changing environment, whether we recognize our shifting emotional repertoire or not. (Perhaps surprisingly, many of these emotional responses never reach conscious awareness.) This active development works in conjunction with the ever-present evolution of digital media and virtual worlds. If we are as malleable and emotionally responsive as embodiment theories suggest, the impact of our changing environment on our person is undeniable.

The changes and construction of a "self" that plasticity enables work hand in hand with our emotional responses. Embodiment theories cite various hypotheses on how we (re)experience emotion; two notable theories explore "as-if body loops" and mirror neurons. Antonio Damasio argues for "as-if-body loops," which describe internal brain simulations that rapidly modify ongoing body maps (almost like a perpetual, biological status update).[5] These simulations, according to Damasio, result in a (re)experience of emotion. Research on mirror neurons more centrally locates this (re)experience within specific neurons in the frontal cortex. Mario Iacoboni, Vilayanur Ramachandran, and many others argue that mirror neurons create our

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[4] Ronald de Sousa, "Emotions: What I Know, What I'd Like to Think I Know, and What I'd like to Think," in *Thinking about Feeling: Contemporary Philosophers on Emotion*, ed. Robert C. Solomon (Oxford: Oxford University Press, 2004), 65.

[5] Antonio Damasio, *Looking for Spinoza: Joy, Sorrow and the Feeling Brain* (London: Harcourt, 2003), 115.

sense of self and other, from our ability to empathize, and can create a sort of group

consciousness. Iacoboni in particular strongly suggests a link between phenomenology and

mirror neurons by citing Heidegger and Merleau-Ponty's theories linking action and

perception—a line of inquiry he names "neurophysiologic phenomenology."[6] He dismisses any

suggestion that mirror neurons are "like being in someone else's shoes." Iacoboni explains, "By

firing as if we are actually making those facial expressions we are simply observing, these

neurons provide the mechanism of simulated facial feedback. This simulation process is not an

effortful, deliberate pretense of being in somebody else's shoes. It is an effortless, automatic, and

unconscious inner mirroring."[7] In short, we are hardwired to empathize. After reviewing the

many functions of mirror neurons, Iacoboni argues that their main role is to facilitate social

behavior by allowing us to understand the intentions and emotions of others. Because mirror

neurons map the actions of the other onto the self through neural firing, they create a sort of

"other self" in the body. This linking, or embedding of other into the self, is where Iacoboni

picks up the phenomenological aspect of his argument. The "coupling" (as described by Edmund

Husserl) of self and other creates a dialectical relationship that parallels much of existential

phenomenology. This shared, social connection, claims Iacoboni, is where we can look to create

a better, more empathic society. Mirror neurons link to what Damasio describes as the "as- if-

body-loop" in the sense that certain neurons fire in an emotive fashion before any (or if any)

cognitive thought occurs. Perception is key for mirror neurons because of their intention tracking

capabilities. When discussing the sudden ubiquity of digital media in our everyday lives, the

discovery of mirror neurons and the theoretical impact of their function, complicates our

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[6] Marco Iacoboni, *Mirroring People: The New Science of How We Connect With Others* (New York: Farrar, Straus, and Giroux, 2008), 17.

[7] Ibid., 120.

changing relationships and experiences in virtual worlds. Suddenly, the "rational" mind is no longer as reliable as we once thought, and our once touted ability to ignore the impact of environmental changes becomes naïve in the face of these automatic responses. Applying embodiment theories of emotion to our interactions in digital space is a logical next step when discussing the convergence of the body and computational media because both processes are both highly plastic and interaction-dependent. Focusing these theories on our emotional experiences in digital space suggests a sweeping biological and cultural influence for our new media revolution.

The integration of neuroscience and new media is growing in popularity, as is neuroscience within the humanities on a broader scale. Some see this coupling as the "next big thing" in humanities research. Merging cognitive psychology and English literature, Lisa Zunshine's research examines the theory of the mind "which involves one person's ability to interpret another person's mental state and to pinpoint the source of a particular piece of information in order to assess its validity."[8] Zunshine takes what is essentially described by embodiment theories and applies it to our experience reading literature. Similarly, journalist Jonah Lehrer and child development scholar Maryanne Wolf both published books on Marcel Proust and the brain, and Rhonda Blair published *The Actor, Image, and Action: Acting and Cognitive Neuroscience* as a guide for actors to understand the cognitive engagement of becoming a character—all in 2008 alone. New scholarship is on the horizon, and with a lively debate following Zunshine's profile in a March 2010 article in the *New York Times* about the

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[8] Patricia Cohen, "The Next Big Thing in English: Knowing They Know That You Know," *New York Times*, March 31, 2010.

neuro-humanities,[9] the conversation has only just begun. Furthermore, much of this new research cites the resurgence of emotions in the self/other construction and interaction. Gone are the days of critically understanding emotion and reason as binaries. Emotion and reason exercise mutual dependency in each of us, and because of this recent recognition, emotion research is cropping up in diverse disciplines. By combining cognitive science, neuroscience, popular culture, and even art history into the scope of this project, an inclusive, complex network of scholarship begins to build the foundation of our digital, emotional lives. While digital emotions may not be the "next big thing" in the neuro-humanities (if such a field even comes to exist on its own), they speak to a changing cultural, emotional, and personal landscape that affects each of us.

Even with the rise of the "neuro-humanities," much of this coupling focuses on traditional subject matter, such as literature or theater, and neuroscience. Specifically for embodiment theories, a bulk of the science is used to explore epidemics such as autism (currently being linked to a mirror neuron malfunction) or socialization disorders. Joined with questions concerning digital mediation, these case studies often maintain their narrow focus and simply append the online or digital component to the scope of research. As a result, the bulk of our daily emotional communication in digital media is overlooked and unquestioned. Without a critical look at emotion and digital space, all other particular occurrences, such as the role of depression in online social groups, falls short. "Normal" is a dangerous term, but in many ways, most of us are rather well adjusted in our lives and take the changes of digital media in stride. The new media revolution arrived quickly, yet almost intuitively, because new media seemed to make life easier. Free services such as Facebook and Skype facilitate convenient communication, so grandparents in California can talk to their grandchildren through video connections with ease.

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[9] Ibid.

The extraordinary hyper-evolution of the technology takes a backseat to the intimacy of the exchange. Understanding how these revolutionary, yet strikingly implicit, changes affect our emotional lives should really be the first of a series of questions concerning digital media and an inevitably changing humanity. Much like the brain defines what we call "me" through constant neural plasticity, our increasingly networked digital environment is defining what we call "we." Strangers coming together to solve an alternative reality game, teenagers text messaging under the sheets, or artists attempting to capture a snapshot of human fragility from blog postings are components of our new cultural landscape, and the role of emotions in this plastic landscape has yet to be fully uncovered. My research begins the process of contextualizing and connecting user's increasingly common emotional experiences in digital space.

There are, of course, a few problems when dealing with media "users"—namely that the "user" population is quite diverse. The troublesome caveat to this fact is that we often describe "users" as a single, hegemonic population when discussing new media. While race, gender, and socio-economic backgrounds comprise much of our personalities and experiences, these factors are mitigated in much digital communication when dealing with emotion because emotional responses are so often researched at the neural level. In regards to embodiment theories of emotion, individual emotional repertoires are considered when differentiating the single user from the network. While these generalizations are not perfect, they do allow for a flexible definition of a "user."

The term "new media" poses similar problems because definitions vary drastically. New media has recently transformed into a highly inclusive term that, as Mark Hansen explains, is both singular and plural. Hansen argues that new media is therefore accurately described by the "new inflections of mass media…new gadgets…and new experiments with the effects of these

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inflections and gadgets on the senses, emotions, and perceptual, social and imaginary experience."[10] This sweeping inclusivity—from the hardware of iPods to the experience of communicating with an avatar—is popular in our use of the term, but the "newness" of new media complicates the very definition that Hansen presents. The "newness" of the plural aspect of new media designates the linear progress of media as innovation. Tom Standage documented an example of this progression in his book *The Victorian Internet* where he argued that the telegraph transformed culture more so than the modern Internet. Yet, as Hansen argues, new media has also come to designate a singular, perhaps more complex transformation in our culture. While the plural form of the term will continue to function as an important facet of digital innovation, the singular form suggests that media is, perhaps for the first time, "separated from the technology that mediates it."[11] The consequence of such a distinction suggests, for Hansen, that we are at a fundamental turning point as humans because media is now distinct from its own technical infrastructure. The telegraph most certainly transformed communication, yet the hardware—the wires, the actual telegraph, the paper, etc.—defined the message. Today, the computer does not indicate, in anyway, the "singular media that it transmits, and therefore is."[12] By expanding the definition of new media to include not just technical innovation, but also aesthetic and social developments, Hansen opens the door for a discussion of "new media" as a singular, emotional experience.

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[10] Mark Hansen, *Critical Terms for Media Studies.* Edited by Mark Hansen and W.J.T. Mitchell (Chicago: The University of Chicago Press, 2010.), 184.

[11] Ibid., 172.

[12] Ibid.

Working from a literary perspective (Hansen is an art historian), N. Katherine Hayles similarly argues for the necessary role of embodiment in computation. She forwards the concept of a post-human subject that is reliant on a "dynamic partnership between humans and intelligent machines."[13] The post-human subject, according to Hayles, links us back to nature and to the importance of our own bodies in conjunction with the technical world. Because emotions and feelings are the key communicative agents in the body, in a sense, emotions become the "new media" when working from these arguments because they facilitate the relationship between the body and the screen. In essence, new media *is* the post-human subject, and emotions are the ties that bind. Digital emotions arise from these hybrid and experimental terms because they require a necessarily link between computation and human experience. Building on Hansen and Hayles, digital emotions provide a more focused, and perhaps more tangible, understanding of "new media."

The decision to include a wider range of media presents a more comprehensive and, hopefully, robust understanding of emotions in digital space, while continuing to underscore the evolution of "new media" as we understand it. These new human experiences permeate our popular culture and are often praised or demonized based on their functionality and/or ubiquity. Yet, just as the computer fails to represent the new media it transmits, catchy advertising or cautionary headlines also fail to explain the human—the emotional—impact of new media. We must continue to broaden our view.

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[13] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), 288.

Part one begins with a review of current emotion research and computing, which subsequently grounds a working framework of digital emotions. Part two explores applications that integrate (on varying levels) the three major contributors to digital emotions: technology, community, and the aesthetic experience. Some of the applications, such as Facebook, may be familiar while other media may be completely unfamiliar, such as the massive-multiplayer game *I Love Bees*. Despite their diversity, each of the media share a similar ability to tighten the already intertwined relationship between computation and human experience—what N. Katherine Hayles calls the post-human, and what Mark Hansen similarly dubs "new media."

To ground the framework of digital emotions, the first chapter explores theories of emotion beginning with the James-Lange theory and ending with a discussion of embodied emotion research. In the nineteenth century, William James and Carl Lange hypothesized, contrary to intuitive belief at the time, that emotions preceded feelings. Instead of crying because we are sad, we are sad because we cry—our bodies perceive the world around us and we, in turn, adapt to that perception.[14] What eventually became known as the James-Lange theory of emotions fell out of favor in the 1920s, only to reemerge, though tweaked, in the past few years. Interestingly, the re-emergence of the James-Lange theory set the stage for a flurry of embodied emotion research that includes Antonio Damasio's "as-if body loops" and mirror neurons.

As emotions began to be understood as part of a feedback process between the body and the environment, researchers began to take a look at emotions as more than perceptions about the world but instead as actual recreations of bodily states. Mirror neurons are opening the door to a wide range of hypotheses highlighting the essential bond between others, our environment and

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[14] William James, "What is an Emotion?," in *What is an Emotion? Classic Readings in Philosophical Psychology*, compiled by Cheshire Calhoun and Robert C. Solomon (New York: Oxford University Press, 1984): 127-141.

ourselves. Interestingly, the age-old question of whether humans are inherently selfish or generous is beginning to be answered, and coupled with our growing social networks, the implications of research like Vilayanur Ramachandran's is staggering. Ramachandran argues that the empathetic power of mirror neurons not only creates a sense of self and other, but also builds civilizations.[15] The transfer of knowledge between individuals and cultures could be more implicit than we once believed. Many civilizations are built from revolutions, and the non-motor impact of mirror neurons sheds light on our changing world. To frame the argument for embodiment theories of emotion, chapter one is further broken down into three sections— simulation and/or (re)experience, culture, and subjectivity. These three core characteristics of embodiment theories lay the foundation for the framework of digital emotions.

Chapter two builds on the history of emotion research and the description of embodiment theories as they apply to new media theories. New media theorists, such as Andy Clark, N. Katherine Hayles, and Mark Hansen, have all embraced, to various extents, the concept of "extended cognition"—the idea that cognition exists within a bodily and environmental feedback loop, not simply locked within the brain. While these theories have their differences, three general themes emerge that utilize embodiment theories as their gateway to the body/media hybrid: (1) embodiment, (2) the importance of the arts to embodied feedback, and (3) quasi-utopian futures based on heightened connectivity. Chapter two also explores the complexity of the term "new media" and how it relates to various permutations of the network, such as the controversial and always colorful visual message board 4chan.org.

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[15] Vilayanur Ramachandran and Lisa M. Olberman, "Reflections on the Mirror Neuron System: Their Evolutionary Functions Beyond Motor Representation," in *Mirror Neuron Systems: The Role of Mirroring Processes in Social Cognition*, ed. Jaime A. Pineda (New York: Humana Press, 2008): 39-45.

Influenced by embodiment theories, as well as new insight into the role of new media and the post-human, the framework of digital emotions is presented in chapter three. The process of digital emotions is an intrinsically hybrid concept that clarifies the numerous permutations of emotions in digital space. The framework implicitly claims that digitally communicated emotions, while limited, are none-the-less an integral part of the body/environment feedback system that incites emotional responses. Digital emotions are thus not watered down, generic representations of "real" emotions, but perhaps *more* influential in scope and effect because of their prolific digital mediation. Whether we call the combination of computation and human experience "post-human" or "new media" depends only on the privileged perspective. The embodied experience of interacting with new media, as Hansen argues, has come to define new media itself, and the consequence is a ripe opportunity to understand the changing shape of the traditional body/environment feedback system in relation to emotional response. Digital emotions are necessarily embodied, yet they occur in conjunction with the digital environment, which includes other individuals. The ever-heightened connectivity of new media influences how we emote, and how, when, and where we emote directly influences our state of being—our personhood. Emotions, and the potential of emotion, are thus magnified *and limited* in these ubiquitous spaces. This seeming contradiction is what makes digital emotions so fascinating. As we continue to emote in digital space, and therefore with new media, we are gaining and losing aspects of what it means to be an emotional human.

Part two comprises a three-chapter series that applies the framework of digital emotions to various technologies/media, communities of users, and aesthetic experiences. In the early 1990s, around the same time mirror neurons were being tested for action-mimicking behavior in monkeys, Rosalind Picard published her first paper on affective computing. This paper heralded

not only a groundbreaking book by Picard on the subject, but an entire field that focuses on

imbuing computers with empathy. Chapter four begins with a discussion of Picard's seminal text

Affective Computing, and discusses the role of emotion in artificial intelligence. Picard defines

affective computing as "computing that relates to, arises from, or deliberately influences

emotions"[16] Because emotion plays a central role in communication, she argues that our

interactions with computers display similar affective behavior as our interactions with other

humans. Picard's ideas gained increasing attention over the years, and today MIT hosts the

Affective Computing Research Group that studies human/computer interactions with a focus on

the emotional exchange.

Picard's pioneering efforts influenced countless studies and innovations in affective

technology. For example, Expressive Internet Communication (EIC) seeks to revolutionize the

primitive emoticon by manipulating a personal photograph's facial expressions. By changing

"your" facial expression based on emotional cues, researchers believe that communication will

be more effective (and affective!). The MIT Media Lab is currently conducting research on

FaceSense, which can detect subtle facial movement and register a like or dislike to the

computer. This technology could allow computers to react to the user by sensing their frustration

and renegotiating a more likeable response to a problem.

So, could empathic computers running programs such as EIC and FaceSense positively

influence our own daily interactions with others? Perhaps. If our emotional intelligence is based

on a cultural repertoire of emotions, as argued by embodiment theories, then programs that

potentially widen such a repertoire directly impact our emotional lives. The more affective

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[16] Rosalind Picard, *Affective Computing* (Cambridge: MIT Press, 1997), 3.

computation becomes the more singular "new media" becomes, and the more our emotional experiences become necessarily linked to digital media.

Affective computing illustrates a key feature of digital emotions: they reinforce the strength and affectivity of biological interactions. Although the focus appears to be on computers, the goal of affective computing is to create a more human experience when dealing with technology. What is so interesting about this often-stated goal is that the technology is influencing the human experience whether or not it attempts to mimic affective responses. Nonetheless, recognizing the importance of emotional experiences when developing new technology heightens the possibility of an emotional response, therefore the importance of understanding the effect of that emotional response in the context of these new, specifically constructed interactions is critical. The digital emotions that these areas of research stimulate are only going to become more pervasive as we continue to recognize the extent of human/computer influence.

Chapter five focuses on how users communicate emotion in online communities—from social networking sites, such as Facebook, to massive multi-player gaming. Moving from a rather narrow human/computer focus, this chapter is more interested in the human-to-human interactions that are facilitated and transformed by digital media. The subject matter in this chapter is probably more familiar than any other, and rightly so. The Internet has become host to incalculable connections and communities over the past decade, and usage will only rise with a new generation that views digital interactions as equivalent to face-to-face interactions.

Renowned game designer Jane McGonigal fully embraces the emotional human potential within the network. She believes that games and gamers can change the world by refocusing gamers' creative spirit, community, and desire to succeed. By creating games that are focused on

real world problems, such as her 2010 project in collaboration with the World Bank, *Evoke*,

McGonigal argues that the immense talent pool of gamers can begin to solve the world's

problems through collective critical thinking. *Evoke* calls on youth culture from around the world

"to start tackling the world's toughest problems: poverty, hunger, sustainable energy, water

security, conflict, disaster relief, health care, education, [and] human rights."[17] McGonigal, along

with game designers and players across the world, understands that games only succeed if there

is an emotional commitment to what she calls "the epic journey."[18] She cites recent cognitive

science research that links gaming to optimism and mutual respect. As games evolve, and they

are evolving at a rapid pace, further understanding the emotional connection between users and

virtual worlds can help us better understand how to mimic these emotions in reality—exactly

what McGonigal and others are trying to accomplish.

Although gaming is ubiquitous, with 500 million global gamers (just online),[19] Facebook,

the most popular social networking site to date, boasts over 400 million users from its inception

in 2006 to the present (April 2010).[20] Much of the research on Facebook focuses on certain

demographics, such as age, and highlights the changing socialization of these populations.

Sometimes these effects are positive and sometimes they are utterly tragic, yet the research

suggests that social networking is a permanent fixture in twenty-first century culture. In these

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[17] Jane McGonigal, "Avant Game blog," http://blog.avantgame.com/ (accessed March 1, 2010).

[18] Ibid.

[19] Jane McGonigal, "Gaming Can Change the World," TED Talks site, March 2010 http://www.ted.com/talks/jane_mcgonigal_gaming_can_make_a_better_world.html (accessed March 30, 2010).

[20] Facebook, "Press Room," http://www.facebook.com/press/info.php?statistics (accessed April 27, 2010).

spaces, users create emotional portraits of themselves to share online through emoticons and other indicators, which relay emotional states to other users.

Emoticons—"emotion" "icons"—comprise the bulk of an ever-increasing index of emotional language that caters to truncated, digital communication. Without critical facial cues to guide the tone of a conversation, emoticons (☺) and other textual abbreviations (LOL—laughing out loud) emotionally punctuate everything from text messages to status updates. They are ubiquitous, primitive, often puerile, and increasingly unavoidable as we continue to communicate digitally. The index of emoticons and their use is increasing because our use of mobile phones and status updates to communicate is skyrocketing. The period between April and October 2009 witnessed an eight percent increase in Internet users claiming that they use Twitter or another service to share updates about themselves, or to see updates about others.[21] With 19% of Internet users communicating via short status updates, recognizing the influence and potential of emotive status updating lays the groundwork for a value-based understanding of networked emotions. Status updating provides a picture of the spectrum of digital emotions and how various technologies facilitate emotional communication within the network.

Recent research suggests that we could soon search for people and images based on emotional markers, such as happiness and anger, which points to the looming potential of status updating culture. Currently, through communal tagging systems, photographs and music can be indexed by common emotional responses to the material.[22] How soon before a catalogue of a

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[21] Amanda Lenhart and Susannah Fox, "Twitter and Status Updating," *Pew Internet and American Life Project*, February 12, 2009 http://www.pewinternet.org/Reports/2009/Twitter-and-status-updating.aspx (accessed March 30, 2010).

[22] Stefanie Schmidt and Wolfgang G. Stock, "Collective Indexing of Emotions in Images. A Study in Emotional Information Retrieval," *Journal of the American Society for Information Science and Technology,* 60, no. 5 (February 2009): 863-876.

user's status updates or "tweets" creates a searchable profile of you as an optimist? Or pessimist? One of the key features of embodied emotion is the almost instant changeability of emotional responses. Emotions work *fast*, so fast that sometimes they never reach our conscious mind. This fact complicates digital emotions and the future of emotion-based indexing. On the one hand, digital media refreshes constantly, whether you are viewing a constantly reloading news page, or receiving social media updates, this flux runs parallel to our emotional lives. On the other hand, digital media is also redundant. The constant refreshing gives the impression that information is always new, but this is not necessarily the case. This redundancy has the potential to distance emotional engagement. The simultaneous flux and redundancy of digital media is what often magnifies emotions in digital space—the landscape is constantly refreshing, which augments the content and our response to it.

Social networking and gaming build varying types of online communities, but none quite fit into the unique niche of online community art—what I like to call digital community artworks. Digital community artworks collect and aesthetically arrange instances of human emotion with the goal of building community through empathy. Emotion is implicit to these projects, and many of them, I believe, provide us a glimpse into the future of digital emotions and our changing culture. The final chapter of the dissertation focuses on digital community artworks and their distinctive relationship to digital emotions.

Within these collective spaces, individual participants provide brief textual and/or visual elements to the project, yet the artwork *as a whole* takes precedence over its parts. As the social context of participation gives way to the evolution of the artwork, emotions take on an interesting role, because the user, often assuming the dual role of spectator and participant, gains access to emotions and/or emotional experiences that appear to be context free. Unlike

mainstream social networking sites, digital community artworks impose a new context on the emotion by juxtaposing the emotion and/or emotional experience with those of other participants. The result is an unprecedented collection of human emotions that, through mass assembly, appear to present a singular, feeling subject (think back to the massive emotion collecting website *We Feel Fine*). The liminal space between the individual and the collective that many of these sites explore inspires a fresh perspective concerning the role of emotions in digital space. For example, Frank Warren's *PostSecret* project invites users to submit an illustrated postcard that reveals a secret. Compiled on the Sunday blog post, the secrets blur the line between the individual user and the collective voice of the artwork. With more and more willing participants, digital community artworks redefine our understanding of "community" art, and the depths of emoting in digital space because they exemplify the potential of all other new media. By combining emotional, aesthetic, and digital experience, they really define what "new media" continues to become—an immersive, highly affective *experience*. Digital emotions are, above all else, a unique experience limited to the singular new media relationship between computing, collective human experience, and aesthetics, and they typify the future of digital media and our emotional lives.

<p style="text-align:center">***</p>

Social networking sites spread revolutions, and in the not-too-distant future, low-energy game consoles that run through wireless phone networks will transform community gaming all over the world (a projected one billion user increase in gaming). Artists continue to explore digital technology and embodiment in their work, and teachers are embracing, for better or ill, truncated, electronic communication in their interactions with students. If these trends continue,

and I believe they will exponentially, a discussion of emotions within these new conversations, connections and communities is essential. Emotions are the glue that holds these relationships together, and as our once local relationships become global, our understanding of digital emotions will only evolve.

By applying embodiment theories of emotion to new media theory, I present a practical framework to understand the value of emotions in digital space. Digital emotions necessarily occur in the body, but they are also dependent on the digital media that incite them. They are autonomic, plastic, and represent the complex influence of new media on our culture. Understanding how this feedback process incorporates various media opens the door to understanding our twenty-first century selves.

Part One

Digital Emotions

Chapter 1

Emotions are Fickle Things

On June 6, 2010, Frank Warren, founder of *PostSecret*—an ongoing community art

project that web-publishes secrets mailed on postcards—published a secret that sparked a public

outcry. It read: "I have lived in San Francisco since I was young … I am illegal … I am not

wanted here. I don't belong anywhere. This summer I plan to jump off the Golden Gate."[23] Each

line of the secret was typed, cut out, and pasted to a colorful image of a globe, which gave the

visual impression of a cheerful postcard from abroad, not a haunting suicide note. Upon reading

the note, a concerned *PostSecret* fan immediately created and dedicated a Facebook page to the

author of the note, and within twenty-four hours twenty thousand people joined the digital

community pleading with the anonymous author to reconsider. The Facebook group inspired a

suicide prevention rally at the Golden Gate Bridge (which is, unfortunately, the most popular

place to commit suicide in the world), and inspired a similar event over seven thousand miles

away in Brisbane, Australia.[24] By the end of 2010, the Please Don't Jump Facebook page had

roughly 25,400 members, and the overflow fan page boasted over 68,000 fans.[25] Messages of

hope are continually posted asking those who are thinking of suicide to hold out hope for a better

day. It is impossible to know if the author of the postcard was ever exposed to the outpouring of

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[23] Frank Warren, *PostSecret*, www.postsecret.com (accessed March 1, 2010).

[24] Krisiti Oloffson, "PostSecret Suicide Confession Starts an Offline Movement," *TIME*, June 16, 2010, under "NewsFeed," http://newsfeed.time.com/2010/06/15/postsecret-suicide-confession-starts-an-offline-movement/ (accessed February 24, 2011).

[25] Facebook, "Please Don't Jump," www.facebook.com/pleasedonotjump (accessed February 24, 2011).

concern for his or her wellbeing, but based on the numerous Facebook posts, it is clear that others who are contemplating suicide have found solace in the spontaneous community built around his or her secret.

When Warren was interviewed about the unprompted chorus of supporters for the author, he said he couldn't think of anything like this before,[26] yet the world didn't have to wait long to see a response that dwarfed the Please Don't Jump reaction. The back-to-back suicides of seven gay youth in August and September of the same year inspired author Dan Savage to create the It Gets Better Project (IGBP) "to show young LGBT [lesbian, gay, bisexual, and transgender] people the levels of happiness, potential, and positivity their lives will reach – if they can just get through their teen years."[27] The It Gets Better Project's website hosts over 10,000 videos of people from all over the world—from Barack Obama to anonymous teens in China—assuring LGBT youths that adults are typically less cruel than children and the emotional hurricane of being a LGBT teen will eventually subside. And on Facebook (the barometer of all things popular) the IGBP fan page cites over 117, 000 fans[28] who post similar words of encouragement for those who feel hopeless and alone.

We can credit Frank Warren, Dan Savage, the incredible unifying power of Facebook, the up-to-the-minute meritocracy of blogs, and even the Internet itself for the success of these spontaneous communities, yet these were only conduits for a primed emotional community to come together and support two politically and culturally charged states of being: citizenship and sexual orientation. Primed emotional communities are difficult to define when discussing social

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[26] Oloffson, "PostSecret Suicide."

[27] Dan Savage, "It Gets Better Project," www.itgetsbetter.org (accessed February 24, 2011).

[28] Facebook, "It Gets Better Project," www.facebook.com/ itgetsbetterproject?ref=ts (accessed February 24, 2011).

media—the term "community" takes on an entirely new meaning when individuals amass

hundreds of "friends" on Facebook whom they have never met. And for every act of human

courage and empathy in these spaces, we find acts of cowardice and cruelty. For example, on

Christmas Day 2010, Simone Back, a forty-two year old British woman, posted a brief suicide

note on Facebook. It read: "Took all of my pills be dead soon bye bye everyone."[29] Minutes after

her stunning declaration, her Facebook "friends" began bickering over the status update. They

called her bluff, traded accusations of guilt and lack of empathy, and some even questioned a call

to the authorities. Ultimately, no one acted to save her life and Ms. Back died as the result of her

overdose. Author Malcolm Gladwell argues that spontaneous emotional communities and

spontaneous acts of citizenship, much like the Please Don't Jump fan page, are simply activism

built around weak ties. According to Gladwell, "social networks are effective at increasing

participation—by lessening the level of motivation that participation requires."[30] Such

participation is low-risk activism, or merely networking, not high-risk activism that puts bodies,

jobs, and ingrained hegemony on the line (Gladwell cites the Woolworth's lunch counter sit-in as

an example of high-risk activism). Ms. Back's death was the result of her overdose, but the

response, and her potential savior, was drowned out by the shallowness of the communication.

Gladwell laments a perceived death of high-risk activism as it is replaced by the "messy"

networks of Facebook and Twitter, and when we juxtapose the inspiring stories of Please Don't

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[29] "'Took all my pills, bye bye': Woman commits suicide on Facebook…and none of her 1,082 online friends help," *Mail Online*, January 6, 2011. http://www.dailymail.co.uk/news/ article-1344281/Facebook-suicide-None-Simone-Backs-1-082-online-friends-helped-her.html (accessed February 24, 2011).

[30] Malcolm Gladwell, "Small Change: Why the revolution will not be tweeted," *NewYorker.com*, October 4, 2010. http://www.newyorker.com/reporting/2010/10/4 /101004fa_fact_galdwell? printable=true (accessed February 24, 2011).

Jump and It Gets Better to the tragic story of Simone Back, the complexity of digitally networked empathy is apparent.

These networks are a lot like viruses: left to prey on a weakened host, they will ravage the body. Weakened and sensibly injected, they will help your body build immunity. Both lethal and life saving, viruses must be controlled, manipulated, dealt with responsibility, and, to really work, be totally ubiquitous. What Gladwell fails to recognize when touting the discipline and strategy needed to propel the Civil Rights Movement of the 1960s forward are the parallel success stories of the Facebook and Twitter generation. Gay rights and illegal immigration are the civil rights issues of the day, and social media are tools that enhance "high-risk" activism and emotional ties. The digital outpouring of emotional videos and Facebook posts supporting suicide prevention for LBGT youth creates community where none existed (being a lonely LBGT teen), not simply by eliminating an already tight knit, yet marginalized community. If the first responder to Ms. Back's suicide post expressed deep concern for the apparent overdose, who knows what the response would have been—one immediate and cruel comment diverted the conversation. If users are to take anything from Ms. Back's story it should be the increased social responsibility that digital space requires, which is continually reiterated on her Facebook memorial page. The responses to these dramatic events show us the *potential* reach of empathy and other emotions in digital media. Whether we lament or celebrate these changes to our paradigm scenarios is beside the point—the landscape has changed and continues to change quite rapidly. In the midst of this social and cultural transformation, we must ask: what is a twenty-first century emotion?

The question of emotional understanding dates far beyond William James' famous 1884 essay "What is an Emotion?," yet he sparked our modern debate on the role of emotion in our

daily lives. James argued that emotional experiences were the result (not the impetus) of a stimulus. As he explains, we are afraid of bears because we run from them, not the other way around.[31] The debate surrounding James' definition of emotion rages on amid a recent explosion of emotion research and theory over the past few decades.[32] At times it seems that the only thing emotion researchers can agree on is their fundamental disagreement. Yet, many advances in emotion research suggest to us a highly complex feedback system that dictates our lives more so than we ever could have imagined. In the midst of this avalanche of new research, it is critical to understand emotions in the context of our current, networked world. Most of us will never find ourselves face-to-face with a bear, or in a lab setting hooked up to countless wires responding to pictures of bears. What we do find is a perpetual relationship with digital culture. Instead of bears, we have digital postcards, Facebook pages, and primed emotional communities ready to answer prayers, pleas, or just acknowledge a user's current emotional status. What do emotions mean in this space? And what does that mean for us?

Frustrated (as all emotion researchers are) with the lack of consensus on the definition of "emotion," psychologist Carroll Izard set out to discover exactly where the commonalities and disagreements lie. Based on the responses of thirty-four scientists in the field of emotion research, Izard constructed this description of emotion:

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[31] William James, "What is an Emotion?," in *What is an Emotion? Classic Readings in Philosophical Psychology*, compiled by Cheshire Calhoun and Robert C. Solomon (New York: Oxford University Press, 1984), 127-141.

[32] Carroll E. Izard, "The Many Meanings/Aspects of Emotion: Definitions, Functions, Activation, and Regulation," in "On Defining Emotion," Special section, *Emotion Review* 2, no. 4 (October 2010), http://emr.sagepub.com.proxy.library.vcu.edu/content/2/4/363.full.pdf+html (accessed February 24, 2011).

> Emotion consists of neural circuits (that are at least partially dedicated), response systems, and feeling state/process that motivates and organizes cognition and action. Emotion also provides information to the person experiencing it, and may include antecedent cognitive appraisals and ongoing cognition including an interpretation of its feeling state, expressions or social-communicated signals, and may motivate approach or avoidant behavior, exercise control/regulation or responses, and be social or relational in nature.[33]

Jargon aside, this description should not come as a shock to anyone who has ever experienced emotion. Emotions rely on the brain and on some parts more than others, to respond to external stimuli in such a way that motivates a person to recognize the situation as being emotive and act accordingly; furthermore, one may or may not recognize this process based on the context of the situation. (Ever been cut off in rush hour traffic? Remember jerking the wheel? The fear of collision? The cold stare directed towards the hazardous driver? This series of events, based on the country of origin, the demeanor the driver, etc. would fall under Izard's description.) Izard is careful to note that such a pluralistic description is *not* a definition, and considering the fact that his 2010 survey updates a twenty year old investigation into the description of emotion,[34] we may not have a concrete definition, or attempt at a definition for some time. Emotions are fickle things.

Still, Izard's survey confirmed a few ongoing assumptions about the nature of emotions. Many of the scientists surveyed recognized neural circuits and neurobiological processes, phenomenal experience and feeling, and perceptual-cognitive processes as fundamental aspects of emotions.[35] According to Izard, "all of the scientists agreed that there are rapid and automatic connections among emotion and cognition…such processes may operate unconsciously….[and]

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[33] Izard, "The Many Meanings," 367.

[34] Ibid., 367.

[35] Ibid.

have implications for emotion activation, emotion regulation, and emotion utilization.[36] With a few key aspects of emotion generally agreed upon, Izard's description allows for various approaches to emotion to co-exist; yet the research is ongoing. As Maria Gendron notes in her response to Izard's survey, the description "only reveals what some scientists *believe* about emotion." Furthermore, "the fact that these assumptions have only recently entered into widely-accepted definitions of emotion suggests that we ignore history at our own peril."[37] Unfortunately, when discussing emotion, we are often relegated to what one believes. Even in the lab, human subjects are asked to rely on their phenomenological experiences in conjunction with measured bodily responses. Gendron does elucidate a rather frustrating point nonetheless: we know what we already thought we knew, but we still are not sure.

Further complicating any consensus on emotion, when editors at *Emotion Review* asked scholars to share their vision for future emotion research, they found that "investigations must situate emotions more clearly and unambiguously in the immediate social context, the broader cultural context, as well as the historical context, [which includes] real-life settings."[38] The overall tone of the special section on the future of emotion research seemed to eschew lab research for a more organic approach to understanding emotions in various contexts. Rosalind Picard, the pioneer of affective computing, believes that computers can help us understand emotions in genuine life situations as opposed to laboratory constructs. According to Picard,

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[36] Ibid., 368.

[37] Maria Gendron, "Defining Emotion: A Brief History," *Emotion Review* 2 no. 4, (October 2010): 371, http://emr.sagepub.com.proxy.library.vcu.edu/content/2/4/371.full.pdf+html (accessed February 24, 2011).

[38] Lisa Feldman Barrett, "Introduction to the Special Section," special section, *Emotion Review* 2 no. 3 (July 2010): 203, http://emr.sagepub.com.proxy.library.vcu.edu/content/2/2/203.sfull.pdf+html (accessed February 24, 2011).

"research can be done for the people by the people,"[39] by tentatively replacing the lab technician with computers. Instead of scientists creating virtual emotional situations that only imitate a mildly recognizable context, such as driving in traffic, Picard suggests outfitting actual rush hour drivers with devices that gauge their emotional response to trying traffic situations. By shifting the focus out of the lab and into the real world, we not only allow human research subjects access to their own generated data, but we get better data. Reminding us why emotions are so critical to research in the first place, Picard states that "emotions are about what's real: they change with what truly matters to you, which can differ from what experimenters think matters."[40] When researchers call for more empirical evidence to forward our understanding of emotions, the real world seems to be the most logical and compelling way forward. Approaching emotions from a digital perspective—questioning how emotional interactions differ in online environments—therefore makes sense in the context of future emotion research. Ignoring how communication has changed, how our acceptance of data in the context of online environments has changed, and how we as digital users have changed, we can begin to understand emotions in a very hands-on, person-to-person fashion.

Picard's suggestion to bring emotion research to the people to benefit the people (not simply to enrich a small group of emotion researcher's portfolios) encompasses many other futures for emotions. Accepting literature and the arts into the fray of emotional research will

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[39] Rosalind W. Picard, "Emotion Research by the People, for the People," special section, *Emotion Review* 2 no. 3 (July 2010): 251, http://emr.sagepub.com.proxy.library.vcu.edu/ content/2/3/250.full.pdf+html (accessed February 24, 2011).

[40] Ibid.

greatly expand the reach of how and why we emote. Sometimes dismissed as "neurobabble,"[41] neuroscience meets the arts books have entered the mainstream—whether discussing Jonah Lehrer's acclaimed *Proust Was a Neuroscientist* or Lisa Zunshine's *Why We Read Fiction: Theory of Mind and the Novel*, the recognition that we have something to learn from fictions is gaining momentum. Literature taps into our empathetic emotions and is therefore somewhat limited, yet, as Patrick Colm Hogan argues in *Emotion Review*, literature produces a simulated experience that could be valuable missing piece of the emotion puzzle.[42] Hogan's claim seems almost pedestrian given our own memories of emotional experiences prompted by literature or other forms of art. General experiences of crying during films, throwing books across the room (this rather violent response to depressing stories runs in my family), or being in awe of a piece of art sweeps over us all throughout our lives. When reviewing the recent proliferation of emotion research, the combination of the arts and emotions as scientific points of study are often written off as a humanities' huckster attempt to broaden their field.[43] Dismissing the global tradition of the arts omits a history of emotion and a ripe field of study—it is almost as irresponsible as ignoring previous empirical research when discussing emotions because we consequently ignore emotional expression by those who have a remarkable talent for conveying what it means to be human.

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[41] Tyler Burge, "A Real Science of the Mind," *The New York Times*, December 19, 2010, under "Opinionator," http://opinionator.blogs.nytimes.com/2010/12/19/a-real-science-of-mind/ (accessed February 24, 2011).

[42] Patrick Colm Hogan, "Fictions and Feelings: On the Place of Literature in the Study of Emotion, *Emotion Review* 2 no. 2 (April 2010): 187, http://emr.sagepub.com.proxy.library. vcu.edu/content/2/2/184.full.pdf+html (accessed February 24, 2011).

[43] The Editors, "Can 'Neuro Lit Crit' Save the Humanities?" *The New York Times*, April 5, 2010, under "Room for Debate," http://roomfordebate.blogs.nytimes.com/2010/04/05/can-neuro-lit-crit-save-the-humanities/ (accessed February 24, 2011).

In the twenty-first century we have come to experience, in a sense, a living literature through ubiquitous networked communication. Studying digital emotional communities and communication combines what Picard, Hogan and others believe to be the necessary future of emotion research. No one is arguing, as far as I can tell, that empirical science step aside to allow the digital "pro-ams" to take over—lab studies and hard science set the foundation for all other inquiries into emotions—yet, we need to incorporate real people, moving fictions, and ordinary technologies into the mix to supply a complete picture of our emotional lives. Hogan notes that emotional experience is often representational anyway, much like the encoded and represented works of literature that he studies as a literary scholar. What could more encoded and represented than our constantly updated digital selves? Through literature, online communities, and pieces of art, emotion creates cultures through language and representation. These cultures influence our emotional repertoire and in turn allow us to empathize and contribute more complexity to our naturally kaleidoscopic lives. Studying emotions in context allows us to exercise the empathy needed to understand emotion in the first place. Viewing the hundreds of videos on www.itgetsbetter.com prompts an emotional experience—not because all users are gay teenagers with thoughts of suicide—but because feelings of loneliness are common, because hope is common, and the passion with which the contributors believe they can inspire change is contagious. The videos are emotional and provoke emotion in the viewer. They are also part of a future of emotion that changes the meaning of cultural and social context with their spontaneity, ubiquity, and collective force. When I discuss "digital emotions" I am recognizing the new power of this emotional triple threat and its ability to change the way we historically emote—for better or worse.

A concrete definition of emotion is complicated by each new publication and study, yet advances can be (and often are) made when, as Izard suggests, researchers and scholars clearly define emotion in the context of their research to help alleviate an already cumbersome description. Amid the chaos of recent emotion research and theory, not to mention the long history of writings on emotion—from Aristotle to Spinoza, Hume to Kant, James to Schachter and Singer—the focus of research that most speaks to our digitally hybrid world are embodiment theories. Embodiment theories not a clearly defined set of theories, but they generally agree that what we know about emotions is dependent on our ability to simulate and/or (re)experience those emotions.[44] This group of theories loosely overlaps with more traditional categorical and cognitive theories, but where as cognitivist theories view emotions primarily as judgments and/or appraisals about the world that are rather consistent over time and space, embodiment theories typically stress the importance of culture on emotional repertoires and subsequent paradigm scenarios. If the future of emotion research depends on a more intimate interaction between scientific studies and real life, then embodiment theories lay the groundwork for a closer understanding of how emotions shape our lives. They suggest that our emotional lives are largely dependent on our social and cultural context and open the door for the possibility that dramatic changes in our environment can influence our emotional lives.

This is not to say that cognitivist or appraisal theories lack merit in a digital context. Many of these theories overlap and influence each other in profound and important ways. Published posthumously in 1677, Baruch Spinoza's *Ethics* experienced a bit of a rebirth in 2003 with the publication of neuroscientist Antonio Damasio's *Looking for Spinoza: Joy, Sorrow and*

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[44] Niedenthal and Maringer, "Embodied Emotion Considered," 122.

the Feeling Brain. Damasio's much-cited study updates the late philosopher's writings on emotion with modern evidence linking the mind and body interactions that Spinoza describes. Spinoza opposed the prevailing dualistic view of the mind and body (championed by René Descartes) and instead argued that emotion, or "passivity of the soul," is a modification of the body. He defines emotion as a "confused idea, whereby the mind affirms concerning its body, or any part thereof, a force for existence (*existendi vis*) greater or less than before, and by the presence of which the mind is determined to think of one thing rather than another."[45] This definition of emotion still views emotion as a misguided thought (much like the Stoics) and believed that we should seek to overcome emotions with reason (or reason-induced emotion).[46] Spinoza's writings on emotions in *Ethics* failed to inspire an entirely new outlook on emotions in the seventeenth century. Three hundred years later, his forward thinking reflects aspects of our modern understanding of emotion as inextricably linked to the body and working in both passive and active fashions. As Izard suggests in his description of emotion, the belief that emotions are inextricably linked to the body is almost universal. The *extent* to which the body proper is responsible for emotions drives current arguments.

Spinoza first linked emotions and body, and William James (later with Carl Lange) argued that stimuli induce a physical reaction and the reaction causes emotion. Walter Cannon and Philip Bard challenged the notion of causality, in the early 1920s when they noted that physiological changes are caused by emotions, not the other way around (as James and Lange suggest). In the Cannon/Bard view, someone can only react to a stimulus if they are

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[45] Benedict De Spinoza, *Ethics* (New York: Penguin Books, 2008), 85.

[46] Robert Solomon, Introduction to Benedict Spinoza, in *What is an Emotion? Classic Readings in Philosophical Psychology*. Compiled by Cheshire Calhoun and Robert C. Solomon (New York: Oxford University Press, 1984), 71.

simultaneously experiencing the corresponding emotion. Where James and Lange proposed a

clear stimulus → physical reaction → emotion trilogy, Cannon and Bard believed that the

arousal and emotional response happened simultaneously after the perception of the stimulus. By

the 1960s, the Schachter and Singer model attempted to update the James/Lange theory, which

combined the Jamesian physiological component of arousal and a cognitive component

discussing how emotions are labeled. This theory was aptly labeled the "two component" or

"two factor" theory of emotions because it recognized the physical arousal and the understanding

of that arousal. Stanley Schachter and Jerome Singer conducted an experiment using epinephrine

to (as they argue) prove that the mind "cognitively attributes" feelings of arousal with patterns in

the environment. Schachter and Singer conclude that

> given a state of physiological arousal for which an individual has no explanation,
> he will label this state in terms of the cognitions available to him…it must follow
> that given a state of physiological arousal for which the individual has a
> completely satisfactory explanation, he will not label this state in terms of the
> alternative cognitions available…Finally, it has been suggested that given
> constant cognitive circumstances, an individual will react emotionally only to the
> extent that he experiences a state of physiological arousal.[47]

These conclusions are based on a simple experiment where 182 college students were given a

shot of either epinephrine (disguised as an experimental vitamin) or a placebo. The subjects were

then told that the shot would produce the effects of adrenaline, a dull headache or nothing at all.

The participants were then led into a room where a stooge attempted to sway the group into

feelings of anger or happiness. As Schachter and Singer explain, those subjects who expected to

feel side effects from the shot (the "epinephrine informed" group) were not as responsive (or

swayed) by the stooge—they anticipated an increasing heart rate, a flushed face and shaky hands.

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[47] Stanley Schachter and Jerome E. Singer, "*From* Cognitive, Social, and Physiological
Determinants of Emotional State," in *What is an Emotion? Classic Readings in Philosophical
Psychology*, compiled by Cheshire Calhoun and Robert C. Solomon (New York: Oxford
University Press, 1984), 182.

The subjects who were uninformed felt the angriest or happiest because, according to Schachter and Singer, they did not have any explanation for their physical symptoms, so they depended on cognitions available to them—anger, happiness, etc.—as dictated by the context of their situation. (The placebo group was less angry or happy than the uninformed group, but more so than the informed.) These foundational theories of emotions each incorporate the basic ingredients for emotions that Izard found in his 2010 survey. The order of the stimulus, perception, response and emotion continues to be contested.

Still on the periphery of embodiment theories, James Laird's self-perception theory refashions the more traditional James-Lang theory and downplays the role of cognition that Schachter and Singer appear to prove when describing feelings. Through clinical testing, Laird argues that first we react and our perception of the reaction as it occurs is the feeling. He believes that feelings are different things from behaviors and bodily responses. They are information, or knowledge about those behaviors and responses, but not the cognitive responses. Basically, the self-perception theory arose from a series of tests that attempt to show that when behaviors related to feelings are manipulated, then those feelings occur. For example, Laird argues, "The feeling of happiness is not a direct consequence of the smile, but rather is a product of the relationship between the smile and the context in which it occurs."[48] Feelings, then, are conscious experiences and "are not the forces that produce actions; instead, they are the feedback information about the effects of those actions, information that permits the control an shaping of action."[49] Context is critical for the Self-Perception Theory because feelings are not automatic, but are based on behaviors in various situations—they are the information about those behaviors

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[48] James D. Laird, *Feelings: The Perception of Self*. (Oxford: Oxford University Press, 2007), 13.

[49] Ibid., 18.

and this information is largely perceptual. Even though feelings do not cause behavior, they have

a central role, according to Laird, because feelings can in turn affect subsequent behaviors. This

creates a feedback loop that Laird links to Damasio's well-known "as-if-body loop," which

describes an internal brain simulation that quickly and falsely constructs a bodily state, but which

the brain cannot identify as a false bodily state. (The "as-if" loop would account for twinges of

pain when you witness an accident—your body reacts "as-if" it were experiencing the action

and/or behavior.) "As-if" feedback is important to embodiment theories because it explains what

the body does and what we perceive the body doing—sometimes two very different things.

Explanations of simulation and perception do not necessarily dominate current debates on

emotion and feeling. Noted researchers such as Robert Solomon, Martha Nussbaum, and Roland

de Sousa all construct theories around a more cognitive understanding of emotions. Inspired by

the same foundation theories of Spinoza, William James, Carl Lange, Schachter and Singer, and

others, cognitive theories often overlap with embodiment theories, but are often more restrictive

when discussing the neurological and phenomenal components of emotions. Cognitive theories

typically argue that emotions are judgments about the world, which are subjective and therefore

political, social, and highly dependent upon context. The most prominent champion for a

cognitive view of emotions is Robert Solomon, who notably detests the term "affect," which

implies short-term neurological arousals, because it leads down a road of fuzzy reductionism

that, for Solomon, cheapens the cognitive sweat of our emotions grappling with the world around

us in a very real way:

> A cognitive theory of emotion thus embodies what is often referred to as affect
> and feeling without rendering these unanalyzable. There are affects/feelings
> critical to emotions but they are not distinct from cognition or judgment and they
> are not mere read outs of processes going on in the body. They are judgments of
> the body and that is the missing element in the cognitive view of emotions. They

are profound manifestations of our many ways of emotionally engaging with the world.[50]

Judgments are geared toward perception, according to Solomon, but they are not dependent on any object of perception. The benefit of viewing emotions as a complex of judgments about the world—or even viewing them as our active engagement with the world—renders them researchable and cuts through a lot of theory (notably neurophenomenology) to focus on the *consequence* of emotion in our social and cultural lives.

Also working within a cognitive paradigm is Martha Nussbaum, who champions the cognitive evaluative view of emotions from a humanist's perspective. Where Solomon argues that emotions are judgments about the world that can exist without any object perception, Nussbaum believes that emotions always involve the thought of an object combined with that object's importance for the subject. Emotions, according to Nussbaum, are eudiamonistic (meaning they are concerned with our own flourishing) and therefore can wield control over the way we behave *or wish to behave.* The cognitive evaluative view sees emotions as value-laden judgments about the world, and if emotions are concerned with one's own flourishing, then emotions can be modified to change the way we evaluate objects.[51] It is no wonder that Nussbaum advocates for the importance of literature and the arts because the very foundation of her theory lies in our ability to cultivate our best emotional lives through empathy, and what better to incite empathy than art? According to Nussbaum, our ability to relate to each other

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[50] Robert Solomon, "Emotions, Thoughts, and Feelings: Emotions as Engagements in the World," in *Thinking about Feeling: Contemporary Philosophers on Emotion*, ed. Robert C. Solomon (Oxford: Oxford University Press, 2004), 88.

[51] Martha Nussbaum, *Upheavals of Thought: The Intelligence of Emotions* (Cambridge: Cambridge University Press, 2001), 232.

through the arts is central to public life and therefore to our personal flourishing as well.[52] (This argument appears again and again when emotion research is combined with the humanities.) It is a relatively straightforward feedback loop: we glean emotional experiences from aesthetics, attribute value to those experiences, become enlightened by them, and go on to seek similar experiences or even create objects to provoke similar experiences. On the surface, the cognitive evaluative view of emotions seems to account for the neurological underpinning of this entire feedback process—Nussbaum even cites Damasio and Joseph LeDoux—yet, her description of emotion is more akin to what Damasio describes as feelings, which are decidedly (according to Damasio) not cognitive.[53] While the intricacies of Nussbaum's theory are perhaps at odds with emerging science, her intuitive desire to merge the arts and our emotional lives is worth noting— especially in the context of aesthetic experiences in digital spaces.

For Solomon, Nussbaum and others (such as Jerome Neu, Justin Oakley, and William Lyons), much criticism comes from their use of the term judgment or appraisal. Even though Solomon notes that some judgments are unconscious, the criticisms override the explanation. Ronald de Sousa attempts to bridge the gap between a hard line cognitive view and more phenomenal one by replacing the judgment model with a perception model. Perceptions can be conscious or unconscious and provide a complex experience in the world. These ongoing experiences comprise what de Sousa calls "paradigm scenarios," which are narratives that arise out of complex emotional experiences.[54] He explains,

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[52] Ibid., 243.

[53] Antonio Damasio, *Looking for Spinoza: Joy, Sorrow and the Feeling Brain* (London: Harcourt, 2003), 28.
[54] Ronald de Sousa, "Emotions: What I Know," 65.

Emotions derive behavior not so much by motivating, but by orienting our attention toward this or that among the plethora of considerations that might think relevant at a particular juncture. These scenarios have narrative structures where emotions play a determining role. Elaborated by art and literature, early experiences and they serve to define and differentiate each person's idiosyncratic repertoire of emotions.[55]

These scenarios construct a "parallel representational system for understanding the world" based on our memories of emotional experiences (whether we recognize them or not).[56] Here again, emotions are highly subjective, but now based on a complex narrative of individualized experiences that, according to de Sousa, are so diverse that reducing them to a single thing may be impossible. The theory of paradigm scenarios appeals to a wide range of emotion research because it accounts for the inherent miscellany in our everyday lives. De Sousa also accounts for the "biological facts" of our emotional responses, but notes that these are only relevant in conjunction with individual biography and social norms.[57] Paradigm scenarios are worth looking at for several reasons: they attribute emotions to either conscious or unconscious perceptions about the world; they account for the influence of culture on our emotional lives; they highlight our experiences (memories) in the world and the role of those experiences on current and future emotional experiences; and they present the subject with an emotional repertoire that encompasses common culture and individual experience that may conflict with that culture. Each of these aspects—culture, memories, narratives, and ongoing subjective experiences—compliment an already inclusive work of embodiment theories because they account for the culturally traceable aspect of (re)experience when dealing with emotions, not just the short-term neurological simulation.

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[55] Ibid., 65.

[56] Ibid., 68.

[57] Ibid., 75.

While some may try to avoid sticky explanations of emotions to construct a tidy definition (emotions are judgments! emotions are perceptions! emotions are synapses firing!), I see the effort as utterly useless and perhaps reckless. It is like saying that the Constitution of the United States can answer every complicated situation that arises in a changing world while ignoring the countless rulings and precedents that interpret the original document based on social and cultural context. Just as Izard was careful not to *define* emotion, but *describe* it based on relative consensus in the field, I find that a more inclusive, malleable description allows for the biology and the experience to coexist while remaining open to new discoveries. This path is messy, no doubt, but emotions are fickle things. We have come a long way since Spinoza merged the mind and body, since James privileged the body over the mind when darting from a bear, and since Schachter and Singer injected kids with adrenaline and then tried to make them angry. We know that many of these experiments and theories were missing critical components—Spinoza never had the privilege of looking at an fMRI image of a brain emoting to see that emotions are not necessarily misinformation, James did not witness a series of experiments that show how thinking of an emotion can create a bodily response, and Schachter and Singer's experiment overly focuses on cognitive factors. Yet all of these experiments and theories contribute to a growing understanding of emotions in our world. They each speak to an aspect of embodiment theories that will help construct the framework for emotions in digital space.

Theories beget studies and studies beget theories. It is a feedback system much like the very emotional process that researchers attempt to explain. Embodiment theories, while diverse, all focus on the importance of (re)experience, or simulation when discussing what subjects

"know" about emotion. Paula M. Niedenthal and Marcus Maringer cite two beneficial aspects to this knowledge: (1) Instead of reducing emotions to generic categories (such as anger, happiness, etc.), embodiment theories remove the distinction between the conceptual and the perceptual; and (2) they account for individual and cultural differences in emotional experience.[58] Looking back at de Sousa's description of paradigm scenarios, we can see how the second aspect is critical to understanding emotions in the round. Removing the distinction between the conceptual and perceptual allows for emotions and emotional knowledge to be understood together—think of Damasio's "as-if" loop. It is not just that bodily changes constitute an emotion, but "peripheral input works with the brain's modality-specific systems to very rapidly create and recreate bodily states of emotions."[59] Culture and simulation: a multi-faceted approach to emotions that compliments our evolution towards the digital.

In an effort not to get bogged down with scientific jargon, or an overly comprehensive review of literature, the following discussion of embodied emotions is broken down into three overlapping areas: simulation and/or (re)experience, culture, and subjectivity. Each aspect is inextricably linked to the other, but various points of research stress one aspect over the others and so the distinction aids in our overall understanding of how embodied emotions work, what we still have left to figure out, and how they open the door for digital emotions.

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[58] Niedenthal and Maringer, "Embodied Emotions Considered," 122.

[59] Ibid., 123.

(Re)experience and/or Simulation

With the rise of cybernetics in the 1950s and the subsequent explosion of science fiction

narratives, the concept of simulation evokes radical, futuristic, and even dangerous feelings.

Exiled "replicants" doing our bidding (or not) in Ridley Scott's 1982 classic *Blade Runner*, (an

adaptation of Philip K. Dick's 1968 novel *Do Androids Dream of Electric Sheep?*), or

genetically mutated humans, "pre-cogs," re-experiencing imminent murders in *Minority Report,*

create a dystopic future where humans are imprisoned by simulation gone awry. Simulation, in a

pop culture context, typically means a world where we are no longer in control—where the

"real" is beyond the pale and only can be found through trust in our "natural" capabilities. The

inability of "replicants" to emote in *Blade Runner* taps into these fears and comforts: the

"replicants" are phenotypically human, but they are kept from developing emotions because they

are given short life spans.[60] This absence of emotion makes them "robotic" and decidedly not

human. (We tend to love emotions when they separate us from robots, but demonize them when

they separate us from each other.) In another Philip K. Dick adaptation, the film *Minority Report*

centers around three mutant humans who can see the future, specifically murders, and through

these visions they (re)experience the entire, gory, emotional scene. Here, hypersimulation is a

blessing and a curse—the "pre-cogs" (short for pre-cognitive) alert authorities (the pre-crime

unit), to would-be murders, but the "pre-cogs" are virtual prisoners of future (re)experience. Of

course, the list goes on and on…science fiction loves clones, mind readers and matrixes. Not to

mention a exhaustive philosophical history of simulation—from Plato's Cave to Jean

Baudrillard's seminal *Simulacra and Simulation*—we seem to be obsessed with the idea of

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[60] Spoiler: they evolve the ability to emote. Sorry humans!

copies, mimesis, and/or (re)experience, and perhaps naturally so. Recent neurological studies

suggest that our ability to simulate other's actions constructs the core of our understanding of

self and other. (In the rare intersection of empirical science and philosophy, the

phenomenologists scored!)

Edmund Husserl, the founder of phenomenology, believed that the science of the mind

should be established on a scientific foundation even though these "sciences" were, according to

him, not physical.[61] Husserl championed the concept of intersubjectivity, which functions

through the expression of human empathy. He believed that the intersubjective experience

allowed the subject to emerge and recognize others as subjects in a spacio-temporal world. In

short, without empathy we would be less than replicants; we would be clueless to our distinction

from others and our surroundings. Max Scheler, a contemporary of Husserl's, argues that some

emotions are reasons, with "value feelings" being intentional and "feeling states" being

unintentional. Published in 1913, Scheler's *Formalism in Ethics and Non-Formal Ethics of

Values*, makes a phenomenological connection between emotion, perception, other and self that

survives clinical trials almost one hundred years later. Phenomenologists—Husserl, Scheler,

Martin Heidegger, Maurice Merleau-Ponty and others—find their theories explicating neuro-

simulation. Marco Iacoboni dubs this unlikely intersection neurophysiologic phenomenology,

claming that Heidegger and Merleau-Ponty had it right when they linked action and perception,

except that we do not have to pretend that we feel the same—"being in another's shoes" as

Husserl would argue—we *are* feeling the same.[62] Iacoboni studies mirror neurons, a group of

cells with sensorimotor properties first discovered in the macaque monkey, which are shown to

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[61] David Woodruff Smith, *Husserl*, (New York: Routledge, 2007).

[62] Iacoboni, *Mirroring People,* 17.

fire when monkeys observe a grasping action as though they are grasping the object.[63] From the humble macaque monkey comes a elaborate theory of (re)experience that attributes everything from speech perception, music perception, empathy, altruism, emotion, imitation, autism, and others to the mirror neuron system.[64] Supporting the foundation of humanity on its humble shoulders (or in its synapses), simulation theory via the mirror neuron system is criticized for being over celebrated and overly attributed to social engineering.[65] As with any recent discovery, hopes are high despite evolving evidence. New discoveries will continue to clarify the role of the mirror neuron network, and the results could teach us a lot about ourselves and the way we socialize.

Mirror neurons are a popular cornerstone of embodied cognition, or embodiment theories, which recognize the brain as an extension of the body where perceptual and motor experiences are the product of our movement through the environment.[66] Mirror neurons aid this perception by (re)experiencing actions of others—we perceive how others act, therefore feel, by creating an experience of those actions in our own bodies. Iacoboni argues that mirror neurons are not deliberate enough to go through the work of creating a conscious "I'm in your shoes" experience, but instead create that experience in an effortless fashion.[67] Mirror neurons are

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[63] Giacomo Rizzolatti and Laila Craighero, "The Mirror Neuron System," *Annual Review of Neuroscience* 27 (March 2004), Rizzolatti.annurev.neuro.2004.pdf (accessed February 24, 2011).

[64] Gregory Hickok, "Eight Problems for the Mirror Neuron Theory of Action Understanding in Monkeys and Humans," *Journal of Cognitive Neuroscience* 21, no. 7 (July 2009): 1229-1243, http://www.mitpressjournals.org.proxy.library.vcu.edu/doi/full/10.1162/jocn.2009.21189 (accessed February 25, 2011).

[65] Ibid.

[66] Iacoboni, *Mirroring People*, 92.

[67] Ibid., 120.

concerned with the goal of an action, the intention, more so than the actual action itself. This is

where the phenomenological tradition comes into play. Because mirror neurons act on intention

they are intimately in tune with space, time, and emotional cues. Mirror neurons, sometimes

dubbed "empathy neurons,"[68] allow us to understand other's mental states by experiencing their

intentions, which deepens the intersubjective experience.[69] Iacoboni does not go as far as Husserl

in describing this experience as "coupling," where subjects become "one," but he does argue that

this (re)experience is more than mere imitation. For example, recent science suggests that

monkey's mirror neurons fire when they watch another monkey reach for an object. According

to the monkey's brain (the F5 region), they are reaching for the object, and not just any object,

but *that* object. The firings are specific to the size and shape of the object being observed.

Studies also suggest that people watching a sport, for example tennis, play along with the

athletes. Even tennis playing muscles in their body fire unbeknownst to them as they observe

(and simulate) a powerful serve. Amputees with "phantom limb" pain present an interesting case

for mirror neurons because they experience pain or discomfort in a limb that no longer exists.

Researchers found that hand amputees observing a hand being touched evoked "vivid, precisely

localized sensations in their own phantom hands."[70] Where a non-amputee would recognize the

difference between the simulation and the actual touch (note: the conscious mind recognizes the

difference, not the mirror neurons—they fire whether watching or acting), the amputee

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[68] VS Ramachandram, "VS Ramachandran: The neurons that shaped civilization," TED website. http://www.mitpressjournals.org.proxy.library.vcu.edu/doi/full/10.1162/jocn.2009 .21189 (accessed February 25, 2011).

[69] Iacoboni, *Mirroring People*, 78.

[70] VS. Ramachandran and D. Brang, "Sensations evoked in patients with amputation from watching an individual whose corresponding intact limb is being touched," *Archive of Neurology* 66, no. 10, case report, (October 2009). 1281-1284.

recognizes the simulation as actual touching. Furthermore, other studies with amputees suggest that when observing their non-amputated limb in a mirror (projected as though it is replacing the amputated limb), subjects claim that phantom pain is erased or weakened with massage, or merely viewing the simulation of the limb as thought it existed.[71] Interestingly, these studies suggest that one does not confuse empathy with actual experience, unless they are unable to, in a sense, complete the simulation. While this research is in its infancy, the repercussions are quite fascinating. The less body we have, the more our brains confuse other's actions and feelings as our own.

Studies also show that the human mirror neuron system not only processes action stimuli, like playing tennis, but specifically action stimuli with social relevance. The mirror neuron system seems to be sensitive to the presence of social cues in a stimulus and even more sensitive when those social cues are interactive. If the viewer identifies with the stimuli, even more social interaction is perceived.[72] Take the tennis example, in the context of this study, a viewers mirror neurons would fire watching Rafael Nadal bounce a tennis ball on his racquet along side Roger Federer bouncing a ball on his racquet, her mirror neurons would fire more if she observed Nedal and Federer playing tennis with each other, but they would respond the most to Nedal and Federer playing tennis and then serving the ball to *her* (or at least towards her). If a subject perceives herself as being part of the game, then her brain "plays" along. Furthermore, other studies show that individuals are more inclined to simulate actions from people with whom we

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[71] Vilayanur S. Ramachandran and Diane Rogers-Ramachandran, "It's All Done with Mirrors: Reflections on the familiar and yet deeply enigmatic nature of the looking glass," *Scientific American Mind* 18, no. 4 (August/September 2007): 16-18.

[72] Lindsay M. Oberman, Jaime A. Pineda, and Vilayanur S. Ramachandran, "The human mirror neuron system: A link between action observation and social skills," *Social, Cognitive and Affective Neuroscience*, 2, no. 1 (March 2007): 62-66, http://scan.oxfordjournals.org.proxy s.library.vcu.edu/content/2/1/62.full (accessed February 25, 2011).

have a close relationship.[73] So, if an individual is lucky enough to know Rafeal Nedal and Roger Federer, the experience would be that much more intense. Mirror neurons aside, studies also show that humans have higher levels of "social sensitivity," meaning they can perceive and appropriately react to others emotions, which can increase brainpower in small groups. This increased collective intelligence exceeds the separate intelligences of each member of the group. The whole, it seems, is truly greater than the sum of its parts.[74] These and other studies show that the mirror neuron network in humans is both action and social oriented. The exciting (or reckless) leap comes when mirror neurons are discussed as being the foundation for mind, empathy, and language.[75]

Similar to the mirror neuron system, Antonio Damasio's theory of an "as-if body loop" attempts to explain our ability to simulate or (re)experience the actions and feelings of others. According to Damasio, an as-if body loop is an internal brain simulation that consists of rapid modification of ongoing body maps when certain brain regions directly signal the body-sensing brain regions.[76] This loop works extremely fast and brings thought and affective feeling close together in time—like a "gut" feeling. Again, this is not a "being in your shoes" type process. Damasio explains:

> The result of direct simulation of body states in body-sensing regions is no different from that of filtering of signals hailing from the body. In both cases the brain momentarily creates a set of body maps that does not correspond exactly to

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[73] Elaine Hatfield, John T. Cacioppo, Richard L. Rapson, *Emotional Contagion* (Cambridge: Cambridge University Press, 2004).

[74] Anita Williams Wooley, et. al., "Evidence for a Collective Intelligence Factor in the Performance of Human Groups," *Science* 330, no. 6004 (October 2010): 686-688, http://www.sciencemag.org/content/330/6004/686.full (accessed February 26, 2011).

[75] Oberman, et al., "The human mirror neuron system," 62.

[76] Damasio, *Looking for Spinoza*, 115.

the current reality of the body. The brain uses the incoming body signals like clay to sculpt a particular body state in the regions where such a pattern can be constructed…what one feels then is based on that 'false' construction, not the 'real' body state.[77]

Emotional stimulus activates brain systems involved in emotion, feeling and decision-making by bypassing the body proper and responding "as-if" the body is changing.[78] This speed (or trickery) is beneficial to us because we can respond to anticipated stimulus. Studies have also shown that the as-if body loop could assist in vivid emotional imagery. In highly vivid imagery experiences, the central nervous system strongly simulates the emotional experience and body information plays a lesser role. Researchers hypothesize that this is because the "as-if" loop works exclusively with the vivid emotional experience and shuts down signals from "outside."[79] Consequently, in low vivid imagery experiences the reverse occurs—the central nervous system does not simulate very strongly and more information is gleaned from the body proper. Practically speaking, our response to high impact visual imagery verse low impact may influence our understanding of new media, such as 3D entertainment, and how we physically respond to powerful images.

Damasio does not cite the mirror neuron system when discussing this "as-if" body loop, but many of the same brain regions are identified. In this construct, the mind is a process—the processing of the body's response to thoughts and actions. Understanding how the body uses simulation, and when simulation is advantageous for our emotional experiences and responses, raises interesting questions when discussing our interactions in digital space. Does digital

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[77] Ibid., 116.

[78] Eduardo Paulo Morawski Vianna, et al., "Does vivid emotional imagery depend on body signals?," *International Journal of Psychophysiology* 72, (September 2008): 46-50, www.elsevier.com/locate/ijpsycho (accessed February 26, 2011).

[79] Ibid., 49.

simulation beget corporeal simulation? How important is the body proper to our emotional experiences? And can we really demonize simulation in our digital worlds if simulation seems to be a keystone of our emotional intelligence?

Culture

Both Damasio's as-if body loop and studies surrounding the mirror neuron system offer promising insight to simulation and/or (re)experience. Vilayanur S. Ramachandran, one of three neuroscientists that conducted the study on mirror neurons and social relevance cited in the previous section, presented a persuasive argument for the relevancy of mirror neurons at the TED Conference in 2009. He suggested that understanding the mirror neuron system in humans could breakdown the barrier between the humanities and the sciences, much like mirror neurons break down the barriers between individuals. Alluding to Eastern philosophy and the already cited phenomenological accounts, Ramachandran believes that these "empathy," or "Gandhi," neurons hold the key to civilization because they allow humans to understand each other and each other's intentions. Only through this understanding can we begin to build social ties, larger social groups and entire civilizations. Our instantaneous ability to experience perceived action or touch brings us closer together. Empathy creates culture.

Embodiment theories account for cultural differences because they recognize simulations or (re)experiences as being dependent upon context and selective attention.[80] Paula Niedenthal and Marcus Maringer explore the benefit of this consideration in this example:

> …Imagine that a child observes a hawk swoop down and snatch an innocent baby chick out of a farmyard—unquestionably to its doom. For the child, witnessing the hawk attack involves, among other things, specific encoding in vision,

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[80] Neidenthal and Maringer, "Embodied Emotions Considered," 122.

audition, as well as feeling consciously a highly activated state of emotion. Populations of neurons in the modality-specific sensory, motor and affective systems are richly interconnected and their activation supports this multimodal experience for the child. Together, the neural bodily, and subjective experience might be recognized and labeled by individuals in the child's cultural (or subcultural) environment as "fear." …In another cultural context…the hawk might be seen as a powerful and courageous bird, whose act represents something positive about the cycle of life or the power of nature. The experience might in this context be labeled by child's entourage as "awe."…Over very little time, children who have had similar experiences that produce similar bodily states will remember this event in a different manner and may represent it as modal experience for different reasons.[81]

The memory of the hawk for each child involves a complex interconnection of neuron populations that is activated during the initial experience and will reactivate when stimulated— perhaps by a vivid sound or vision that will recall the memory. Parallel simulations of either fear or awe could also occur, even though they were not part of the original hawk and bird experience. Situations like this are played out countless times throughout our lives and the ways in which we respond to them has a lot to do with our culture. These neurological patterns contribute to our paradigm scenarios—we can pull upon our growing repertoire of emotional experiences throughout our lives (for better or ill). Emotions, then, are not consistent across cultures. We understand our experiences differently based on our environments and act accordingly (most of the time).

As global cultures continue to blend and we become increasingly exposed to diverse cultures and emotional communities, it is worth noting how these differences might break down. Think of the video website YouTube. Every day over two billion videos are watched from the site and over twenty-four hours' worth of videos are uploaded every minute.[82] YouTube can be

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[81] Ibid., 122.

[82] YouTube, "Frequently Asked Questions," YouTube website, http://www.youtube.com/t/faq (accessed February 26, 2011).

accessed in twenty-nine different languages and boasts a global audience. Most of this audience

is between the ages of eighteen to thirty-four, but the site's content is so diverse, people of all

ages typically stumble upon a video in some online context. The power of web-video is

growing—not just with the expansive reach of YouTube, but also with video content websites

such as TED.com where short "talks" by Ramachandran and other innovators can reach a global

audience. Video seems to spur innovation in these spaces. After TED began posting the content

from their yearly conference online, producers found that subsequent talks became better, and

speakers began to prepare and practice for the aggressive eighteen-minute slot provided.[83] On the

more popular site, YouTube, break-dancers post videos and virtually "compete" with each other,

which greatly increases the daringness and innovation of the moves. TED curator Chris

Anderson dubs this phenomena "crowd accelerated innovation" where a crowd, some visibility

and the desire to improve come together to magnify talent.[84] The idea of crowd-accelerated

innovation with the power of visibility through online video opens the door for sharing emotion

across cultures. The ubiquity and ease of use with video on the web is providing a shared image

of people all over the world—music, dress, language, habits, dance moves, science—it all

becomes accessible. Embodiment theories account for differences in culture by acknowledging

the importance of context. Video sharing is the ultimate keyhole into other cultures and may be a

harbinger of change when we discuss emotional repertoires in the twenty-first century.

The example about the bird and the hawk tells us something else interesting about

emotion and culture: not only are emotions dependent on cultural context, but also they are

dependent on a fallible memory. Culture helps to shape the memory by combining it with other

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[83] Chris Anderson, "Film School: Online Video is More Powerful Than You Think," *Wired*, January 2011, 112-117.

[84] Ibid., 114.

experiences or even "false" experiences that are so ingrained, or pervasive in the culture that one

takes them on as their own. Memories are not perfect simulations of past experiences—like the

digitally archived YouTube videos—but are imperfect interpretations of those experiences that

change over time. Memories can be modified by new information, whether this information is

accurate or not.[85] Our brain's plasticity allows for this constant updating and rerouting to occur.

This can be a good thing. Researchers have shown that older people (sixty-five years and older)

are better able to control emotions by processing emotionally-charged material in areas of the

brain typically used for rational thinking rather than feeling. Furthermore, older people are less

likely to remember images that inflict negative emotions due to this control.[86] This type of

plasticity and emotional maturity is both biological and culturally dependent. If our memories are

being continuously shaped by new experiences, then we could expect the hypothetical fear of

hawks to change in the future based on new experiences therefore new neural patterns.

Emotions are malleable depending on our evolving emotional repertoire, our changing

cultural landscape, and our age and circumstances. Perhaps surprisingly, emotional standards

reflect each culture and period differently.[87] We do not progressively master our emotions with

the passage of time, or the evolution of culture. Emotional standards are often contradictory, and

historians who studies emotional standards throughout history understand the importance of

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[85] Richard Restak, "Empathy and Other Mysteries," *American Scholar* 80, no. 1 (Winter 2011), 44-52.

[86] Peggy L. St. Jacques, Florin Dolcos and Roberto Cabeza, "Effects of Aging on Functional Connectivity of the Amygdala for Subsequent Memory of Negative Pictures: A Network Analysis of Functional Magnetic Resonance Imaging Data," *Psychological Science* 20, no. 1 (Jan 2009), 74-84.

[87] William M. Reddy, "Historical Research on the Self and Emotions," *Emotion Review* 1, no. 4, (October 2009), http://emr.sagepub.com.proxy.library.vcu.edu/content/1/4/302.full.pdf+html (accessed February 28, 2011), 312.

identifying emotional systems, styles, and regimes based on emotional shared emotional practice, not simply social norms and ideals.[88] Emotions are a vehicle of culture. They allow a common foundation of communication for people within a culture and they allow for culture to influence changes in a community's emotional repertoire. Historical research on emotions is inherently interdisciplinary and relatively recent. Carol Z. Stearns and Peter Stearns argued for the creation of a separate "history of emotions" sub-field in the 1980s based on the varied emotional standards present in different cultures in different time periods. William Reddy and other emotion historians (Nicole Eustance, Barbara Rosenwein, and others) argue for a multidisciplinary approach to emotion research that considers recent advances in the neurological understanding of emotion combined with more genuine historical research of emotions in their historical context. According to Reddy, "What is needed now is consideration of how the coalescence or breakdown of emotional styles has set limits on, or shaped, other kinds of change."[89] Understanding how our new digital culture influences our own emotional repertoires and influences changes in our culture, other cultures and ourselves, is part of this way forward.

Subjectivity

Embodiment theories of emotion depend on our ability to (re)experience or simulate emotional information; therefore embodied cognition is dependent on our own emotional knowledge—our experiences with emotions. The mirror neuron system is so fascinating for

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[88] Ibid., 311.

[89] Ibid., 312.

researchers and emotion enthusiasts (like myself) because its function seems to justify decades old philosophy on the subjective experience; particularly the philosophy of Maurice Merleau-Ponty. While references to Husserl abound in simulation and/or (re)experience explanations, Merleau-Ponty is a favorite of Mario Iacoboni, Raymond Gibbs, Evan Thompson and others who readily link embodiment and embodied simulation with phenomenology because Merleau-Ponty, more so than Husserl and other pheneomenologists, seeks to uncover abstractions when discussing lived experience. All under the ever-broadening purview of embodied cognition, Iacoboni dubs this intersection "neurophysiologic phenomenology," while philosopher Evan Thompson names essentially the same intersection "neurophenomenlogy." Phenomenology and neuroscience are strange bedfellows. Celebrating qualia (the subjective quality of experience) flies in the face of traditional neuroscientific research because it implies that there is some sort of "content" in the brain beyond the highly complex physical network of neurons. Theories like Daniel Dennett's multiple-drafts theory, or Paul Churchland's map-indexing theory of perception, rely on the hardware of the brain to explain concepts like feeling, consciousness, and selfhood. Perhaps the most influential materialist theory comes from Joseph LeDoux, author of *The Emotional Brain* (1996) and *The Synaptic Self* (2002). LeDoux believes that emotion is a critical component of the mind, arguing that the mind is a trilogy: cognition, emotion, and motivation, and the self is the result of Hebbian plasticity, or synaptic plasticity, occurring in multiple neural systems.[90] While LeDoux's view of the subjective experience is too exclusively

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[90] LeDoux, *Synaptic Self*, 174.

"neural" for some embodied cognitivists,[91] plasticity plays an important role in understanding the subjective experience in many embodied theories; therefore it's worth briefly exploring.

Neurons, or nerve cells, communicate with each other through synaptic space via electrical and/or chemical signals. LeDoux argues that our sense of self exists solely in our synaptic connections because these are the spaces of plasticity. Brain plasticity allows for incalculable synaptic connections that respond to incalculable environmental experiences; therefore, the unique configuration "rewires" as we learn and grow. This constant rewiring presents a "self" with both stable and changing characteristics. LeDoux notes that plasticity was not intended to construct a "self," but is a feature of the brain that allows it to work better (in his opinion). The "synaptic self" is "the totality of what an organism is physically, biologically, psychologically, socially, and culturally" and is a "unit, but not unitary."[92] Plasticity allows for all of these components of the self to work together through a highly complex system of ever-changing neural maps that is dependent on patterns of activity. The classic axiom "neurons that fire together wire together" comes from this neural mapping concept and explains why one child may be frightened of a hawk and why another would find a hawk a noble creature. Synaptic plasticity creates pathways for understanding and we interpret experiences through these pathways, while building new ones along the way.

Plasticity accounts for much of what makes us distinctly human, but most embodied cognitivists believe that relying solely on synaptic plasticity ignores the role of the body in cognition, emotion, and feeling. Where LeDoux dissolves the self down to patterns of synaptic

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[91] Evan Thompson, *Mind in Life: Biology, Phenomenology, and the Sciences of Mind.* (New York: Belkamp Press, 2007), 222-223; Jesse Prinz, "Embodied Emotions," in *Thinking About Feeling*, ed. Robert Solomon (Oxford: Oxford University Press, 2004), 48.; Raymond W. Gibbs,. *Embodiment and Cognitive Science.* (New York: Cambridge University Press, 2006), 10.

[92] LeDoux, *Synaptic Self*, 31.

activity, embodiment theories incorporate plasticity into a much larger sensing body network that culls environmental information both in and outside of the brain. Welcome Merleau-Ponty. Merleau-Ponty notably argues that the body is an expressive being, and what it expresses is subjectivity.[93] Critics argue that phenomenology is subjectivistic, implying that it relies on problematic notions of dualism that have corrupted our understanding of the mind and brain for centuries, yet, according to proponents of phenomenology, this is a shortsighted understanding of the method. Phenomenology, especially when linked to recent sciences of the mind, instead lays the groundwork for highly *intersubjective* experiences—meaning that reasoning takes place in the real world with others through language established by the culture.[94] Merleau-Ponty and other phenomenologists actually seek to remove "abstraction" when discussing the world to uncover what is really happening—our lived experience. Merleau-Ponty, in particular, argues that the body is an essential component to this lived experience and our ability to understand others through empathy. Furthermore, Merleau-Ponty recognizes that we share and constantly create our own milieu, yet our environment does not solely define us. We work to surpass the social and cultural structures that envelope us, thereby constantly creating new, defining experiences through language, art, social interaction, and such. This type of redefinition is similar, in many respects, to synaptic plasticity in that our brains form new connections based on lived experience, and those connections influence new and perhaps innovative experiences in the world. The self is a rather fragile thing. Whether you subscribe to LeDoux's synaptic self theory or not, few would argue that our subjective experience in the world is reliable. Shared experience

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[93] George J. Marshall, *A Guide to Merleau-Ponty's Phenomenology of Perception*, (Milwaukee, Wisconsin: Marquette University Press, 2008).

[94] Lawrence Haas, *Merleau-Ponty's Philosophy* (Bloomington: Indiana University Press, 2008), 7.

provides stability, which is why intersubjectivity plays an important role in embodiment

theories.[95]

Eschewing this total reliance on synaptic activity, embodied cognition theorists typically

view the self as much more a result of embodiment—neural events, the cognitive unconscious,

and the phenomenological experience—than simply complex neural patterns.[96] Based on

dynamical systems theory, which emphasize the "temporal dimensions of cognition and the ways

in which an individuals behavior emerges from interactions of brain, body and environment,"[97]

embodied theories of emotion incorporate information gleaned from the entire body, not simply

the brain. The coupling between brain, body, and world shape various trajectories of behavior, so

instead of looking at how the world becomes represented in the mind, embodied cognitivists are

interested in how the body provides patterns for behavior in the world, or opportunities for

action. Just as the name implies, dynamical systems are in motion and always changing, so

information exists only as it is dynamically embodied between the brain, body, and

environment.[98] Echoing Merleau-Ponty's view of self, Evan Thompson argues,

> Self and other enact each other reciprocally through empathy. One's
> consciousness of oneself as a bodily subject in the world presupposes a certain
> empathetic understanding of self and other. Human subjectivity emerges from
> developmental processes of enculturation and is configured by the distributed

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[95] LeDoux sees the self as a result of synaptic connections; if you break the connections, you loose the self. In the synaptic view of the self, emotions are the processes by which brain determines the value of a stimulus. A process approach is different from a cognitive-appraisal approach (Solomon, Nussbaum, etc.) because less credibility is given to self-reports (the subject's feeling).

[96] Gibbs, *Embodiment and Cognitive Science*, 9.

[97] Thompson, *Mind in Life*, 10.

[98] Ibid., 57.

cognitive web of symbolic culture. Human subjectivity is from the outset intersubjectivity. No mind is an island.[99]

Also employing an enactive, embodied approach to cognition and emotion, Raymond Gibbs echoes a similar phenomenological understanding of perceived experience:

> Perception is not something that only occurs through specific sensory apparatus (e.g. eyeballs and the visual system) in conjunction with particular brain areas, but is a kinesthetic activity that includes all aspects of the body in action…Bodies are not culture free objects, because all aspects of embodied experience are shaped by cultural processes.[100]

For Gibbs, Thompson and other followers of the dynamical systems approach to embodied cognition, physical properties in the world are not just objects to be perceived by our brains, but they are opportunities for action and response from our entire bodies. Embodied cognition is like a dance—bodies are in motion, acting and reacting with various partners, the cultural context of the dance and the physical environment. LeDoux's process approach is more like me sitting at my computer, typing away with various thoughts in my mind and resources at my fingertip—a lot is coming together to write these words, but at the end of the day, it is a brain function. It is easy to see why embodied cognition is more appealing when discussing the subjective self—the theory is beautiful. We are in constant, dynamic motion with others and our environments, always in tune with our culture, becoming culture, becoming each other. Of course, all of this "content" is what drives most neuroscientists crazy, but embodied cognition can tell us a lot about how we can come to understand our emotional selves in the world.

Intersubjectivity is the lifeblood of embodiment theories and by incorporating various theories from diverse disciplines we can see why the strange bedfellows of phenomenology and

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[99] Ibid., 383.

[100] Gibbs, *Embodiment and Cognitive Science*, 12-13.

embodied cognition fit so well together. Studies suggest that the mirror neuron system actively simulates emotional behavior exhibited by others, particularly when the subjects know each other.[101] We know that the body is responsible for much more feeling and "thought" than we once believed, which diverts researchers attention solely from the brain and incorporates the entire body into our perception of our environment, and we are beginning to understand the importance of culture and environment on our own constructions of self.[102] Embodiment theories celebrate this entire dance and the complexity involved. Furthermore, they privilege the role of emotions within this system—emotions drive the system because they are the vehicle for understanding and interpretation through (re)experience. In the digital age, viewing the mind as brain, or brainbound,[103] detrimentally narrows our thinking of these new digital environments and how we interact with and within those environments. It is perhaps more beneficial to understand the new context of our digital lives as part of the body, therefore a critical piece of cognition, not simply a world to be acted within and upon.

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[101] Oberman, et. al. "Human Mirror Neuron System," 62.

[102] Reddy, "Historical Research," 312.

[103] Andy Clark, *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*, (Oxford: Oxford University Press, 2008), 82.

Chapter 2

Emotions Put the "New" in "New Media"

Looking at emotion through an embodied lens expands the description of emotion to include the environment that both stimulates and often perpetuates our emotional lives. Our bodies—sense modalities such as vision, olfaction, audition and neural systems—all work together to encode information and therefore reactivate when stimulated. Using the terms "embodied cognition" or "embodied emotion" take into account this entire feedback system, as well as the importance of cultural context and social and cultural emotional histories. Embodiment theories of emotion are incredibly inclusive, and when discussing the role of new media in our emotional lives, they are plastic enough to carry the digital burden.

Digital media mediate…digitally. This sounds simple enough. Yet new media systems are so thoroughly complex and ubiquitous that separating the machine from the body is an exercise in futility. These new media are *smart media*—they cull personal information constantly and shape the environment to fit individual lifestyles. More than just bulky CPUs, new media today infiltrate our lives almost seamlessly as complex algorithms predict our next moves. Whether programs purchase stocks to fit a trader's buying habits, or Google intuitively prescribing search requests, our digital needs are often met before they are fully expressed. We live in an age of fulfilled anticipation where answers arrive before the question is finished. It is difficult to predict the consequences of an algorithm—we have relatively dependable predictions, at best, but the intricate algorithms that drive our financial markets, our search engines, cutting edge x-ray machines and countless other tools function so rapidly because they lack human

interference.[104] Anyone witnessing the crushing blows to the stock market on the May 6, 2010

"flash crash" can attest to that (or anyone watching the market tank from 2008 and on for that

matter). To understand how emotions work in a new media environment, we must look at them

within the feedback system of simulation, culture, and intersubjectivity—or the body, the

environment, and the "other." Enactive theorists who work within the scope of embodiment

theories tend to reject computational metaphors for the brain. The brain/body dynamic, they

argue, is far more complex than the input/output functions of the "smartest" computers. In many

ways, they are correct. The relationship between our perceiving bodies and our environment is

outrageously complex and still a hotly debated mystery. Yet separating computers and the digital

media they transmit from the loop of embodiment theories seems rather shortsighted as digital

media continues to proliferate. They are what Andy Clark calls our "extended brains,"[105] and it

should be pretty clear by now that they are as mysterious and self-functioning to the average user

as the body is to a scientist. Clark forwards the theory of extended cognition, which defines the

supersized mind as an "extended brain" where the brain is more than neurons firing within the

confines of our skull. According to this view, the brain is a network of feedback and feed-

forward loops that incorporates the body and the environment to the extent that the *mind itself*

leaches into the body and world.[106] Clark essentially explodes dynamical systems theory beyond

a mind/body interacting with the environment and argues that the mediation between body and

environment is so completely integrated to our cognitive selves that the distinction is

superfluous. Clark's hypothesis of organism centered cognition privileges the organism, but

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[104] Steven Levy, "The A.I. Revolution," *Wired*, January 2011, 89.

[105] Clark, *Supersizing the Mind*, 82.

[106] Ibid., 27.

argues that cognitive function is not simply brain or body bound but reliant on environmental tools to function.[107] While never discussing emotion definitively, Clark works to bridge the gap between general embodiment theories and our ever-expanding digital lives by incorporating neural plasticity and complex digital environments that can "carry the load" of our extended brains. His theory helps set the stage for various tangents of embodiment theories of new media because it is both inclusive and practical. In recent years others have joined Clark in conflating media theory with embodiment theories, namely Francisco Valera's (highly embodied) theory of autopoiesis, which describes systems that self-create—much like a biological cell. In this section, I will briefly outline their theories of embodiment and new media, which will lay the groundwork for my framework of emotions in digital space.

First, the "new media" component of this feedback model deserves some explanation. While embodied cognition recognizes cultural influences and works from (re)experiences of emotions from our emotional repertoire, embodiment in regards to new media is slightly different. The term "new media" has undergone a modification over the past few years as we have seen the hardware of the computer evolve into seamless functions where the machine itself seems to disappear with our own thinking and actions—think of the early adopters of Bluetooth technology. Mark Hansen proposes an updated (and slightly overwhelming) definition of new media, and his description of what media has become in the twenty-first century sets the stage for how we can begin to understand the role of emotions in a contemporary digital landscape.

New media today, according to Hansen, has become both singular and plural—meaning it is both the physical technology and the cascade of experiences that extends far beyond the

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[107] Ibid., 139.

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machinery.[108] The coupling of the body and the technological experience dramatically increases our connectivity, which makes our new media actually "new." While thinkers such as Malcolm Gladwell argue that the Internet and other forms of new media fail to live up to their oft-described "revolutionary" status, Hansen makes the critical point that for the first time content is completely separated from the vehicle of transport. Our use of digital technology is so far removed from the series of 0s and 1s that we can barely comprehend the underlying structures that keep digital media alive. Unlike the skilled telegraphers of the nineteenth century who translated Morse code into short, alphanumeric messages, computers function far "below" the content that we glean from them. Technologies—the telegraph, the printing press, paper and ink—have always allowed for a certain amount of "cognitive distribution," where memory is translated to media, as Hansen and Clark describe, to extend our minds. This type of distribution underscores our technologically bound existence and allows for a sharp increase in human knowledge and capital. Culture proliferates in the presence of networking technologies and through these increased and extended interactions the media (in the plural sense of the word) and the body become *mutually dependent* as we build new social and cultural structures around these forms of communication.

An interesting, and perhaps unlikely, example of this dependence comes from the website 4chan.org, which is currently the largest English-speaking image board website. Since 2004, 4chan, and "moot"—founder Christopher Poole's online identity—host the most influential, and often puerile, meme generator on the web. 4chan users, specifically self-identifying "/b/tards" that post to the site's miscellaneous /b/ board, overwhelmingly default to the "anonymous" moniker when posting. With millions of anonymous posts uploaded, and with shockingly

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[108] Mark Hansen, *Critical Terms for Media Studies.* Edited by Mark Hansen and W.J.T. Mitchell (Chicago: The University of Chicago Press, 2010), 17.

minimal oversight or memory storage for that matter, the /b/ board becomes what some call the Internet's "id"—a dynamic, visual, and textual kaleidoscope of everything impulsive, contrary, and buried beneath a overwhelmingly identity-centered media world. Users on the /b/ board generate memes that cycle far beyond the inside jokes (typically called "lutz") within the boards. With "anonymous" being the most popular identity tag on the site, a group of users began hacking websites under the name "Anonymous" by using the veil of 4chan to organize and conceal their identity. Various "Anonymous" groups operate under the meme, and they have hacked everything from epilepsy websites (with seizure inducing videos) to PayPal and MasterCard (in a show of solidarity for Wikileaks founder Julian Assange).

4chan is larger than its parts. Much like the collective intelligence of a group surpasses individual intelligences, the memes that 4chan instigates bring down more than established websites, but also established ideas and assumptions about how collective action and the Internet works. The site incorporates and influences pop culture, counterculture, politics, and economics with a particularly ironic, juvenile and anarchical tone. In a world of Facebooks and Twitters, 4chan works because of its culture of anonymity where the millions of users (more than 200 million page views per month[109]) converge to form one highly functioning, multivocal "body" that (at times) wages attacks, or tricks (called "bait and switches") depending on their mood. According to Chris Poole, the popularity of 4chan relies on the "anonymous" moniker, which allows for users to be wrong without consequence. In a world where your high school identity can rear its ugly head when you attempt to enter the workforce decades later, 4chan is ephemeral, anonymous, brutally honest, and a haven for mistakes. When we think of the body and new media becoming both singular and plural, and when we think of the body and the media working

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[109] Mattathias Schwartz, "Malwebolence," *New York Times Magazine*, August 8, 2008: 25.

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in symphony, 4chan shows us the reach of these two phenomena in real time. No one user is the master of 4chan and the "Anonymous" meme. The symbiotic relationship between the body and media suddenly removes any user from the master position. We program and choose our media (most of the time), but once our choice is made the relationship becomes necessarily reciprocal due to the social and cultural environment that arises from those media choices. Even in the (literally) anonymous world of 4chan, the users submit to the language and the actions of the group. Their bodies adapt to the culture just as much as the site adapts to the users. Working in concert, 4chan becomes much more than a medium for manga fans and teenage boys looking for porn, it becomes a living hive of activity whose actions are becoming increasingly consequential.

4chan is a website where you can choose to engage your time and energy, and for those who choose not too, it is still pretty likely memes perpetuated by the site affect you in some fashion. Even with the influence of 4chan, the message board only activates one small piece of the new media puzzle. Most of the media we engage throughout our daily lives seems inconsequential because it is so ubiquitous. Media today, as Hansen explains, is no longer for storage or production, but for "experiencing the here and now of connective presence."[110] Whether we talk about the anonymous posts of 4chan users, or the physical postcards scanned on the *PostSecret* blog, these short pieces of text rely on the phenomenal experience of users, and users rely on them to shape their environment. While the connections are definitely more important than the content,[111] the collective action trumps even the connections. The ability of memes to engage beyond their connectivity is part of what makes new media new.

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[110] Hansen, *New Media*, 180.

[111] Ibid., 181.

So, new media in the twenty-first century is original for two broad reasons: the traditional relationship between the machine and the medium is disrupted (or, dare we say, inconsequential), and collective actions override both distributed content and connections (whether strong or weak) thereby influencing our socio-cultural environment. The environmental influence is particularly important when we apply embodiment theories to digital culture because environmental factors shape our emotional engagement with the world and therefore our understanding of self and other. The mutual dependency, or hybridity, between new media and our bodies (and when I say "bodies" I mean our physical bodies and our minds) is a popular premise in many new media theories. Three general themes typically emerge in most media theories that use embodied cognition as their gateway to the body/media hybrid: (1) embodiment itself—meaning the intricate feedback between our bodies, our environment, and machines/media; (2) the importance of the arts both as a function of embodied feedback and in creating understandable metaphors to assist our understanding of this heightened digital engagement; and (3) quasi-utopian futures based on heightened connectivity. Emotions play an interesting, yet varied role in each theme, and they typically adopt the more ambiguous moniker of "affect"—referring (most commonly) to short-term neurological arousals, not a more ordinary understanding of long-term "emotional" arousals.[112] "Affect" is not the only nebulous term used in new media theories—most theories are steeped in phenomenological and second-order systems jargon that make our current relationship with media seem far removed from our rather mundane, daily interactions. In the "to-the-people" spirit of Rosalind Picard, this chapter will clarify some of these theories in the context of emotion without getting bogged down by overly

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[112] This use of the term poses a few problems when discussing emotions in digital space, which I will discuss later.

complex emergence theories, which do little to illuminate our daily interactions with digital media.

The plural nature of the term "new media" includes not just the mediating technology, but the thriving network that those technologies create. New media today are always online, perpetually connecting both minds and other media indiscriminately. Our plural understanding of new media is perhaps more intuitive than the historical, singular version, which is why the name is more common than "posthuman," a term made famous by N. Katherine Hayles. Describing essentially the same phenomenon, Hayles argues for the importance of embodiment as a mediator between technology and discourse,[113] where information and the body work together to create the posthuman subject:

> Emergence replaces teleology; reflexive epistemology replaces objectivism, distributed cognition replaces autonomous will; embodiment replaces a body seen as a support system for the mind; and a dynamic partnership between humans and intelligent machines replaces the liberal humanist subject's manifest destiny to control nature.[114]

The posthuman subject progresses in real time, and Hayles believes that we should humbly accept our inevitable hybridity as a natural phenomenon instead of fearing a mechanistic takeover. Embodiment, according to Hayles, is a necessary condition for information—a key truth that first, second, and third wave cybernetic theory failed to acknowledge. She defines embodiment as "contextual, enmeshed within the specifics of place, time, physiology, and culture, which together compose enactment…Embodiment is elsewhere."[115] To clarify, embodiment is not equivalent to the body, but a *process* that works with the body to engage and

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[113] Hayles, *How We Became Posthuman,* 205.

[114] Ibid., 288.

[115] Ibid., 196-197.

create our cultural environment. This process allows technologies to work with us, or *become* us, through heightened feedback processes (i.e. daily interactions within the environment).

The concept of embodiment expands in Hansen's view to include the "affective body." For Hansen, affectivity is "the capacity of the body to experience itself as 'more than itself' and thus deploy sensorimotor power to create the unpredictable, the experimental, the new."[116] Such a view incorporates a version of Damasio's theory of an as-if-body-loop, which describes the rapid simulation of emotion within the body. The plurality of new media depends on the affective body to "give body" to digital data by experiencing that data within the body. Virtual reality is then a body-brain achievement, according to Hansen, where "the source of the virtual is thus not technological, but rather a biologically grounded adaptation to newly acquired technological extensions provided by new media."[117] Recalling embodiment theories of emotion, studies suggest that the body (re)experiences actions as though the subject is performing these actions within their environment. Proponents of embodiment theories argue that perception and illusion are thus experienced identically within the brain.[118] Hansen sees the trick of affectivity as an opening to conflate virtual environments and our bodies, hence pushing the concept of embodiment further from a balanced feedback system to a feedback system that is more autopoietic in nature—more self-fashioning. In his 2006 book *Bodies in Code*, Hansen argues that embodiment is "actively produced with flexible new media artifacts," consequently new

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[116] Mark Hansen, *New Philosophy for New Media* (Cambridge: MIT Press, 2004), 8.

[117] Ibid., xxiv.

[118] Ibid.,168.

media art pieces can enhance embodiment by purposefully tapping into our affective response.[119] Furthermore, new media artifacts may be analog, according to Hansen, but display digital characteristics. He cites Mark Danielewski's postmodern novel *House of Leaves* as a "body in code" where the text creates a virtual world through the reader's imagination.

Both Hayles and Hansen see embodiment as a necessary process for new media because the practice of decoding virtuality takes place within an extended, cognitive feedback loop between the mind/body/environment. To further explain the critical role of embodiment, both theorists cite Francisco Valera's interpretation of autopoiesis, which applies the "self-fashioning" of mechanical systems to biology. For Valera and his seminal "enactive approach" to consciousness, the mind can only be understood through its interactions with the outside world.[120] According to Hayles, autopoiesis turned the traditional (first wave) cybernetic paradigm "inside out." Where first wave cybernetics saw the user outside of the system, although potentially able to become a conduit within the system, second wave cybernetics saw systems as being "informationally closed." In this autopoietic view, "no information crosses the boundary separating the system from the environment." She continues, "We do not see a world 'out there' that exists apart from us. Rather we see only what our systemic organization allows us to see. The environment merely triggers changes determined by the system's own structural properties."[121] Valera uses the example of cells to illustrate how autopoeisis works organically— cells are built of the very same proteins and enzymes that they create. This view of information

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[119] Mark Hansen, *Bodies in Code: Interfaces with Digital Media* (New York: Routledge, 2006), 20.

[120] The enactive approach is similar to the many neurophenomenological approaches discussed earlier as Mario Iacoboni, Evan Thompson, Raymond Gibbs, and others all cite Valera's research as their inspiration.

[121] Hayles, *How We Became Posthuman*, 10.

inspires current new media theories because the biological system (our bodies) hosts the information—not the clunky CPU. Therefore, the body becomes indispensable when discussing information. In a sense, the body *is* the information and embodiment represents the journey.

Hansen and Hayles generally consent with this view, as they both use it to ground their respective, yet quite similar, theories of "new media" and "posthuman." Although, they both seem to agree that autopoeisis is perhaps too body-centric, an argument that is also forwarded by Andy Clark in his description of extended cognition. Clark argues that information encoded in the environment, notes on a page, images, music, is cognition. For example, the act of writing is part of the cognitive process of "working," not an artifact of "work" that merely reflects a brain function.[122] In this view, the pencil is as "neurological" as a neuron because each are conduits of information—the pencil allows the brain to "spread the load."[123] This, according to Clark, is what balances out the body-centric enactive approach. Brain function is not bound within the skull, but distributed within the environment as various types of technologies perform our habits, thoughts, and memories. Again, each of these views has embodiment at their core. The feedback loop between body-mind-environment-technology fundamentally alters our experiences with new media artifacts. Hansen and Hayles apply their new media hybrid approach to the arts to further explicate the embodiment process, either by example or through metaphor.

The novel *House of Leaves* is an interesting text to cite in embodiment theories of new media because it is not digital, although it displays digital features. Postmodern to its core, the book is a twisted thriller about a house that is bigger on the inside than on the outside—an apparent metaphor for information. Danielewski pushes the boundaries of novel by printing text

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[122] Clark, *Supersizing the Mind*, xxv.

[123] Ibid., 197.

backwards, blacking out text, toying with shape and size on the page and creating multiple

frames within the story.[124] The paranoia that overtakes the narrator, Johnny Truant, creeps into

the reader's psyche and becomes *affective*. The story overwhelms the reader narratively and

artistically and the countless citations create a maze-like hypertext that mimics both the endless

maze within the home and the endless maze of digital information.[125] Hansen argues that *House

of Leaves* is a "body in code" for each reader as they embody the text. As the characters in the

novel futilely attempt to capture the impossible—a house bigger on the inside than on the

outside—a metaphor for the digital begins to emerge. According to Hansen, the house cannot be

documented (the mazes that appear within the house are pitch black, always shifting and

seemingly endless); much like digital information cannot be documented *unless it is embodied*.

The affective response brings information to life and makes it meaningful. The various levels of

narration create what N. Katherine Hayles dubs a "remediated narrator," which she describes as

"a literary invention foregrounding a proliferation of inscription technologies that evacuate

consciousness as the source of production and recover in its place a mediated subjectivity that

cannot be conceived as an independent entity."[126] For the remediated narrator, consciousness is

irrelevant without "technologies of inscription"—photography, film, text, drawings, and even

tattoos.[127] These technologies are not simply copies of thoughts, but "noisy channels of

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[124] Having taught this novel in a counterculture course, students find it haunting and incredibly exhausting. Some students requested permission to stop reading the book because the narrative exacerbated fears, phobias, and other negative emotional triggers.

[125] Mark Hansen, "The Digital Topography of Mark B. Danielewski's *House of Leaves*," *Contemporary Literature* 45, no. 4, (Winter 2004), http://www.jstor.org/pss/3593543.

[126] N. Katherine Hayles, *Writing Machines* (Cambridge: MIT Press, 2002), 117.

[127] Ibid., 117.

communication" where information is constantly being negotiated, rewritten, and/or forgotten.[128] (The remediated narrator mirrors what Clark generally describes as extended cognition, although he does not apply it to fiction.) *House of Leaves* is such a fascinating metaphor for the digital because it is *not digital.* And while the novel reminds us of the power of print in a digital world, the book would not exist in its unique form if not for digital influences. The creation of the novel indirectly depends on the influence of digital life while critiquing the fallibility of all forms of transcription—even the brain.

The dizzying levels of transcription that Danielewski explores in the novel makes for an intriguing metaphor for digital media and an example of digital affective practices at work. Digital arts garner similar embodied relationships between the work and the user, and these works demonstrate embodiment and new media in action. Hayles believes that new media literature is an essential component to understanding ourselves as embodied creatures living within and through embodied worlds and words.[129] She explains,

> Literary texts do more than explore the cultural implications of scientific theories and technological artifacts. Embedding ideas and artifacts in the situated specificities of narrative, the literary texts give these ideas and artifacts a local habitation and a name through discursive formulations whose effects are specific to that textual body.[130]

She calls this feedback between contemporary literature, technologies that produce that literature, and readers who produce and are produced by these works "informatics."[131] Including *House of Leaves*, Hayles cites other literary new media works, such as Shelley Jackson's

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[128] Ibid., 130.

[129] Hayles, *How We Became Posthuman*, 24.

[130] Ibid., 23.

[131] Ibid., 29.

Patchwork Girl, which allows the reader to create the narrative of a Frankenstein monster

through hypertext. By choosing various narrative pathways, the reader becomes a writer of the

text and through this interaction the text becomes embodied as the narrative becomes

increasingly dependent on the reader's choices.

While literature provides a compelling view into embodiment theories of new media, new

media artworks are perhaps more ubiquitous for the everyday consumer. Works such as Mark

Hansen and Ben Rubin's *Listening Post* interact more robustly with the fluctuation of the

Internet. Hansen began with a simple question: What do 100,000 people chatting on the Internet

sound like?[132] The multi-media installation harvests text fragments from digital public spaces,

such as blog posts and message boards, and displays them across a grid of small electronic

screens. The text streams through the small screens (about two hundred in all) and is also read by

a voice synthesizer. The result is an immersive, multi-media experience that works in real-time

with the dynamics of the web. An art piece like *Listening Post* is said to create "chatter into

chant" and through these tones—these algorithms—create an affective response in the

consumer.[133] New media works of literature and art attempt to reframe our ubiquitous digital

interactions to typify our emotional interactions with these media, therefore illuminating the

entire embodiment process that new media works ignite. A rough summation of new media

embodiment theories describes works that exemplify the potential of body/technology feedback

through a slightly altered interpretation of autopoiesis that allows for the closed system of the

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[132] Ben Rubin, "Listening Post," Ear Studio, http://earstudio.com/2010/09/29/listening-post/
(accessed March 1, 2011).

[133] Frances Dyson, "Enhancing Data: Body, Voice and Tone in Affective Computing," In
Emotion, Place, and Culture, edited by Mick Smith, et.al., 248.

body to both house, interpret and produce information, while simultaneously pairing with digital technologies to distribute some of the cognitive load.

It is difficult to ascertain whether the body or the machine bears more of the digital burden in these views. While it seems as though the body is responsible for much of the work—being the only medium of the phenomenal experience—the technologies must be a seamless match to garner an emotional response. The only reason *Listening Post*, *Patchwork Girl*, or even *House of Leaves* "works" is because the piece encompasses the consumer. If *Listening Post* lost its Internet feed, or *Patchwork Girl* failed to link properly, or the reader of *House of Leaves* gives up, then the technology failed. The much-touted relationship—the embodied experience—is lost. When we spread the cognitive load there is more room for error, and there is also a question of what constitutes error in the first place. Is a reader who quits reading *House of Leaves* the ultimate embodied consumer because they were led to a critical affective state by the novel? Or has the novel failed? Are glitches as organic as naturally occurring mutations and should we embrace them as such? These questions complicate the feedback system that new media embodiment theories rely on to survive.

The final theme that pervades new media embodiment theories is quasi-utopian futures based on heightened connectivity. Embodiment theories of emotion typically profess utopian futures based on a keener understanding of empathy. For neuroscientists and cognitive scientists, revealing an innate empathetic response to others suggests that we are hardwired for compassion—for the good.[134] Studies show that children as young as six months gravitate towards objects that show empathy and cooperation, and while historians that study empathy note that empathy would be largely absent from a utopian world, many still argue that spreading

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[134] see Ramachandran, Damasio.

scientific knowledge of empathy to the broader public would benefit society.[135] New media

embodiment theories concur with many of these optimistic viewpoints when "new media" or the

"posthuman" is described as occurring in the here and now, but also with the potential to bring us

closer to a more organic relationship with each other and our environments. Technologies create

extended memories and knowledge while enhancing connectivity. If affect drives our connection

with these technologies and each other, then we can capitalize on the innate empathy in each of

us and build a better world. When Mark Hansen discusses "affect," he is describing this

emotional connection to others as a gateway to "collective individuation" where the subject can

tap into commonality with others beyond identity.[136] According to Hansen, the embodied life is

"an ongoing materialization of the human on the cusp between the individual and the

preindividual, the actual and the potential—we see the coming community without

presuppositions and without subjects…collective individuation…singularity beyond identity."[137]

"Collective individuation" is not a Facebook group rallying around a suicide threat; it is more

like an identity soup where we are both singular and plural—others and ourselves. This type of

"transindividuation" can only be facilitated by new media artworks that tap into our primordial

selves (the identity soup), not simply through ubiquitous media, such as social networking (how

pedestrian!). Nonetheless, Hansen sees the "transindividual" as a positive result of new media

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[135] *The Human Spark,* PBS, January 6, 2009; Jeremy Rifkin, *The Empathetic Civilization: The Race to Global Consciousness in a World in Crisis,* (New York: Tarcher, 2009); Iacoboni, *Mirroring People,* 272; Damasio, *Looking for Spinoza*, 271; Thompson, *Life in Mind*, 391; Gibbs, *Embodied Cognition*, 67.

[136] Hansen, *Bodies in Code,* 170-171.

[137] Ibid., 170.

technologies and one that can push us "beyond commodification."[138] Collectivity awaits us as the ultimate prize as we create and engage in embodied feedback. (It's interesting to note that 4chan.org illustrates Hansen's description of "transindividuation" almost perfectly, though it is difficult to argue that the collective action 4chan incites is "good.") N. Katherine Hayles argues that forging partnerships with machines can bring us closer to nature, and while she never explicitly cites empathy in her future vision, the mutual, emotional connection seems to be the bedrock of her posthuman model.

Embodiment theories point to quasi-utopian futures because they have nowhere else to go. The process of body/environment interaction that embodiment describes is founded on a process that proponents argue is as natural and perfected as the cell. When new media technologies enter the picture, our relationship became symbiotic and helped us reconnect with our more native human to human relationships because new media was a conduit for affect—the thread that binds us all together. Boiling our interactions with new media technologies down to affect, which is seen as a good, civilization building, bodily response, casts a positive and purposeful light on where our increasingly technologized lives are going. If the relationship were seen as negative, as disconnecting, embodiment theories would simply not apply.

These protracted descriptions of embodiment rest on the theory that external inputs work with the brain to rapidly create and recreate bodily states of emotion where the body is seen as a theater of introspection that clarifies the subjective state and the status of the feedback operation.[139] A sort of grand illusion comes into play when discussing embodiment theories and new media because the simple act of simulation so often discussed on the cognitive end (you

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[138] Ibid., 171.

[139] Niedenthal and Maringer, "Embodied Emotion Considered," 123.

play tennis = I think I play tennis) contorts to describe intricate (re)creations of digital patterning within the body. The process works quickly and becomes almost mysterious as a result—much like the synapse where LeDoux argues our "selves" reside. When we see a space we want to fill it. When we identify a fast response, we want to attribute its urgency to something critically important. I see embodiment theories of media in the context of this exciting, yet opaque frontier.

It is easy to imagine a cyborg when discussing body/media hybridity, which, in many cases, is perfectly accurate. We are becoming more and more cyborgish as artificial limbs connect directly to our nervous system, pacemakers keep our hearts pumping, and GPS chips track our children. Embodiment includes these complex and fascinating relationships, but it also encompasses a broader relationship between technologies and the body that can sometimes be frustrating and slightly unstable. Affectivity, a nebulous term on its own, becomes even more convoluted when coupled with virtuality because both rely on the subjective experience. Generally speaking, affectivity *is* the subjective experience and therefore largely unanalyzable. Embodiment theories are malleable, therefore convenient. This can be both a blessing and a curse when composing a theoretical framework for emotions in digital space because the science is simply not conclusive.[140] In many ways, the theory outweighs the evidence and focuses too intently on the "mental" aspects of embodiment, which ignores the far more interesting role of culture in the feedback process.

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[140] Jean Decety, "To What Extent is the Experience of Empathy Mediated by Shared Neural Circuits," *Emotion Review* 2, no. 3, (July 2010), http://emr.sagepub.com.proxy.library.vcu.edu/content/2/3/204.full.pdf+html (accessed February 28, 2011), 206.

Chapter 3

A Framework for Digital Emotions

First, two statements from young, Egyptian protesters during the 2011 Egyptian

revolution:

> Well, Facebook and Twitter is what started this revolution. So, ah, it's the most
> important thing or element we have here. Most of youth in Egypt have Facebook
> accounts so it's the easiest way to get to them. You just write what your political
> views [sic], write what you feel, share videos, show corruption. And it worked; it
> works. When people see it, when people get all of these images around them it
> helps them become aware politically. –protester from the "Facebook flat" in
> Cairo[141]

> We will start speaking about a joke that Mubarak when he dies he met Abdel
> Nasser and said that both of them ask of him [sic] how did you die? Poison? Or
> Assassination? He said "Facebook." -Islam Lodfi, protest organizer[142]

As the world watched the events in Egypt unfold over January and February, the power of social

networking was unmistakably apparent. Contrary to Malcolm Gladwell's assertion that "the

revolution will not be tweeted," the revolution *was* tweeted through mobile phones and updated

on social networking sites. And, perhaps for the first time, protesters praise the power of social

media, not simply pundits on cable news, or tech enthusiasts from Silicon Valley. Even after the

Egyptian government imposed an Internet blackout throughout Cairo and other large cities, the

protesters continued to find connections and keep the momentum going in Cairo's Tahrir Square.

Based on interviews and news articles, it is pretty clear that many protesters do not have

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[141] *The New York Times,* "Cairo's Facebook Flat," The New York Times website, video file, http://video.nytimes.com/video/2011/02/08/world/middleeast/1248069622796/cairo-s-facebook-flat.html?scp=1&sq=facebook%20flat%20cairo&st=cse (accessed February 28, 2011).

[142] *The New York Times,* "A Night in Tahrir Square," The New York Times website, (accessed February 28, 2011).

Facebook or Twitter accounts. A group of students and young professionals marched to Tahrir Square and encouraged people from poor and working class neighborhoods to join them and the crowds continued to swell. Yet, social media ignited the action that led to the days of protests and the eventual resignation of President Hosni Mubarak. The connections made through social media created a shared emotional purpose, and the actions inspired by the collective emotion seem to have led to a real, honest to god, revolution. It is easy to get lost in cognitive jargon, philosophical theories, and obscure installation pieces when discussing the impact of new media on our emotional lives. The language of embodiment theories reduces the impact of the body/environment feedback process to unanalyzable minutia that seems to purge any possibility of real life applications. We can watch events, like the Egyptian revolution, unfold and we can note the powerful emotive force of social media, but it becomes difficult to make the connection between these events and the theories that could potentially explicate them. This is a problem. Current theories that link new media and emotion, or affect, fail to reach into our daily lives. Rosalind Picard notes this explanatory gap in her plea to remove emotion research from the lab and place it into the real world,[143] and I believe it is necessary to approach embodiment theories of emotion and new media in the same spirit. Creating a framework for digital emotions allows for new research to shape our understanding of emotions in digital space, while also opening the door for practical applications of embodiment theories on our increasingly networked lives.

Mark Hansen, N. Katherine Hayles and other scholars that employ embodiment theories to describe new media do so because of the striking parallels between grounded cognition (or embodiment theories of emotion), phenomenological theories, and the construction of digital networks. The relationship between technologies, our bodies, and our cultural environment

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[143] Picard, "Emotion Research by the People, for the People, 254.

describes a self-perpetuating process of heightened connectivity because with each new technology conforming to our bodies, and with our bodies conforming to these new technologies, our environment reflects and extends those changes. This dance between human and machine is more beautiful than the drum of inputs and outputs—a mind-numbing noise that convinces people like Malcolm Gladwell that a real revolution could never be "tweeted." If we continue to separate media from people, we will continue to argue that revolutions can never be "tweeted," because we will always privilege human action over technological connectivity (or "weak" connections). Despite all of the jargon of embodiment theories, they show us that by viewing people and technologies as part of a process that occurs within our environment and our bodies, we can understand new media as *human potential,* not simply tools. In the previous section I discussed three common themes in embodiment theories of new media: a common understanding of embodiment, the importance of culture, and the declaration of quasi-utopian futures based on the embodiment process. Digital emotions mimic these features, but with a few key updates, or shifts in perspective, to make them more accessible to a variety of media and users. It is then worth discussing what Mark Hansen and N. Katherine Hayles contribute to the discussion of emotions in new media, and what they have missed.

The use of the term "embodiment" becomes slightly problematic when transitioning from cognitive science to media due to the introduction of technology. Where proponents of embodiment theories of emotion cite mirror neurons, and/or "as-if-body-loops" to describe the body's process of (re)experience, as well as the role of culture on our emotional repertoire, Hansen, Hayles and others expand the description of embodiment to include a body/media hybrid where the body absorbs properties of the technology to incur the (re)experience. New media theories of embodiment rely more on emergence and systems theory than advances in the

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mirror neuron system, or "as-if-body-loops" because there is more theoretical wiggle room. Emergence and systems theories allow for arguments of "transindividuation" that even a phenomenological neuroscientist would subdue. As disconcerting as many of these theoretical leaps are for some scientists, embodiment theories are still our best bet when attempting to describe and understand how emotions work in digital spaces due to the concept of (re)experience and/or simulation and the conflation of bodies and technologies. Studies suggest that our bodies (re)experience the action and emotion of others, and we know that technologies work because they are able to simulate, well, just about everything. Our bodies seem to be doing what digital technology does best: creating meaningful experiences directly based on our environment. While there are countless studies left to be conducted, and even more interpretation to be debated, the analogous function of our minds and current technology suggests that the role of technology as a medium for simulation could mirror our own cognitive process. The conflation of the body and the machine could then broaden our emotional intelligence by heightening connections, therefore (re)experiences. The key word here is *could*. We don't know for sure. Researchers can barely agree on a common definition of "emotion" let alone how emotions increase our relationships with technologies. The relationship between simulation and feedback is critical to understanding digital emotions, but so is the cultural component that is integral to the feedback process. Hansen and Hayles overly rely on hotly debated science and consequently privilege the body/technology interaction. If embodiment theories are going to be useful in a framework for digital emotions, acknowledging the scientific debate concerning embodiment theories is the responsible thing to do. This allows for the framework to engage the theory conscientiously, while remaining malleable. Furthermore, the role of culture in the feedback process deserves a broader scope than select new media artworks. We have to combine

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what science suggests with what we feel we know phenomenologically. This is where culture steps in—we can look around, and this simple act has merit.

From a cultural perspective, embodiment theories highlight the importance of our emotional repertoire in shaping our emotional behaviors. The arts substantially contribute to the emotional repertoire of individuals across the globe, although, when discussing embodiment from a new media perspective, the focus tends to discount popular culture. Mark Hansen looks to gallery-focused installation pieces by renowned artist Robert Lazzrini and video artist Bill Viola that beautifully inspire affective responses by design, and N. Katherine Hayles explores works of new media literature that reveal the body/technology hybrid that she so meticulously describes. Often, the pieces described present the complexities of the quasi-utopian futures that their respective theories explicate. The arts typically expose fundamental truths, or the cumbersome miscellany of the human experience by tapping into our emotions. Yet contemporary art has moved far beyond the confines of a gallery space, or even spontaneous, artistic eruptions. New media art pieces are bleeding into our everyday lives, which is why it is important to focus on new media artworks that live and breath online, not simply in galleries or studios. It is equally important to expand the current arts-based model for digitally induced affect to other forms of media beyond new media artworks and pieces of literature. Popular culture is often dismissed as "pop" culture, i.e. youth culture, and consequently overlooked when modeling these weighty media theories. *House of Leaves*, a novel praised by both Hansen and Hayles for its digital intimacy and affective power, is by no means a "pop culture" novel in the traditional sense. While Mark Danielewski's anti-hero, Johnny Truant encapsulates the coolness and anxiety of a hip, urban punk, the snippets of hot sex and drug use fail to entice the average reader to navigate the mental commitment of a network of historical allusions that would exhaust a seasoned

academic. When Hayles cites the book as "complex literature as rock performance"[144] she is talking about dedicated readers who celebrated the referential complexities of the book—she is talking about a new generation of *readers*. The dedicated fans of *House of Leaves* are individuals who embrace the "grammatically and etymologically challenging, philosophically probing and culturally hyper-contemporary novels" of David Foster Wallace[145] and other literary giants of the late twentieth century. This subculture of readers is looking for a literary challenge within the celebrated avant-garde of contemporary literature. Despite describing the landscape of twentieth century pop culture, *House of Leaves* is far from it as a novel. So when we talk about widening the scope of new media affective models, we have to delve into the messy, neon world of popular culture because this is where the bulk of our emotional experiences derive. Our emotional repertoires, while individually constructed, pull from countless shared cultural environments, and most of these environments are not critically acclaimed. Twenty-first century culture is what Lawrence Lessig dubs "re-write" culture, and it is a fast-moving, chaotic mash-up of high, low, camp, and kitsch.[146] Not just for kids, re-write culture appeals to a broad demographic because it weaves together the old and the new. While installation pieces, such as *Listening Post*, and novels like *House of Leaves*, represent a model for some new media theories, they are only a small piece of a much larger, richer culture from which we interact. A framework for emotions in digital space has to account for "high" art and popular culture simultaneously while highlighting the current feedback environment.

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[144] Hayles, *Writing Machines*, 125.

[145] Bruce Weber, David Foster Wallace, Influential Writer, Dies at 46," *The New York Times,* September 14, 2008, under "Books," http://www.nytimes.com/2008/09/15/books/15wallace.html (accessed February 28, 2011).

[146] Lawrence Lessig, *Free Culture: The Nature and Future of Creativity,* (New York: Penguin, 2005).

New media embodiment theories focus on select pieces of art and literature because those works are often deliberately constructed to illustrate the feedback process that so intimately links digital environments and our bodies. Whether discussing posthumanity or a new philosophy for new media, the arts occupy a liminal space between our present and the possible future where we can both reflect on our current technological predicament and glimpse into potential tomorrows. A silver lining is often attached to embodiment theories because they rely on a shared affective experience, which suggests that people are brought together to execute a common purpose. Facilitated by digital technologies, this intimate interaction would then lead to empathetic society and consequently a better world. Yet, championing "transindividuation" is a risky endeavor when one assumes that a shared purpose leads to positive action. 4chan.org exemplifies the description of "transindividuation" and the results are often cruel and catastrophic. "Trolls" on 4chan's /b/ board began harassing the family of Mitchell Henderson, a 7th grader who took his own life in the Spring of 2006, after they found amusement in his MySpace profile. Mitchell's profile was hacked, his parents received prank calls for over a year after his death, and the "an hero" meme (as it came to be called) now describes a person who commits suicide for a "stupid" reason.[147] Mitchell Henderson, of course, did not commit suicide because he lost his iPod—the concocted impetus for the meme—but after the trolls on 4chan took hold of the story, it didn't matter. On the other hand, the twenty-first century has seen social networking sites facilitate revolutions and consol the suicidal. Emotionally connecting large groups of people with the hope of cultivating empathy is a noble gesture, and one that has merit in our digital world, yet it is important to recognize that digital environments are neutral when it comes to emotion—our own desires drive the connections—and if a group of particularly narcissistic, puerile, techies come

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[147] Schwartz, "Malwebolence," 25.; Urban Dictionary, "An Hero," Urban Dictionary Website, http://www.urbandictionary.com/define.php?term=an+hero (accessed February 28, 2011).

together as one unit and barrage a grieving family, it is thanks to the shared community that digital technology makes possible. Empathy can backfire when an individual recognizes the possible negative impact of their actions and continues wholeheartedly. The hive mind of 4chan relishes the emotional turmoil caused by their actions. Empathy can be masochistic. So, what do we make of the future of heightened empathy in digital space? We have to wait and see. Most of our digital interactions are rather mundane, and 4chan is definitely the exception, not the rule. Still, declarations are often disproved before they make it to print (think Gladwell), so frameworks seem to be our best bet when discussing the impact of emotions in digital space. We should take a cue from our brains and be plastic.

Embodiment theories, culture, and digital futures are each critical gateways into our understanding of emotion in digital space, but so far they have only been addressed in a very limited cultural scope through an even more limited lens of cognitive science. An accessible, inclusive framework for understanding emotions in digital space does not exist, and this absence in the midst of such dramatic changes to our communicative tools is disconcerting. We are only going to continue emoting in digital space, and as our emotions lead to actions with consequences we should be aware of these changes in both the technology and ourselves. Many questions arise from this problem: What does it mean to emote in digital space? Could this new environment and our interaction with (or our becoming) change who we are? (A twenty-first century human with a new emotional life? A new communal paradigm scenario?) What is lost or gained when we emote in digital space? How can we talk about emotions in digital space in a way that makes sense to the millions of people who are engaging in digital communication? The answers to these questions are vital to understanding shifting norms and behaviors as technology becomes more ubiquitous. Furthermore, the changing popular culture provides a good barometer

for the future of emotions in digital space. Matching our understanding of science with the popular culture gives a more realistic understanding of the world and our ability to change it (or be changed by it). Right now, we are living an old conception of self that is no longer relevant in the twenty-first century. The theories that we have to work with are incredibly opaque and the science is truly in its infancy. It is a precarious place to build a foundation for anything, let alone fickle emotions.

The science of emotions and the construction of self continue to rage on, luckily for us, as new technologies widen the view into our bodies and minds. What embodiment theories of emotions share with many other emotion theories, such as appraisal theories and cognitive theories, is the understanding that what we call "self" is plastic. We are changeable; sometimes consciously and many time unconsciously we shape to fit our world. Children born in the past fifteen years are growing up in a digital world that is radically different from our own childhood, and this world is changing the way their brains are wired. Heavy media multitaskers are more sensitive to distracting stimuli, and they use procedural memory (habit memory) more so than declarative memory (typically used in critical thinking).[148] Our "status update" world is rewriting our brains to react to short bursts of information constantly, instead of sustained, in-depth communication. Emotions lie at the heart of this shift between extended communication and short bursts of information because truncated communication, whether textual or visual, requires heightened emotive power to convey a state of being and inspire a response or behavior. Digital emotions are the embodied feedback of these short communiqués. With this framework of digital emotions, I suggest that emotional experiences that are facilitated by digital space and/or digital

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[148] Dalton Conley, "Wired for Distraction," *TIME*, February 21, 2011, 55.

technologies are unique because of the intimate feedback that occurs between digital environments and our bodies. This feedback alters emotional experiences based on interactions with media, the community of users, and/or the aesthetic experience. Working separately, in tandem, or all at once, the media, users and experience both expand and limit our emotional repertoire through the ubiquity of emotion generating media and the redundancy of the media. The impact of such a broad range of emotional experiences in new, hybrid environments point to a shift in our understanding of the twenty-first century human by complicating our traditional understanding of community, empathy, and identity via face-to-face interactions.

The foundation of the framework of emotions in digital space begins with a general description of digital emotions. Digital emotions describe the feedback process that occurs between digital technologies and our bodies with respect to short, networked inscriptions of emotion and the (re)experience of those inscriptions within the body and through digital space. In short, digital emotions are a process of digitally mediated inscription and (re)experience. Unlike the general description of affect in regards to embodiment theories of new media, we can see digital emotions in action because the process describes more than short-term neurological arousals. Digital emotions include the entire, distributed cognitive load—what Andy Clark describes as our "extended brain"—therefore digital emotions are analyzable. The environmental piece of the feedback process is specifically digital, meaning it is connective, ubiquitous, and mediated by digital networks. (Where Hansen and Hayles see *House of Leaves* as a "digital" text due to its digital features in an analog state, the affective text and layout in the novel would not qualify as a "digital emotion.") Emotions fuel the process of digital emotions and become the process as well—this is why digital emotions are both the inscription and (re)experience, which

makes them highly plastic and unstable. Digital emotions express five basic characteristics that can be applied to a variety of media environments:

1. They describe a process of feedback that link short, emotive inscriptions in digital environments to users and their (re)experiences of those inscriptions.

2. This feedback process includes, but is not limited to, the inscriber, the medium, and the receiver and the emotive experience fuels the initial connectivity and any further connectivity.

3. The emotional value of the process varies depending on the media, the community of users, and the aesthetic experience of the digital emotion.

4. Digital emotions influence our emotional repertoire by normalizing our paradigm scenarios.

5. They are highly malleable based on changes in technologies and their ability both expand and contract emotional experiences in real time.

Clearly, the feedback process that digital emotions describes is based on a combination of embodiment theories of emotion and more general embodiment theories of new media. Like embodiment theories of emotion, the process of digital emotions recognizes the importance of (re)experience and/or simulation to conjure emotional understanding. Whether this (re)experience is perpetuated by the mirror neuron system or a broader system of "as-if-body-loops," only time and more research will tell. Nonetheless, the brain's ability to quickly recreate a perceived emotive behavior or emotionally stimulating experience is widely cited in scientific studies. The burgeoning, hybrid subfield of neurophenomenology is particularly helpful when discussing digital emotions because the perception of the inscription drives the possibility for further connectivity. Furthermore, the subjective experience expands to include perceived digital communities where the subject, or user, may become univocal. Digital emotions may display a *perceived* "transindividual" based on the speed and ubiquity of the feedback process.

Phenomenological theories, illuminated by neuroscience, help to explain this illusion. Embodiment theories of new media, as we have seen, adopt many of the characteristics of embodiment theories of emotion. Digital emotions mimic the three common themes cited in the most prominent new media theories: the use of embodiment to explain the relationship between man and technology, the importance of culture on this relationship, and the projection of better futures based on this heightened connectivity. Yet, the framework of digital emotions allows for varied levels of interaction based on the balance of inputs by each part of the feedback process (the media, the community of users, and the aesthetic experience). In other works, the framework allows for strong and weak emotive connections based on these short inscriptions.

The sum of the framework suggests that digital emotions, because they are based on short, quick, and plentiful inscriptions of emotion, influence our emotional repertoire because they increase the number of our emotional experiences, while manipulating the value of those interactions. This shift in communication has in fact created a uniform paradigm scenario for the twenty-first century, networked user, therefore normalizing our emotional experiences and reactions. Digital emotions are more influential because of their global reach; they are magnified because of this reach and limited because of their short inscription status. The connectivity of the media dictates their flux and redundancy; therefore, they are highly autonomic and plastic. The spontaneity, ubiquity and collective force of digital emotions is changing how we understand emotions, how we react to emotive inscriptions, and how we understand ourselves and each other—for better or worse.

If digital emotions are changing our paradigm scenarios, our ongoing subjective experience encoded by our culture, memories, and narratives, the consequences of this shift have broad implications. A single emotional inscription now influences countless (re)experiences in

real time, across cultures, geographies, and societies. As the emotion becomes continuously

remediated within the network, the collective action inspired by the network of emotive

experiences overrides the content of the emotion inscription, and even the connections
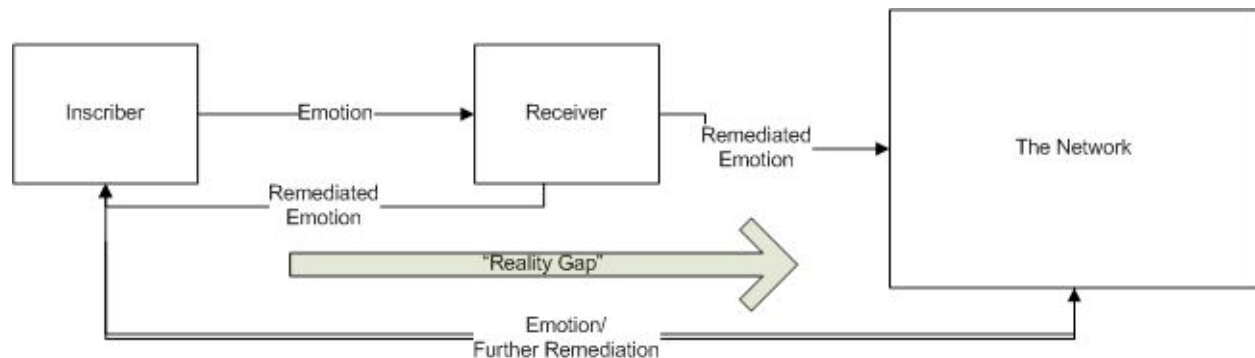

Figure 1. The feedback process of a digital emotion

themselves. Embodiment theories of emotion care little about the content of an emotion

anyway—cognitive theorists such as Martha Nussbaum are more interested in specific emotions,

such as joy and anger—but embodiment theories see these distinctions as culturally specific. The

specific connections, in a hyper connective world, are also lost in translation because they are

almost impossible to track. The best we can do is surmise a low or high connectivity for a digital

emotion, and even that distinction is highly subjective (I will give it a go in Part Two

nonetheless). What is left is the action or behavior that results and in turn drives further feedback

in the process of digital emotions (see Figure 1). Focusing on the emotive action, or the

consequence of the (re)experience is what drives the digital emotion and pulls more users into

the shared experience. It also balances out the feedback process so that the

environmental/cultural component of the processes is equivalent to the body/technology

component. The action stabilizes the feedback process with a singular function, but destabilizes

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the collective force of the digital emotion because the networked actions of the group, much like an algorithm, are difficult to predict. This is where "transindividuation" becomes problematic— we don't know if a post on a social media site will incite heckling or sympathy. Furthermore, digital emotions are magnified and limited in these spaces. The result of this anomaly is what I call a "reality gap" where the original emotive experience is eclipsed by countless (re)experiences of the inscription. The digital emotion is limited by the media and magnified by the connections, and this flux and redundancy erases the original context of the digital emotion and places context within the body and emotional repertoire of the user. The experience becomes both singular and plural (much like the definition of "new media"), but what makes this different from, say reading a popular novel, is that the experience is quickly turned around (through the feedback of digital emotions) and shot back into the network through links, and such. What is the ultimate consequence of these contextually opaque (re)experiences? It may seem as though it is a cheapened emotion—a used emotion that is nothing more than hollow text floating around cyberspace—but this is where digital emotions require their own description and framework. These "emotions" are different from the rush of a first kiss, or anger at a loved one, but they *are* emotions that have an impact on the way we express our world and ourselves. The more we transition to networked, digital communication, the more traditional face-to-face emotive experiences will translate to digital technologies. These moments are then recorded, documented, and distributed—they are fleeting and permanent in a single breath. Accepting the framework of digital emotions also means accepting the fact that digital emotions exist simultaneously and on par with "normal" emotions. Otherwise, we cheapen an increasingly influential medium of communication.

Understanding the role and consequences of digital emotions is difficult in a vacuum. The second part of this research project focuses on applying the framework to the various parts of the feedback process: the technology, the community, and the aesthetic experience. The body participates in each of these stages, and popular culture is present throughout as well. Each of these factors, when viewed through embodiment theories contributes to our updated paradigm scenarios and the spontaneous, ubiquitous and collective force of digital emotions. The framework proposed does not seek to add to the already complex tangle of emotion theories, or media theories for that matter, but instead applies the possibilities of a select group of those theories, the most integrated and promising, to our digitally emotive lives. The moniker "digital emotions" allows for a discussion of this process in a language that is (hopefully) straightforward and sensible in the context of current science and our popular culture.

The most intriguing applications to the framework correspond to the three major aspects of the feedback process: technology, community, and aesthetics. Part Two will explore various applications of the framework on digital environments that exemplify these aspects. Chapter four explores affective computing and the current and future status of emotive technologies. Chapter five explores the vast array of networked communities, such as social networking and gaming. The final chapter explores the impact aesthetic experiences when coupled with digital emotions—a phenomena I call digital community artworks. Digital community artworks inhabit a small segment of our current digital environment, but keeping with the spirit of embodiment theories of new media, I predict that they will continue to inspire and influence more common forms of communication.

Part Two

Applications

Chapter Four

Technology: Affective Computing

 The question is not whether intelligent machines can have any emotions, but whether machines can be intelligent without any emotions.

–Marvin Minsky[149]

The impact of digital environments and new media technologies on our emotional lives is complicated and widely contested. In the midst of these theoretical debates, a small group of engineers and scientists work diligently to develop affective technologies that relate to, arise from, or influence emotion.[150] Most notable are the researchers and engineers in the Affective Computing Group at MIT's Media Lab, lead by affective computing pioneer, Rosalind Picard. The group boasts over twenty current projects and fifty-five former projects (some of which are still ongoing)[151] that challenge our assumptions of the perhaps awkward marriage of emotions and computers. According to the group's website, its research "develops new technologies and theories that advance basic understanding of affect and its role in human experience. We aim to restore a proper balance between emotion and cognition in the design of technologies for

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[149] Marvin Minsky, *The Society of Mind* (New York: Simon and Schuster, 1988), 163.

[150] Picard, *Affective Computing*, 3.

[151] Affective Computing Group, "Affective Computing." MIT Media Lab. http://affect.media.mit.edu/ (accessed March 1, 2011).

addressing human needs."[152] One of its current projects is the iCalm device (short for Interactive

Continuous Autonomic Logging and Monitoring), which logs and communicates personal

autonomic behavior. Typical of many of projects at the Affective Computing Group, the iCalm

engineers developed this low-power, low-cost, wearable device to help adults, infants, and

children track autonomic and affective states that could lead to harmful behaviors. For example,

individuals overcoming addiction could wear an iCalm device to track their stress levels and

preempt a desire to smoke, drink, or gamble. The device could be programmed to anticipate

these biological changes and alert support for the patient. The creators of iCalm claim that "help

might be customized for better managing that affective state and its ceases, perhaps even at a

moment well timed to the triggering event."[153] iCalm could also help patients with psychosis or

other emotional disorders—going as far as alerting their doctor and altering medication. As with

many projects undertaken at the MIT Media Lab, iCalm also works to help children living with

autism spectrum disorder. The technology can detect extreme states of autonomic arousal that are

"unseen" to other individuals. Children with autism could then receive emotional support from

their caregivers before the expression of any extreme behavior.

iCalm and similar wearable technologies utilize biofeedback to indicate emotional

arousal, and coupled with a software program, suggest behaviors for the user—this human-

computer interaction (HCI) is considered a reflexive relationship. Alternative functions of

affective computing can facilitate human-to-human interaction and computer expression of

emotion. The latter application often receives the most attention due to the science fiction aura

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[152] Ibid.

[153] R. Fletcher, et al., "iCalm: Wearable Sensor and Network Architecture for Wirelessly
Communicating and Logging Autonomic Activity." *IEEE Transactions on Information
Technology in Biomedicine*14, no.2 (March 2010): 215.

that surrounds "emotive" machines and the perhaps misleading term "affective computing."

Computers that "express" emotion do so to facilitate more effective HCI, not simply to compete

with humans as emotive beings. Programs are being developed that can adjust the computer's

interface based on biometric feedback. For example, if a user is working through a help session

online, a sensor may indicate that her heart rate is increasing and her palms are becoming sweaty.

The computer will then note that she may be frustrated and try to approach the fix from a

different perspective, with a more soothing voice, color scheme, music, or even terminate the

session. Taking iCalm technology one step further, mobile phone technologies are being

developed to send users text or voice messages to intervene if wearable sensors detect signs of

stress or anxiety. This type of mobile technology is being used to help soldiers with PTSD

recognize signs that lead to attacks while providing connections to external support systems.[154]

These technologies "act" like humans in that they appear to provide empathetic support while

mediating behavior and can be considered HCI or computer mediated communicators (CMC)

based on their function.

The broad scope of affective computing raises many questions that trump base fears of

increasingly human-like computers. While Picard and other proponents of affective computing

argue that computers should adapt to us, not the other way around, it is reasonable to suggest that

affective computing is a two-way street. The framework of digital emotions implicitly argues

that digital environments are influencing our emotional lives whether or not new media is

affectively engineered. Digital emotions describe a process of feedback that link short, emotive

inscriptions in digital environments to users and their (re)experiences of those inscriptions, and

they are highly malleable based on changes in technologies. While affective computing only

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[154] Affective Computing Group, "Affective Computing." MIT Media Lab. http://affect.media
.mit.edu/ (accessed March 1, 2011).

claims a small share of new media technologies, the use of emotionally driven products and services is already gaining momentum. So, how do these new technologies and HCI relationships influence the process of digital emotions? What can we learn from a purely computational perspective of emotions? And what is missing? Understanding emotions from a technological point of view can help illuminate the entire feedback process of digital emotions while furthering the affective computing debate.

This chapter explores the evolution of artificial intelligence with a focus on affective computing and discusses the role of digital emotions from the perspective of "smart" technology. The various applications of affective computing question our understanding of emotions and how we interact with digital technologies. Despite the debate surround affective technologies, the research is robust and moving from the lab into our daily lives—whether we choose to question their influence or not. Based on the framework of digital emotions, I hope to show that affective technologies not only influence non-affective technologies, but also have the potential to influence our emotional lives in profound ways.

<center>How Artificial Intelligence became Affective</center>

In 1950, Alan Turing's essay "Computing Machinery and Intelligence" appeared in the philosophy journal *Mind* (the same journal that published "What is an Emotion?" by William James sixty-six years earlier) and ignited the modern artificial intelligence (AI) movement. The essay describes what came to be known as the "Turing Test," which evaluates a machine's ability to simulate human intelligence—a key element of AI. While still debated today, the Turing Test presupposes two debatable factors: humans always exhibit intelligent behavior and

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intelligent behavior is always human.[155] The human brain, while incredibly plastic, is also

incredibly fallible, and our behaviors reflect that fallibility quite often. Intelligence is also

(thankfully) not bestowed solely on humans. Emergent systems "behave" intelligently as they

create complex systems from a network of simple interactions. (Proponents of affective

computing argue that affective technologies can exhibit emergent behaviors as they "get to

know" our emotions.)[156] Furthermore, we have also seen incredibly success stories in the field of

AI over the past two decades—namely Deep Blue's victory over world chess champion Garry

Kasparov in the spring of 1997, and Watson's victory over Ken Jennings, the undefeated

Jeopardy! champion in 2011. Developed by IBM, both Deep Blue and Watson mastered

supremely intelligent behavior to out perform our best examples of human intelligence in the

worlds of chess and trivia. The success of Watson, perhaps more than Deep Blue, challenges our

assumptions about intelligent machines because we can readily see the potential impact of

Watson-esque technology in our lives. Watson is able to synthesize queries in natural language—

a highly complex quilt of idioms, innuendo, slang, and metaphor—and the high rate of accuracy

makes a typical web search seem sluggish and inefficient. As IBM explains, Jeopardy! "demands

that the computer deeply analyze the question to figure out exactly what is being asked, deeply

analyze the available content to extract precise answers, and quickly compute a reliable

confidence in light of whatever supporting or refuting information it finds."[157] The key term in

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[155] Alan Turing, "Computing Machinery and Intelligence." *Mind* 59, no. 236 (October, 1950): 433-460.

[156] Rosalind Picard and Jonathan Klein, "Computers that Recognize and Respond to User Emotion: Theoretical and Practical Implications," *Interacting with Computers* 12, no. 2 (2002): 141.

[157] IBM Watson, "FAQS," IBM, http://www.research.ibm.com/deepqa/faq.shtml (accessed March 1, 2011).

this description is "reliable confidence." Right now, web searches, while often intuitive, do not supply one definitive answer. Watson shows us a glimpse into a world where search choices become obsolete. This is all fascinating and exciting for proponents of AI and the general public (perhaps more entertaining within popular culture at the moment), but viewed from the perspective of a digital emotion enthusiast, the implications of Watson-esque technology (specifically the DeepQA technology that Watson employs) are exciting. Retrieving data on emotion is a messy and rather unreliable process that typically depends on biological and physiological reactions that suggest congruent emotions. For example, facial recognition technology, such as FaceSense, tracks intricate facial movements, gestures, and other nonverbal cues to determine user's emotional and mental states. The only other means by which affective states can be assessed is self-reporting—the subjective experience (a factor that many affective technologies, such as FaceSense bypass). This method is useful, but also poses some inherent problems: sometimes people just don't know what they feel. DeepQA technology can greatly assist affective technologies in interpreting human subject reports by assessing emotions through the inherent complexities of language. Coupled with biological and physiological reactions, human language technology could be an important key in the field's future because users could express their emotional experiences in their own words.

With the disassembly of Deep Blue in the late nineties, and the entertainment value of Watson being its most salient feature at the moment, these technologies currently seem irrelevant to our daily lives, yet AI is all around us. The reason why we may not notice is because it works so well—it's so…human. Pandora Radio creates an individualized music library based on a single artist selection, Google Goggles links users to information about their world through the camera in their smart phones, banks often know that an account has been highjacked before the

victim has a chance to notice missing funds, and cars can parallel park themselves (how

brilliant!). Our digital environments are deceivingly expansive with endless choices, but also

incredibly narrow as technologies work to create individualized digital experiences. This

individualization is a guiding principle for affective computing engineers because they

understand that personalized experiences are calming.[158] It is no surprise, then, that computers

are preloaded with soothing landscape photographs to decorate the desktop, or that users often

replace these landscapes with photographs of loved ones. Affective computing is a growing

segment of AI research, and the growth of simple affective technologies, such as emoticons

("emotion" + "icons"), and like and dislike buttons on a variety of media (Pandora Radio, Digg,

Facebook, etc.) show that our opinions, and our ability to create comfort zones in ubiquitous

digital spaces, is growing. We are living in an increasingly customizable world thanks to

advancements in AI, and we barely seem to notice.

Much AI technology today works behind the scenes, so to speak, not only to create

comforting, customizable experiences, but also to work more quickly and efficiently than

humans (even lawyers are being replaced by the computer[159]). Affective computing attempts to

make the encroachment more amiable by creating computational adaptations that reflect human

needs—our emotional needs. It is not that we want computers to emote per se—no one is looking

to engage with an angry computer—but that we want computers to be empathetic and responsive

to our needs. This should come as no surprise given that empathy, according to embodiment

theories of emotion, drives much of our communication and understanding of one another. If

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[158] Noam Tractinsky, "Tools Over Solutions? Comments on Interacting with Computers Special Issue on Affective Computing," *Interacting with Computers* 16, no. 4 (2004): 756.

[159] John Markoff, "Armies of Expensive Lawyers, Replaced by Cheaper Software," *New York Times*, March 4, 2011.

computers could empathize with our situation, human-computer interaction would become increasingly influential. ELIZA, one of the earliest examples of natural language processing software, engaged in therapeutic consultations in the mid-sixties with startling results. With no emotional compass, the program comforted some patients with canned responses to their statements. For example, if a patient stated that they needed help to deal with unhappiness, ELIZA would ask, "What would it mean to you if you got some help?" This type of questioning relaxed some participants, even after they were informed that ELIZA was a computer.[160] Employing a rather simple algorithm by today's standards, ELIZA appeared to empathize with participants, and empathy was enough to make the session a success. In the mid-nineties, Rosalind Picard recognized what popular culture is now experiencing: computers need emotional intelligence if they want to function seamlessly with humans. Her seminal book, *Affective Computing*, lays a framework for "computing that relates to, arises from, or deliberately influences emotion."[161] Picard argues that our relationships with computers are inherently social in nature and that we infer emotion even when there is little evidence to support such an assumption.[162] Weaving the theories of Damasio, LeDoux, and Laird into her framework, Picard understands that an "emotional" computer is an evolutionary computer—a machine that can adapt to human emotions by being flexible and rational. Computers with emotional intelligence are plastic, and plastic computers can exhibit emergent behaviors that get to know their users. Picard outlines five components of a system to "have" emotions (and by "having" emotions,

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[160] Joseph Weizenbaum, "ELIZA: A Computer Program for the Study of Natural Language Communication between Man and Machine," *Communications of the Association of Computing Machinery* 9, no. 1 (January 1966): 37, 42.

[161] Picard, *Affective Computing*, 3.

[162] Ibid., 13-14.

Picard means "express" emotions): emergent emotions and emotional behavior, fast primary emotions, cognitively generated emotions (she notes that this is not necessarily sufficient for emotions, but important), emotional experience (cognitive awareness, physiological awareness, subjective feelings), and body-mind interactions.[163] Based on these requirements, we can see how technologies such as iCalm play a role in affective computing. These wearable technologies read biological outputs and "decide," based on the individual's context, health history, and such. to seek help for the user, to suggest medication, or suggest a more beneficial behavior. The key factor for affective computing is that the technology would learn the best response based on a variety of contexts and your emotional response to their suggestions. In a way, affective computers build their own paradigm scenarios based narrowly on their interactions with you— the user. So, an HCI relationship in Birmingham, Alabama may be very different from one in Taipei, Taiwan, even though each user may have purchased the same machine.

Even with highly customizable applications, computers still require a certain level of fallibility and quirkiness—the redundant responses of ELIZA would only last but so long. During an interview with Brian Christian, author of *The Most Human Human: What Talking with Computer Teaches Us About What It Means to be Alive*, *The Daily Show* host Jon Stewart questioned the evolution of artificial intelligence:

> STEWART: So the idea that a computer can accomplish the simple tasks with a certain amount of grace and not a robotic sense is what's more impressive now about the computer?
> CHRISTIAN: Well, what we're learning is that these seemingly everyday things that we take for granted...as turns out is more computationally complex than playing grandmaster chess or factoring huge numbers.
> STEWART: Here's when I think computer will be human, when they're walking down the street and they trip and they look up and go "I meant to do that."
> CHRISTIAN: Ya.

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[163] Ibid., 68.

STEWART: Cause that's the thing that, when they evolve a sense of neurosis, when they, when they walk up to Alex Trabec and go "I wonder if he thinks I'm an asshole," like that…

CHRISTIAN: Well, that's something called "Theory of Mind," which is one of the big characteristics of human intelligence—that a system like Watson only understands the world as it is…but even if you think about something as simple as gossip…that we have to hold not only the way the world is but each individual perspective, or each individual perspective on every other perspective.

STEWART: …So some of our most base aspects…it's so interesting…until a computer is like "that MacBook Pro is a whore"…[164]

What Christian is explicating, and what Stewart so humorously points out, is that even the most "intelligent" computers lack perspective, or the phenomenological experience that currently makes HCI human centered. When Stewart comments that computers will exhibit human characteristics when they experience embarrassment, or social anxiety, he is noting the intrinsic fragility of human ego and experience. When Christian discusses the mental agility of shifting perspectives, he is essentially explicating the function of our ability to (re)experience human emotion. The title of Christian's book, *The Most Human Human*, derives from the Loebner Prize, a yearly reward offered to a program that can pass the Turing Test (or Hugh Loebner's version of the Turing Test—the program had to fool ten judges during three hours of unrestricted conversation). An equivalent award goes to the participant that acted the most "human" in the mix of man and machine. An early winner of this rather odd contest was Charles Platt, a contributor to *Wired* magazine. In a 1995 article describing the experience of being "The Most Human Human," Platt relates some his performance anxieties:

> The first question appears on my screen. My judge laboriously types: "What is the difference between cryonics and cryogenics?"
> There is no way I can give a human-sounding answer to a question as dry as this. To seem human, I need to show emotion—but if my emotions are excessive compared with the question, the effect will be false. It's a trap: the degree to

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[164] The Daily Show with Jon Stewart, "Brian Christian – March 8, 2011," The Daily Show website, http://www.thedailyshow.com/watch/tue-march-8-2011/brian-christian (accessed March 8, 2011).

> which I can seem human is limited by the humanness of the judge who is interrogating me.
> This is exasperating. But wait; irritability is a human response, so maybe I should play it up. I tell my judge to not ask such boring questions…the judge makes a tetchy response…and within minutes, we're having a flame war.
> …My new judge asks me, "What is the purpose of cryonics?"
> "To be frozen after I die so I can be revived in a future where people are so highly evolved they no longer ask stupid questions."
> …despite my worst fears, when all the votes were in, I was rated the 'most human human' of all. By being moody, irritable, and obnoxious, I came out way ahead of the other four confederates, who were mild-mannered and much more polite.[165]

In a moment of clarity, Platt recognizes that the gaping hole in computing is emotion. Computers, no matter how frustrating at times, are serial pleasers—they are command-based technologies. The core simulative activities that we perpetually produce to remain engaged in the world is what seemingly sets us apart from computers. If computers could close this gap, affective computing would enter a watershed moment in our digital landscape. Stewart and Platt, in two very different contexts, arrive a similar conclusion: computers have to emote if they are to be anything like humans.

AI is transforming our lives, despite the lack of fanfare. The influence of affective computing is buried within this velvet revolution, and perhaps rightly so. Affective computing is successful when it inconspicuously integrates into our lives. Picard argues, "the individual's personal computer will respond best if it is also able to perceive context—sense if you're climbing, if the room temperature change, or if you just read a news story about a tragic bombing. In other words, an affective computer will be effective if it is also a perceptual computer."[166] Understood as perceptive computation, some affective computing can be thought

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[165] Charles Platt, "What's It Mean to be Human Anyway?," *Wired* 3, no. 4 (April, 1995).

[166] Picard, *Affective Computing*, 33.

of as a shadow that simultaneously engages one's environment while illuminating and influencing emotional behavior along the way. Perceptive computers *imply* affection, just as individuals that perceive and create context imply an emotional investment in a particular situation. Our ability to perceive and create context (therefore create a network of emotive paradigm scenarios) makes us distinctly human. If computers can simulate this ability, then affective HCI will integrate seamlessly with human-to-human communication. So, when your PC, after a few years of getting to know your reactions to web content, suggests that the new MacBook Pro is, in fact, a whore, and you readily agree, perhaps affective computing is on the right track.

<center>*Problems with Affective Computing*</center>

Although proponents of affective computing tout the advancements in computer engineering that contribute to affective technologies, critics argue that affective computing requires "suspension of disbelief" when entertaining ideas of emotive "bots."[167] Frances Dyson, an affective computing skeptic, wonders if wearable emotion indicators could induce a "social and biological autism" where individuals are so overly cognizant of being monitored that their natural reactions are stunted, or misrepresented.[168] This "acquired autism" is a "condition that is both generated and remediated with a technologically driven psycho-social environment."[169] Other arguments suggest that our knowledge of emotion is so limited that engineering a computer to respond to emotions is a stretch, and we should instead create tools for developing

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[167] Dyson, "Enchanting Data," 248.

[168] Ibid., 256.

[169] Ibid., 257.

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affective HCI relationships, not solutions[170] (for example, focusing on personalization and aesthetics to facilitate more meaningful HCI interactions instead of trying to develop emotional reciprocity between users and their machines.) The instability of emotion theory poses other problems for affective computing. Experiments with physiological responses are often highly contrived, whereas our emotional responses in the real world are much more natural and subtle. Also, an individual's physiological responses can be surprisingly diverse.[171] Picard notes this problem when she argues for emotion research to move out of the lab into the real world.[172] Yet even emotional responses in natural environments run into problems, such as the possibility of Dyson's "acquired autism" and, again, the range of emotions expressed by individuals based on their personalities. This all assumes that researchers are interpreting data in the same fashion, which is another detriment to affective science. Responding to user's "affective states" is quite tricky—sometimes there is no reason why some people do what they do (at least no measurable reason). Noam Tractinsky makes a valid point in the context of biofeedback: "Is my blood pressure rising because I'm frustrated with the computer, or because I recalled a fight I had yesterday?"[173] Computers could feasibly recreate situational context, but for the technology to know the context of your thoughts is another story all together.

Using Affective Tutoring Systems (ATSs) as an example of current affective computing engineering, we can see how some of these criticisms play out. ATSs are a more recent subset of Intelligent Tutoring Systems (ITS), which have been around for decades. Typically using facial

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[170] Tractinksy, "Tools Over Solutions," 256.

[171] R. D. Ward and P.H. Marsden, "Affective Computing: Problems, Reactions and Intentions," *Interacting with Computers* 16, no. 4 (2004): 710.

[172] Picard, "Emotion Research by the People, for the People," 251.

[173] Tractinsky, "Tools Over Solutions?," 752.

recognition software, gesture recognition software, and sometimes biofeedback (body temperature, heart rate, and such), ATSs gather information from student users and tailor tutoring sessions to meet the user's needs. Proponents claim that affective tutoring systems can supplement face-to-face tutoring when qualified teachers are unavailable, and they can work to enhance student's motivation and success with new learning material. These tutoring systems are great examples of HCI technology—the user only interacts with the computer based on their emotive state. (Unlike CMC, there is no human on the other end, such as email tutoring, or web chats). Even though some ATS researchers claim that the technology can stimulate collaborative learning,[174] most of the science (at the moment) focuses on the relationship between one user and one computer.

Eve, the tutoring avatar featured in the ATS Easy with Eve, does not look like a typical elementary school math teacher. With her vibrant, dyed hair, cargo pants, cool sneakers and tight-fitting shirt, Eve looks like a hip, urban deejay, but Eve is an "affect-sensitive animated tutor," who was developed to appeal to primary school students (apparently very trendy primary school students) and to interact affectively with the students based on facial cues and gestures. Her creators claim that "Eve displays a comprehensive range of emotions through facial expressions; she is also able to deliver teaching content through realistic lip-synching and gestures."[175] Eve's responses are dependent on facial recognition cues gleaned from the student user in real time. The ATS keeps a running history of each interaction (student to Eve and Eve to

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[174] M. Neji, "Affective Expression Recognition in Intelligent E-Learning System," *International Review on Computers and Software* 3, no. 4 (July 2008); Ben Ammar, Mohamed, et al., "The Affective Tutoring System, "*Expert Systems with Applications* 38, no. 1 (2010).

[175] Abdolhossein Sarrafzadeh, et al., "How Do You Know That I Don't Understand? A Look at the Future of Intelligent Tutoring Systems," *Computers in Human Behavior* 24, no. 4 (2008): 1358.

student) and Eve's recommended reactions are weighted and delivered based on this constantly

updated history. The process goes something like this: after the student responds to a question

the system initiates a data file reflecting the student's current affective state, then the history is

updated classifying the response with the facial feedback, the system then generates a set of

weighted responses for Eve and a response is chosen based on the history and Eve's pre-set

responses. Finally Eve responds to the student, her response is logged in the history and the next

question is generated.[176] The key to Eve's success is modeling student behavior based on non-

verbal cues thereby responding optimally to student's needs. For example, if a student is

confused by a question, Eve can register this confusion and attempt to clarify the question, or

provide clues to the answer. If Eve's senses disengagement, she can try to approach the topic

from a different perspective to spark interest in the student. Studies show that affective agents,

such as Eve, need to be vivid and expressive to convey an emotional investment in the user; they

also need to be highly accurate to build trust and confidence.[177]

Easy with Eve has a very specific approach to tutoring for a certain age group,

demographic (middle-class New Zealanders), and subject matter. Other affective tutoring

systems are engineered to utilize multiple emotional "agents" that represent various moving parts

in the system, such as the actual tutoring, the curriculum, the emotion being exhibited by the

user, and the avatar's emotional behavior.[178] Still, other systems use mirroring techniques

(instead of reactive techniques) to help users understand their emotions. MAUI, short for multi-

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[176] Ibid., 1359.

[177] Xia Mao and Zheng Li, "Agent Based Affective Tutoring Systems: A Pilot Study," *Computers and Education* 55, no.1 (2010): 207.

[178] Ben Ammar, "Affective Tutoring System," 3013.

modal affective user interface, can simulate a user's facial expressions in real time while supplying a description of their emotions based on the physiological cues.[179] The system can also animate text only chat—a function that mimics another type of facial recognition software, EmotiChat. (EmotiChat inserts emoticons to text-only outputs based on emotional facial cues. The programs can also trigger music, soothing photos, etc. based on facial cues to help create a more relaxed and effective tutoring environment.)[180] If all of this facial recognition software seems too invasive for some users, researchers are taking a cue from security technology and implementing keystroke engineering to gauge a user's affective state.[181] While ATSs are approached from various perspectives—from helping user's understand their own emotions to providing empathetic feedback to adjusting pedagogical strategies—they all make the argument that students will benefit from digital interactions where avatars (of some sort) appear to understand their emotional state and react empathetically. ATS engineers believe that this type of interaction will motivate students to work harder since there is an emotional investment in the learning process.[182]

Affective tutoring systems rely on our own natural tendencies to anthropomorphize technologies and create social situations with machines. They harness student's emotions and

[179] Fatma Nasoz and Christine L. Lisetti., "MAUI Avatars: Mirroring the User's Sensed Emotions Via Expressive Multi-Ethnic Facial Avatars," *Journal of Visual Languages and Computing* 17, no. 5 (2006). 430-434.

[180] Keith Anderson and Peter W. McOwan, "A Real-time Automated System for the Recognition of Human Facial Expressions," *IEEE Transactions on Systems, Man & Cybernetics: Part B* 36, no. 1 (2010): 96-105.

[181] Lisa M.Vizer, Lina Zhou and Andrew Sears, "Automated Stress Detection Using Keystroke and Linguistic Features: An Exploratory Study," *International Journal of Human-Computer Studies* 67, no. 10 (2009): 870-886.

[182] Sarrafzadeh, "How Do You Know," 1351.

customize their pedagogical approach, and sometimes curriculum, to meet the needs of the student. The ability of ATSs to recognize (in most cases) six facial cues for emotion and respond with empathy is an important aspect of the system. ATS engineers recognize the importance of simulation to build relationships, and the fact that many ATS avatars can effectively respond to a user's behavior is a huge leap forward from more basic input/output tutoring software. Yet, simulation and resultant empathy rely heavily on environmental context; furthermore, facial cues are not consistent across cultures.[183] Unlike some affective technologies, ATSs are not perceptive in that they cannot infer a user's surroundings and make judgments based on external factors. For example, if a student were engaging with Easy with Eve, and they received a text message from their friend, the student may display an emotion that has nothing to do with math problem presented. Eve has no way of knowing that the student's reaction is not directed toward the system, and while the system may recognize a distraction, there is no way of knowing its value. Currently, ATSs perhaps rely too heavily on facial recognition and ignore the importance of environmental context. Facial cues are heavily dependent on social context and individual emotional repertories. Once ATSs can harness the social and cultural context of the user, while "learning" the user's responses to various environmental situations both in and outside of a tutoring environment, then the system could begin to build an emotional repertoire for the student and react accordingly.

In spite of the literal and figurative learning curve of ATSs, we judge each other's emotions all of the time, and it's a hit and miss endeavor.[184] Fast emotional appraisal—the kind that Damasio describes as "as-if-body-loops" and Iacoboni and Ramachandran attribute to mirror

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[183] Neidenthal and Maringer, "Embodied Emotion Considered," 126.

[184] R.D. Ward, "Affective Computing," 710.

neurons—works so well because humans share the same hardware. We recreate experiences because we can imagine experiencing them with our bodies. Computers do not have this luxury, so they must process our emotional behavior and respond in much more laborious fashion.

It is safe to say that critics, and perhaps some users, would like to see computers and other new media be *effective*, not affective,[185] and while these criticisms are legitimate, they are not lost on affective computing engineers. In fact the debate surrounding affective computing as a worthwhile, or even feasible, endeavor came and went in a flurry of articles around 2003 and 2004, most notably in a special section on Affective Computing in *Interacting with Computers*. The terminology surrounding affective computing is perhaps its own worst enemy—leading skeptics to believe that engineers are building computers to rival human emotion, or to replace humans in some emotive capacity. While some affective computing projects dabble in these areas, this is hardly the broader goal of affective computing. Affective computing may be better dubbed "computing with affect" or "affected computing"[186] to avoid these criticisms, but such a change this late in the game is unlikely. Currently, affective computing engineers either use technology to alleviate emotional burdens in the real world, or to facilitate more communicative HCI. Of the twenty plus projects that the Affective Computing Group highlights in its current research, over half focus on helping children with autism spectrum disorder and/or their caregivers. The other half of the projects range from working to help soldiers with PTSD (the iCalm technology and other mobile computing technologies) to helping with other health

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[185] Erik Hollnagel, "Is Affecting Computing an Oxymoron?" *International Journal of Human-Computer Studies* 59 (2003): 69.

[186] Michael D. McNeese, "New Visions of Human-Computer Interaction: Making Affect Compute," *International Journal of Human-Computer Studies* 59, no. 1 (2003): 79.

disorders that could benefit from a digital companion.[187] Other affective computing research

focuses heavily on tutoring programs for students with various types of learning disabilities (as

Easy with Eve demonstrates), improving our daily, digitally communicative activities,[188] and

expanding our artistic tools with affective science.[189] There are ethical debates to be had about

affective computing, namely that it may not be the best idea to have computers "respond to our

changing moods and whims,"[190] but affective computing engineers are more rational than not

when developing these technologies, and many concerns are thoughtfully addressed within the

literature.

Understanding Affective Computing Through the Lens of Digital Emotions

It is reasonable to suggest that affective computing is the new frontier of artificial

intelligence. Understood in conjunction with embodiment theories of new media, which already

hypothesize embodied digital media, affective computing essentially tightens the feedback

process between technology and body because both agents are "affective." The goal of digital

emotions is to provide a framework for understanding and discussing various digital medias that

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[187] Affective Computing website, under "Current Projects."

[188] Mitsuru Ishizuka and Helmut Prendinger, "Describing and Generating Multimodal Contents Featuring Affective Lifelike Agents with MPML," *New Generation Computing* 24, no. 2 (2006): 97-128.

[189] Lone Koefoed Hansen and Susan Kozel, "Embodied Imagination: A Hybrid Method of Designing for Intimacy," *Digital Creativity* 8, no. 4 (2007): 207-220; Eunjung Han, et al., "Emotion Gesture Art," *Leonardo* 43, no. 3 (2010): 308-309; Steven R. Livingston, et al., "Controlling Musical Emotionality: An Affective Computational Architecture for Influencing Musical Emotions," *Digital Creativity* 18, no. 1 (2007): 43-53.

[190] Gitte Lindgaard, "Adventurers Versus Nit-pickers on Affective Computing," *Interacting with Computers* 16, no.4 (2004): 723.

convey emotion based on the two major aspects of embodiment theories: (re)experience as the source of social and cultural understanding, and cultural context as the foundation for emotional experiences and learned emotional behavior. Viewed through the framework of digital emotions, the following points reference some of the popular themes in affective computing with the goal of illuminating some of its strengths and weakness.

1. Humans engage in social relationships with technology whether or not the technology is engineered to be "affective." ELIZA's responses to the human subjects in "therapy" were not programmed to be affective, but the participants in the study projected a sense of affinity, understanding, and empathy on the program. Even in studies where human subjects "know better" than to interact with computers as though they are humans, they trend towards more natural, social, emotional interactions.[191] In our daily lives we consistently project emotion onto many types of text, with or without overt emotional cues. For example, we often infer emotion in email messages whether or not the message included emotional words or cues.[192] For short, digital messages that intend to convey emotion, we use emoticons ("emotion" "icons") and/or Internet slang, such as LOL (laughing out loud), to punctuate statements. A simple emoticon or textual abbreviation can deliver an emotional punch—a smiley face at the end of a statement can often indicate how literal the statement is intended to be understood. (After texting your dinner date that you'll be late, which response would you rather receive: "whatever." or "whatever ☺"?) These brief inscriptions are at the heart of digital emotions, and they don't need affective technologies to interpret them. They are also much more effective in CMC interactions. For HCI

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[191] Picard, *Affective Computing*, 14.

[192] Ibid.

interactions, projecting emotions onto technologies that happen to also be affective could mimic typical CMC interaction because the user anticipates an affective response.

The process of digital emotions also highlights the importance of culture in both producing and interpreting emotions. These cultural influences dictate the ways in which we interact with others and with technologies, specifically how we anthropomorphize technologies to communicate. With this in mind, some researchers argue that affective computing should be understood as an interaction to help users "understand, reflect on and experience their emotions in new ways."[193] Approached as an interaction rather than solely an interpretation, systems are sensitive to fluxes in culturally influenced communication while relying on actual lived experience over objective, physiological measurements.[194] Understood in this fashion, we can place affective computing on a continuum of strong and weak connections in digital space, instead of carving out an entirely new framework or set of guidelines for affective computing verses "non" affective computing.

2. Affective computing focuses on addressing human needs, not simply endowing computers with emotion to empower technology. Noam Tractinsky identifies three broad areas of affective computing: systems that detect or recognize users' emotions, systems that influence the users' emotional state or support users' in managing their emotions, and systems that integrate both.[195] In each of these areas, affective computing is a *user support technology* that

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[193] Kristen Boehner, et al., "How Emotion is Made and Measured," *International Journal of Human-Computer Studies* 65, no. 4 (2007): 284.

[194] Ibid., 289.

[195] Tractinsky, "Tools Over Solutions," 752.

"directly couples users and the context or situation of use,"[196] where the computer depends on a human user to initiate the emotional relationship. As the process of digital emotions shows, the feedback is largely embodied, not solely computational. The "digital load" is expanded, furthering our extended cognition into new media technologies in a dynamic fashion (not simply for extended storage, but extended interactions, as noted in the previous point).

The value of digital emotions is dependent on the media, the community of users, and the aesthetic experience of the digital emotion; digital emotions also rely on the value of the experience to fuel further experiences. Affective technologies afford us the opportunity for prolonged, digital interactions that can steadily increase in value over time thereby increasing our dependence on salient HCI relationships. This may make more sense if applied to a personal object that holds intrinsic value, such as a personal computer. Whether I am uploading photos of my daughter (a large picture of her greets me every morning on my virtual desktop), downloading new music, performing web searches, Skyping with my in-laws, or writing my dissertation, my laptop encompasses my new media world. When it is on the fritz, I treat it like a sick pet. I wrap it comfortably in foam and present it teary-eyed to the always-aloof "Mac Genius" at the local Apple Store and I pray for speedy recovery. Our relationship is clearly one sided. As noted in the previous point, we anthropomorphize our relationships with technologies and project emotion onto them and the media they mediate whether or not any sort of affect is insinuated or reciprocated. But if my laptop were to assess my mood first thing in the morning *and* select the perfect song to start my day, or upload a picture onto my desktop that would bring me some mental clarity, its interactive value as a mediator of emotions would strengthen. If we

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[196] McNeese, "New Visions," 46.

think of humans as the "on" switch for affective computing, their role as emotional facilitators, rather than emotional agents, becomes clearer.

3. Affective computing is at its most effective when it can perceive our emotions, react with empathy, and increase our own emotional awareness. Perception is a key factor in creating a context for affective technologies to react to our behavior, and one of the first features that Picard argues must be present in affective technologies. Without a contextual repertoire that correlates to your own emotional repertoire, affective technologies would never "learn" how to appropriately respond to your behaviors. While computers cannot "have" empathy, they can arguably express empathy, and this expression is a key factor in affective HCI. While the problems with biofeedback and self-reports are well documented, technologies are moving toward being able to perceive their environments. This perception will never rival human perception, but it is a big step for affective computing because a computer with a sense of the shared environment can infer your perceptions, therefore your emotion—especially if it contains data detailing a users' habits and typical responses in various contexts. Imagine if smart phones could sense a user entering a stressful situation—say walking into the doctor's office. Historically, the phone received feedback from a wearable device that traced increased heart rate and other responses that are triggered by stress. The computer "knows" that the user dislikes the doctor's office. The phone could then send a text message, picture message, or even connect the user with a loved one to calm her anxiety. (This example is based on technologies that are already in development.) In a situation such as this, digital emotions can help illuminate the feedback process when initiated by the technology.

Our ability to (re)experience observed action is already being implemented in robotics. Mimicking a human neural network, researchers are creating robotic models that utilize a similar

simulation mechanism as our mirror neuron network. As described by Lindsey Oberman the

overall implication of his particular project argues:

> The human mirror neuron system may be activated as a result of the human interaction anthropomorphizing these robots. Indeed, by activating the human mirror neuron system humanoid robots could potentially tap into the powerful social motivation system inherent in human life, which could lead to more enjoyable and longer lasting human-robot interactions.[197]

Most new media embodiment theories rely on the body to interpret the situation; digital emotions

allow for the technology to assume a more perceptual role in the feedback process. If we look at

potential paradigm scenarios that reflect HCI *relationships*, not simply individual histories, then

the role of digital emotions in our lives becomes that much more important.

    4. Affective computing relies heavily on design and aesthetics to facilitate a more

meaningful, customizable experience for users. Computer customization and affective computing

work closely together since studies show that personalizing digital space creates a more calming

computing environment. This analogy may seem peculiar, but I think it's helpful—Malcolm

Gladwell argues that human happiness is tied to having choices that reflect your tastes.

Therefore, you can embrace your personal likes and dislikes in a diverse environment that is

designed to meet your needs. Using spaghetti sauce as his primary case study, Gladwell cites the

history of expanded food product choices in the 1980s. His story begins with a man named

Howard Moskowitz who, after years of pouring over test data, recognized that people's tastes are

incredibly diverse. Moskowitz argued that there is no "perfect Pepsi," no perfect spaghetti sauce,

no perfect mustard, but a spectrum of perfect tastes for different people. Consumers were happier

when they could purchase products that met their specific likes and dislikes, whether that be

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[197] Lindsey Oberman, et al., "EEG Evidence for Mirror Neuron Activity During the Observation of Human Robot Actions: Toward an Analysis of the Human Qualities of Interactive Robots," *Neurocomputing* 70 (2007): 2195.

extra chunky spaghetti sauce or zesty pickles.[198] In many ways, affective computing approaches

customization with the same logic. Trying to find a perfect interface that appeals to all users is a

waste of time; instead, affective computers can get to know their users and apply interfaces, or

responses that meet the needs of the individual. This includes choosing not to use an affective

program at all.[199]

In a study conducted in 2004, sixty participants were asked to evaluate twelve different

"skins" for Microsoft's Media Player. Users were asked to rate the skins by personal preference

and usability, aesthetics and symbolism. (Skins typically only change the interface of digital

space instead of the actual function, but some skins can obscure usability.) The results obeyed

Moskowitz's food preference paradigm: user's exhibited a wide variety of tastes—of the twelve

different skins, eleven out of the twelve were chosen at least once. Noam Tractinsky, the

designer of the experiment, argues that personalization is the key to increasing this value because

"certain aesthetic impressions are indeed being formed immediately and thus are strongly related

to information processing at the visceral (reaction) level. To a large extent they set the tone for

the rest of the interaction."[200] According to Tractinsky, users need to be able to tailor their digital

experiences to meet their affective needs,[201] and designers should "capitalize on interactive

technologies that let users tailor applications...Our challenge would be to improve the ease, the

flexibility and the creativity by which users can satisfy their own diverse needs and programmers

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[198] Malcom Gladwell, "Malcom Gladwell on Spaghetti Sauce," Ted website. http://www.ted.com/talks/lang/eng/malcolm_gladwell_on_spaghetti_sauce.html (accessed March 18, 2011).

[199] Lindegaard, "Adventurers verses Nit-pickers," 725.

[200] Ibid., 755.

[201] Ibid., 756.

can achieve their goals."[202] The growth of personal blogs and blogs for business and classroom use is taking a cue from this line of thinking. Companies such as Tumblr provide hundreds of truly beautiful "themes" (much like skins) to choose from, and allow for individually-designed themes to be uploaded. (Tumblr, known for their contemporary design catalog moved their operations to Richmond, VA to tap into the graphic design talent in the city.[203]) The choices that Tumblr provides its users contribute to the company's success in the blog world and logically follow from the findings of Tractinsky's small experiment and the years of food research conducted by Moskowitz. Computing is perhaps at its most affective when it provides tools to create customizable, comforting experiences for the user that reflects their tastes and interests.

Understood through the lens of digital emotions, these choices have infinite potential because they are only defined as needed, within the user's environment, and limited because they increasingly rely on (and perpetuate) habit through familiarity. Digital emotions both expand and limit our emotional experience in the world by normalizing our paradigm scenarios and with customizable experiences that could potentially obscure digital chance encounters, our experiences may be detrimentally narrowed. For example, upon purchasing a new computer, a user could transfer all of her preferences from her old computer and never encounter any new designs or themes that may impact her habits. (This is different from the "acquired autism" that causes Frances Dyson concern—he worries that we will intentionally stunt our emotional experiences to avoid being recorded or judged.)

5. Computers with emotional intelligence should exhibit a certain level of fallibility and natural language to communicate affectively. While we naturally exhibit social behavior in HCI,

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[202] Tractinksy, "Tools Over Solutions," 756.

[203] Brian Devasher, "Tumblr to Open Office in South Richmond," *Richmond Times Dispatch*, January 8, 2011.

an ongoing relationship with affective technologies requires the technology to understand the intricacies and subtleties of human language. With this understanding comes the dynamic relationship of emotional interaction that I describe, but also a larger margin of error, or "unpredictably." Watson's Jeopardy! success relied on the computer's ability to navigate not only the trivia presented, but the more implicitly natural language game that Jeopardy's contestants must engage. When Watson missed the final question on day two of his winning streak, ("It's largest airport is named for a World War II hero; its second largest for a World War II battle;" the category was U.S. cities), IBM engineers explained that the question confused the super computer because of the complexity of inputs.[204] Watson incorrectly answered "Toronto" (there are U.S. cities named Toronto), and a sigh of relief seemed to wash over viewers. Watson's brief failure made the computer just a little human, but it also made the humans just a bit more human as well. Computers that engage in natural language will always be fallible because our vernacular is dynamic and incredibly complex. This is refreshing and leads to serendipitous moments, humorous moments, and linguistic variety in general.

Rosalind Picard describes affective computers working through a sort of adolescence as they get to know user's habits and preferences.[205] In this way, affective computers are plastic technologies that evolve based on their mistakes—their features are emergent based on countless HCI interactions. A computer that communicates in natural language, with all of the hiccups that come along with it, allows for stronger digital emotions because users will not have to adjust

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[204] Steve Hamm, "Watson on Jeopardy! Day Two: The Confusion of an Airport Clue," A Smarter Planet Blog, entry posted February 15, 2011, http://asmarterplanet.com/blog/2011/02/watson-on-jeopardy-day-two-the-confusion-over-an-airport-clue.html (accessed March 18, 2011).

[205] Picard, *Affective Computing*, 129, 118.

their natural, verbal communication for the computer. This tightens the feedback that drives digital emotions. Furthermore, fallibility could protect users from a cycle of habitual behavior in certain contexts.

Placed in the context of digital emotions, and therefore embodiment theories that rely on environmental context and the process of (re)experience, we can see the potential of affective computing: technologies that are reliable, yet sometimes fallible, customizable, perceptive, and focused on addressing our emotional needs in a variety of ways. Yet, while proponents of affective computing maintain that computers should adapt to us, we are adapting to them in a reciprocal fashion. Various tactics and examples of affective computing illustrate the framework of digital emotions by highlighting the feedback process from a computational perspective. Instead of the computer being a lame duck in the feedback process—merely facilitating all of the action being recreated in the body—some affective computing programs mimic human engagement with the world through the user's body and react accordingly. Other programs help users understand their emotions by clarifying reactions to certain environmental triggers.[206] These reactions then create an emotional repertoire for the computer that simulates the user's emotional repertoire, or, perhaps more interestingly, can shape the user's emotional repertoire based on potentially long-term HCI relationships.

The future of affective computing awaits us all. When these technologies hit the streets and begin their integration into our lives, the many features (and problems) will surface. Affective technologies ignite a difficult debate because they lack the ubiquity of non-affective technologies, so it is hard to gauge their impact on our lives, yet studies show that their potential

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[206] Picard and Klein, "Computers that Recognise…"

could be not only novel, but useful to many users who could benefit from further emotional mediation (such as children with Autism Spectrum Disorder, soldiers crippled by PTSD, or a typical, self-proclaimed neo-Luddite). Based on our emotional experiences with non-affective technologies, and based on the framework of digital emotions, it is reasonable to suggest that affective technologies will become the norm. The embodied feedback of digital emotions proposes that emoting with and through new media technologies will ultimately change our emotional paradigm scenarios and therefore our behaviors and identities. With affective computing entering our digital worlds, we could reasonably see this emotional shift occur more intensely with affective "agents" present through the feedback process. Nonetheless, I do not anticipate HCI relationships, no matter how affective, out-emoting human-to-human relationships facilitated by new media, but they don't have to—affective computing simply is not in the business of competing with the emotional acrobatics that humans display. Even the silliness of the Loebner Prize can attest to that.

Chapter 5

Community

Twitter, the short message service founded by urban enthusiast Jack Dorsey, began with the simple desire to connect socially disconnected urbanites. In rare interview with Dorsey, David Kirkpatrick of *Vanity Fair* notes that, "The short text alert, for him, was a way to add a missing human element to the digital picture of a pulsing, populated city…He claims his inventions all aim at the same goal: a society that works more efficiently and humanely."[207] Dorsey believes that real time data democratizes information and unites seemingly disparate individuals, especially when that information can be conveyed easily and simply. Twitter users have a maximum of 140 characters to transmit a message to a network of followers. These text-based "tweets" or photo "twitpics" can be "retweeted" by anyone receiving the original message in the network. Tweets rely on creative textual truncation and abbreviations, and their social force entirely depends upon the network's reaction to the message. Since Twitter was founded in 2006, the service has become a fixture in modern communication. It is not that everyone is tweeting, they are not,[208] or that the tweets themselves are all critical to our lives, they are typically mundane, but that the ease and urgency of the service lends itself to those critical moments when real time information is the vital impetus for social action. The 2011 youth led uprising in Egypt was spread through short tweets and status updates on Facebook, victims of the

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[207] David Kirkpatrick, "Twitter was Act One," *Vanity Fair*, April 2011, 172.

[208] As of September, 2010, Twitter claims 175 million users.
Twitter, "About" section, www.Twitter.com/about (accessed April 1, 2011). As of September, 2010, Twitter claims 175 million users.

2011 earthquake and tsunami in Japan used Twitter to convey critical information, and the

"Green Revolution" beginning the summer of 2009 in Iran is also dubbed the "Twitter

Revolution" because protesters relied heavily on the service to organize. Yes, pop stars are

popular on Twitter, yes, we wade through banal twitpics of cats and equally boring self-portraits,

and these things are silly, but it is not Twitter's fault. It is just a service. Twitter puts all of our

little quips online and puts us in touch with one another. In the midst of unrest in the Middle

East, natural disasters in the Pacific, civil disobedience in Eastern Europe, and fundraising efforts

in America, Twitter not only connects people, it ignites *action based on short bursts of emotion.*

And Twitter isn't alone. Status updates on Facebook and other social networking services

rely on short bursts of information to convey emotion-laden thoughts and inspire action. Digital

truncated communication is by far the most ubiquitous form of computer-mediated

communication (CMC) with longer text-based communication, such as blogging, being replaced

by short message culture.[209] When it comes to how emotions exist and survive in CMC, the story

is a little different from human-computer interaction (HCI). The rise of affective computing, and

its inevitably influential future, gives us a glimpse into the ways in which our relationships with

computers will manipulate our emotional lives. Affective computing, as the current research

shows, mainly works to assist and promote positive emotional behaviors, so the relationship

between the user and the technology is markedly one sided. The user's emotions are the star of

the show and influence the feedback process, while the technology, utilizing its own "affective"

response system, perpetuates the emotional conversation. Much like the short-term neurological

arousals that affect often describes, this "conversation" may occur unbeknownst to the user.

Affective computing technologies show us the potential of digital emotions when technologies

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[209] Katherine Zickuhr, "Generations 2010," Pew Internet and American Life Project,
http://www.pewinternet.org/Reports/2010/Generations-2010.aspx (accessed April 1, 2010).

"emote." In these HCI relationships, the framework of digital emotions is a useful tool to help engineers and users understand both the impact and limitations of affective technologies. Digital emotions clarify this foreseeable future by framing affective computing in cultural contexts that create and contribute to paradigm scenarios, and also by reinforcing the consequences of simulation in our emotional lives. This is HCI, and HCI is rather straightforward, even when machines are instilled with "emotions." CMC is different. Technologies such as Twitter and Facebook are services that mediate massive amounts of information, therefore they are incredibly widespread, easy to use, and ultimately reflexive of our daily lives. Digital emotions work differently in CMC because the network dictates the simulative impact of emotional communication. The *medium* is the amplifier and the users' role diminishes in the feedback process. This may seem counterintuitive considering that affective computing focuses on the user much more intimately and the technology also boasts affective responses. Yet CMC multiplies affective responses exponentially, and the user becomes a spark that ignites a feedback process much, much larger than him or herself. The process of digital emotions highlights the importance of each moving part of the CMC process—the inscriber, the technology, and the network of receivers—and shows the power of (re)experience and paradigm scenarios in an era of real time, ubiquitous communication. The community, however loosely defined, that arises from these short bursts of communication is changing the way we emote in digital space while normalizing our paradigm scenarios, therefore our individual emotional repertoires.

Like affective computing, these social and cultural shifts come with their own set of problems, many of which have yet to be seen. They also raise a lot of questions: Is normalizing our emotional repertoires a bad thing? Do complex emotions necessarily command complex modes of communication? Does the process of digital emotions clarify or complicate the vast,

unpredictable computer mediated networks that even their creators can barely wrap their heads around? This chapter attempts to answer these questions by applying the framework of digital emotions to two distinct and relatively new manifestations of CMC: status updating/microblogging and online, massive multi-player games. The power of social networking and the ever-present status update is familiar to most of us, but the intricate sub-culture of multi-player gaming is a world unto itself. A comprehensive analysis of the gaming world is beyond the scope of this research, but one specific area of gaming sheds some interesting light on the potential of gaming communities while showcasing the importance of emotions in those communities. Renowned game designer, Jane McGonigal, creates games that tap into our emotions, and therefore social connections. McGonigal believes that games can improve our lives in very real ways by spreading empathy, creating communities, and pooling ingenuity to build a better world.[210] By creating games that tackle real world problems, McGonigal connects the talent of twenty-first century gamers with the challenging reality of their social world. Coupled with the role of emotions in social networking, "gaming for change" expands the spectrum of digital emotions in our networked world. Digital communities, it turns out, are just physical communities amplified, and that could be good thing.

Social Networking

Social networking, or social media, is nothing new. We have used tools since the beginning of time to communicate with each other, and the medium of the Internet and the services of social networking sites continue a long tradition of social communication. Even

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[210] Jane McGonigal, *Reality is Broken: Why Games Make Us Better and How They Can Change the World* (New York: Penguin Press, 2011).

narrowed down to Internet culture, social media boasts a traceable history from the MUDS and

MOOs, chatrooms and bulletin boards of the 1990s to the rise of Friendster, MySpace and

Facebook of the 2000s. What is new, and what Mark Hansen so pointedly argues, is the way in

which contemporary digital media blurs the line between the technology, the service, and the

user.[211] As I detailed in chapter two, "new media" can be described as a biological and

technological hybrid as the user comes to embody ubiquitous digital landscapes. And, as N.

Katherine Hayles argues, we are already posthuman. The ubiquity of new media permeates our

lives so completely that the concept of "cyberspace" as an ulterior location, no matter how

"real," no longer holds in the twenty-first century. When Twitter users glance through a series of

tweets on their mobile device, they are not entering a cyber world separate from their current

reality. The feeds exist within their everyday, real world functions as an ongoing, "ambient

awareness" of a larger, albeit weaker, social life.[212] Furthermore, academic research and

commentary on social media is frustratingly dated on arrival. Even the revered Pew Internet and

American Life project, which is constantly publishing data and research on our various

interactions with digital media, cannot keep up with the pace of social media adoption and

adaptation. And it is not for a lack of trying. Pew publishes research at a lightening fast rate—

they turned around data on social networking for the November 2010 mid-term elections in less

than two months(!).[213] But with thousands of new users signing on to services like Facebook and

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[211] Hansen, "New Media."

[212] Clive Thompson, "Brave New World of Digital Intimacy," *The New York Times*, September 7, 2008, under "Magazine Preview," http://www.nytimes.com/2008/09/07/magazine/07awareness-t.html (accessed April 1, 2011).

[213] Aaron Smith, "The Internet and Campaign 2010," Pew Internet and American Life Project, March 17, 2011 http://www.pewinternet.org/Reports/2011/The-Internet-and-Campaign-2010.aspx (accessed April 1, 2011).

Twitter everyday,[214] even the most tenacious researchers find their numbers unfortunately out of date. The social networking that describes the Internet juggernauts of Facebook, Twitter, etc. is then both familiar, which explains the incredible rate of adoption, but different in its relatively seamless integration with our daily lives.

Social networking is probably more aptly defined as twenty-first century socializing, which is another reason why the rate of adoption and the ease of integration has occurred so rapidly over the past decade—not as much "networking," in the traditional sense of the word, occurs. Dating sites notwithstanding, most users of social networking sites utilize the services to socialize in pre-existing networks.[215] We use social media to connect with people we already know, via either strong (best friends) or weak (best friends from third grade) ties. What perpetual updating does, whether on a micro-blogging service like Twitter or through status updates on Facebook, is provide a running commentary on people's lives. Viewed separately, these updates are perhaps mundane and meaningless, but read continuously in the flux of our everyday lives, they become a dynamic narrative of our lives—available for our expanding social circles to experience. Narratives of all kinds are central to culture. Mark Poster explains:

> We might say that in modern society, individuals are expected to narrate their own lives, connecting their stories more or less to preexisting narratives, such as the idea of progress. Modern society imposes on individuals the task of taking account of themselves, of forming or directing their lives, of intermittently taking stock of where they are at a given point in life's journey, and, at base, knowing

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[214] Robert Johnson, "Scaling Facebook to 500 Million Users and Beyond," Facebook Note, July 21, 2010 http://www.facebook.com/notes/facebook-engineering/scaling-facebook-to-500-million-users-and-beyond/409881258919 (accessed April 1, 2011); Jason Kincaid, "Twitter has 105,779,710 Registered Users, Adding 300k Per Day," Tech Crunch, April 14, 2010 http://techcrunch.com/2010/04/14/twitter-has-105779710-registered-users-adding-300k-a-day/ (accessed April 1, 2011).

[215] danah boyd, "Social Media is Here to Stay…Now What?," (talk, Microsoft Research Technology Fest, Redmond, Washington, February 26, 2009).

their own story…The digitization of narrative enables an extreme separation in space between narrator and listener, as well as an instantaneity of transmission of the narrative and response to it, and requires a globally networked machine mediation that envelopes the narrative.[216]

In an era of constant self narration, we might worry that a generation of narcissists is inevitably on the rise, yet this generation, or culture rather, of status updaters know a great deal about themselves. Clive Thompson, of the *New York Times,* interviewed many avid Twitterers, Flickers and Facebook users and they often described an unexpected side-effect of all of this short message, self-narration: it became rather philosophical.

The act of stopping several times a day to observe what you're feeling or thinking can become, after weeks and weeks, a short of philosophical act. It's like the Greek dictum 'know thyself,' or the therapeutic concept of mindfulness. Having an audience can make the self-reflection even more acute, since, as my interviewees noted, they're trying to describe their activities in a way that is not only accurate but also interesting to others: the status update as literary form. [217]

As of December 2008, Pew researchers found that eleven percent of online American *adults* use a short message service that allows them to post updates and view updates from others. The numbers double for eighteen to thirty-four year olds, and the study mainly focused on micro-blogging sites like Twitter.[218] And that was in 2008, when services like Twitter were beginning to gain popularity. When Mark Zuckerberg, mastermind of Facebook, decided to change the profile-based site with a "news feed" that automatically updated friends with any changes to

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[216] Mark Poster, *Information Please: Culture and Politics in the Age of Digital Machines* (Durham: Duke University Press, 2006), 129.

[217] Thompson, "Brave New World."

[218] Amanda Lenhart and Susannah Fox, "Twitter and Status Updating," Pew Internet and American Life Project, February 12, 2009 http://www.pewinternet.org/Reports/2009/Twitter-and-status-updating.aspx (accessed April 1, 2011).

status or info, there was user revolt.[219] This was in 2006, when most social networking users were straddling between MySpace and Facebook, waiting to see which site would ultimately prevail. Both sites privileged the user's profile before Zuckerberg's change, with MySpace allowing much more control over the aesthetic of individual pages. When Facebook began privileging status updates and profile changes two interesting things happened: 1. users became more aware of their "friends" lives, both through their updates and their "likes," and 2. The individual profile became secondary to the update.[220] Facebook, by far the most popular social networking site in the world, can thank its success to this shift from individual pages to perpetual updates. (MySpace is shrinking by the day.[221]) With almost ninety percent of teens and young adults interacting on social networking sites, I think it's safe to say that we are living in the age of the status-update.

In the realm of emotions, social networking and status updating provide an interesting and incredibly relevant application for how truncated, networked communication mediates emotion. As our communication becomes more informative (no matter how mundane) and more truncated (Twitter allows 140 characters, Facebook status updates allow 420 characters), we are forced to convey our emotions differently. Short bursts of information must express emotion, and this emotion must be perceived and (re)experienced by the receivers to perpetuate the communicative relationship. These status updates are conveyed in real-time, and they speak to

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[219] Thompson, "Brave New World."

[220] Even though users experience more emotional reactions to purposeful searching on "friends" profile pages (opposed to browsing through the news feed), the news feed is still the most popular feature on Facebook.

[221] Luke Lewis, "The Sad Shrinking of MySpace into the Digital Void," *The Guardian*, January 14, 2011 http://www.guardian.co.uk/commentisfree/2011/jan/14/myspace-facebook-gaudy-user-pages (accessed April 1, 2011).

what danah boyd describes as an "imagined audience" where networked broadcasters /users

negotiate the various possible followers of their updates without every really knowing *who* is

reading.[222] The emotional feedback generated in the network relies on the user's ability to gauge

their audience, which makes digital emoting a deliberative act. Users often submit updates that

will garner attention, and many of these updates are emotion laden as a result. Being an avid

status update follower, I find that updates fall between two general categories: static or dynamic.

Users employ both depending on the context of their situation, and sometimes static updates

serendipitously become dynamic. (And sometimes dynamic updates become memes, but that is a

different beast all together.) Understanding how emotions work within each type of update can

help us understand the power of the status update, and how it is changing our relationships.

Static updates are informative statements posted by a user that relay contextual, perhaps

mundane information. They typically garner either no response from followers and/or friends, or,

at least in the world of Facebook, receive "likes." Facebook allows users to comment on status

updates and/or click a "like" button that publishes an agreement with the update. For example,

showing support for a sports team by posting a status update on Facebook often garners many

"likes" from friends who are also fans. The post does not direct users to perform any action, nor

does it necessarily inspire users to redirect the message--they can simply agree. The like button is

a virtual nod of head that is documented for others to see. When posting updates that relay

emotion-laden information, the like button can take on a more important role. The list of

"friends" that agree with a statement convey a sense of solidarity and empathy. Furthermore,

users can typically gauge the "like" response to static updates based on their imagined audience.

For example, when I post static updates about a long night of research, I can typically expect to

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[222] danah boyd and Alice E. Marwik, "I Tweet Honestly, I Tweet Passionately: Twitter Users, Context Collapse, and the Imagined Audience" 13, no. 114 (July, 2010): 130.

receive some "likes" from my academic peers. When I post an update about my daughter, "likes" appear from other mothers. Static updates engage digital emotions in a straightforward feedback manner that allows digital emotions to benefit the user through quick establishment of (re)experience by expected, imagined audiences. (The very definition of digital emotions describes a feedback process that link short, emotive inscriptions, such as status updates.) Even if the network fails to respond to a static post, the update is not lost. Digital emotions provide us with a framework to understand emotion as a feedback process, no matter how obvious or opaque.

Clive Thompson's description of Twittering clarifies this point when he discovers that perpetual status updating creates more round characters. Our individual lives—our personalities, our troubles, and our daily routines—emerge through these status updates to portray a real person through the (supposed) digital divide. So when static updates appear to have failed in the sense that they did not receive any feedback from the network (through either likes or retweets, or @_____ responses on Twitter), the update is still an important piece of the larger, emergent user identity. In this way, digital emotions can be applied to static feedback to help us understand emergent identities through social networking where the feedback process is inscriber centered, but absorbed perhaps unknowingly by other users. Static updates that acquire "likes" strengthen the feedback of digital emotions because experience of the emotional content spurred other users to agree with your statement, and the "likes" transmit a sense of empathy and shared experience for the inscriber. A mini-community is instantly created around a simple comment, furthermore, this micro-community is on display for others in your network to see. The digital emotion lives as it makes its way down the "News Feed" page, or through simple retweets. While this process may seem as banal as the imagined post, digital emotions tell us something else quite useful: the

feedback process is inherently embodied, so static updates and the various ways in which they are consumed by others in your network, are highly dependent on your conscious or unconscious engagement. In short, once the connection is made between your emotion and the network, the digital emotion *never really goes away.* The hybrid of new media perpetuates the (re)experience through algorithms, potential retweets and other means of copying (users can copy or link status updates as their own). Static updates are definitely a form of weak connectivity in social media, but they are the critical filler to round our digital presence, and they work to compliment dynamic updates.

Dynamic updates exist on a spectrum that necessarily depend on context. When Sarah Palin, a controversial Republican pundit, posts comments to her Facebook page, or Tweets, her status updates often appear in cable news tickers and spur political debates. Palin's status updates represent an extreme dynamism in social media because they are often emotion laden and they inspire behaviors and actions throughout the network. With almost a half-million followers on Twitter, when Palin tweeted "Commonsense Conservatives & lovers of America: "Don't Retreat, Instead — RELOAD!" Pls see my Facebook page,"[223] on March 23rd, 2010, over 100 followers retweeted the message.[224] News pundits picked up the message and a national conversation about gun metaphors swept through the country. On Palin's Facebook page, followers found a map of the United States featuring crosshair icons over key Democratic races for the November, 2010 mid-term elections. And Palin's tweet lived on. When Democratic congresswoman Gabrielle Gifford's of Arizona (she represents one of Palin's "crosshair" districts) was shot during a

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[223] FeiFei Sun, "140 Best Twitter Feeds," *TIME*, March 8, 2011, http://www.time.com/specials /packages/article/0,28804,2058946_2059021_2059005,00.html (accessed April 4, 2011).

[224] "Sarah Palin USA," Twitter, http://twitter.com/sarahpalinusa/status/10935548053 (accessed April 4, 2011).

community event, Palin's tweet resurfaced with such force that the former governor of Alaska

had to issue a public statement. This story does not suggest that Palin's tweet had anything to do

with Gifford's shooting, but it does show the potential of dynamic status updates that employ

emotion. Palin's tweet stirred emotion in her followers by tapping into their nationalistic pride.

Her followers were compelled to not only retweet her message, therefore increasing the scope of

influence, but to keep the emotional response alive in other ways—through civic conversation,

Facebook comments, "likes," etc. The digital emotion, in this case, worked quickly and probably

just as Palin, the inscriber, intended. Just as with all digital emotions, the context of the impetus

is critical to power and sustainability of the feedback process. Palin's tweets and status updates

are incredibly notorious and ignite a social and cultural context unique to her following, yet they

ripple through dozens of other social and cultural communities because of their divisiveness.

The social and cultural force of a Palin tweet or status update shares space on the

dynamic status update spectrum with other celebrities, such as Justin Bieber and actor Ashton

Kutcher. Many entertainers use status updates to connect with their fans, which gives the

impression of intimate knowledge and exchanges. Some entertainers use social media to bring

attention to a cause, typically by tweeting or posting updates that conjure empathy in their

followers and inspire them to donate time, money, or attention. Performance artists and pop star

Lady Gaga went to Twitter to inspire her fans to donate money to the Japanese tsunami relief

effort (after the 2011 earthquake and tsunami). She called on her "monsters," a term of

endearment for her fan base, to purchase a rubber bracelet supporting the relief efforts. Within

two days, her fans raised over a quarter of a million dollars.[225] What Lady Gaga and other power

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[225] Mark Pasetsky, "How Lady Gaga Raised $250,000 for Japan Thanks to Twitter," *Forbes.com*, March 15, 2011, http://blogs.forbes.com/markpasetsky/2011/03/15/news _lady_gaga_japan_twitter_1891/ (accessed April 4, 2011).

tweeters do to raise money and awareness reflects what media maven Clay Shirky calls civic

value. Shirky argues that social media amasses "cognitive surplus," which describes the potential

of over a trillion hours of "free time" each year for educated, social media users to pool their

resources and pursue activities they care about. This cognitive surplus can either have communal

value or civic value.[226] The culture and context surrounding the pooling of this spare time

dictates the action taken. Communal value would describe the various memes generated by

4chan, such as the Lolcat meme that posts pictures of cats performing a variety of tasks with

often-misspelled captions. Not much is gained from the time users spend creating and sending

Lolcat pictures, but there is undoubtedly a community built around their exchange.[227] Shirky

cites Ushahidi, a much celebrated digital service that tracks outbreaks of violence in Kenya, as

an example of civic value. Swahili for "witness" or "testimony," Ushahidi aggregates citizen

reports of violence and locates them on a map in real time. Within months of Ushahidi's launch,

the site was found to be better at reporting acts of violence than traditional media.[228] Shirky

argues that Ushahidi's success resulted from the cognitive surplus of a civically engaged digital

community that pooled their knowledge to quickly and cheaply create a service that not only

bore witness to egregious attacks on citizens, but also warned citizens about potential attacks,

and acted as a deterrent for future attacks. The civic value of Ushahidi works due to emotionally

engaged citizens who share their experiences with the broader community in the hopes of

enacting change. Tracking violent outbreaks is one thing, but tracking them in real time through

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[226] Clay Shirky, *Cognitive Surplus: Creativity and Generosity in a Connected Age*, (New York: Penguin Press, 2010), 27-29.

[227] "I Can Has Cheezburger," Website. http://icanhascheezburger.com/ (accessed April 4, 2011).

[228] Shirky, *Cognitive Surplus*, 16.

user's personal experiences is another enterprise entirely. These users rely on empathy and what Mark Hansen dubs "transindividuation" to guarantee positive action larger than any single individual could attain. Digital technology aggregates these status updates to create an emergent civic force for good. Both Lady Gaga's Japanese tsunami bracelet and the Ushahidi service are examples of surplus civic value and dynamic status updating.

Despite the success of Sarah Palin's tweets, Lady Gaga's charity endeavors, and Ushahidi (now an open source software used in cities all over the globe), most users of social media are not working on the extreme end of dynamic status updating. Their emotion-laden tweets and/or status updates do not reach large, national network, nor do they inspire civic change on a global scale. Still, users find themselves *participating* in the feedback process, which makes them consumers, creators, and perpetuators of these digital emotions. For example, one in five online adults used Twitter or a social networking site to get involved in the 2010 mid-term elections.[229] While various campaigns and pundits flooded social media with election news, users took it upon themselves to shape the culture around those messages. And social media users engage in other dynamic status updating that creates emotional communities online—they post news articles, studies, interesting links, and personal information that garner a variety of responses from the network. Researchers at the University of Pennsylvania found that online news readers e-mailed articles that have emotional, positive, intellectually challenging themes more so than any other type of article.[230] Jonah Berger, one of the leading researchers on the experiment, told

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[229] Aaron Smith, "The Internet and Campaign 2010," Pew Internet and American Life Project, March 17, 2011 http://www.pewinternet.org/Reports/2011/The-Internet-and-Campaign-2010.aspx (accessed April 4, 2011).

[230] John Berger and Katherine L. Milkman, "Social Transmission, Emotion, and the Virality of Online Content," (Working paper, The Wharton School of the University of Pennsylvania, Philadelphia, 2009).

John Tierney of the *New York Times*, "Emotion in general leads to transmission, and awe is a quite strong emotion…If I've just read this story that changes the way I understand the world and myself, I want to talk to others about what it means. I want to proselytize and share feelings of awe. If you read the article and feel the same emotion, it will bring us closer together."[231] What Berger describes happening through email forwarding, is essentially the feedback process of digital emotions. While Berger and his team focused primarily on around 7, 500 articles emailed from the *New York Times* between August 2008 and February 2009, the same reasoning applies to articles and videos posted as status updates on Facebook and Twitter. When users supplant a personal update with an emotional news story or video, they are consciously igniting digital emotions. News articles and videos are incredibly popular status update links, and they create flash-communities within broad social media networks.

Dynamic status updates can also be personal and elicit empathy from the network without tapping into any broader social or civic issue. Posts by new mothers detailing baby troubles, a subject I have become intimately familiar with over the past few months, arouse dozens of what I call "empathy comments." These empathy comments do not inspire the same kind of action of civic surplus value, or the same social, cultural, and political value of sharing news events or scientific discoveries, yet they inspire behaviors that create comfort in trying situations. Using myself as an example, over the past year over twelve of my Facebook friends have either become pregnant or had a baby (myself, my sister and three of my cousins included). From all of the mothers or mothers-to-be, you'll find posts lamenting sleepless nights, troubles feeding, and shining moments. Moms solicit advice through status updates and find solace in similar stories.

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[231] John Tierney, "Will You Be E-Mailing This Column? It's Awesome," *The New York Times*, February 9, 2010 http://www.nytimes.com/2010/02/09/science/09tier.html (accessed April 11, 2011).

The emotional feedback occurring through these empathy comments perpetuates a dynamic

network that is driven by the (re)experience and context of new mother culture. (And this is just

on Facebook. I can't even begin to explain the expansive network of mommy blogs, Q & A sites,

and general discussion boards for moms.)

Status updates range from the silly and mundane to the civic minded and empathetic, and

the spectrum grows with each new and innovative use of the platform. The era of the status

update is an era of connection where the power of human networks far outweighs the sum of

their individual participants. Emergent behaviors in social media transform the culture, and

consequently transform both the users of the service and communication in general. Static and

dynamic status updates are unique in their effect on social media behavior. Static updates still

influence the feedback of digital emotions, although they typically foster weak connections.

Weak connections do not dissolve into the Internet abyss; they are an important part of our

identities because they contribute to our overall web presence. Dynamic updates inspire action

and change behaviors through empathy. They are a strong example of the power of digital

emotions in social media because they rely on the network to stay alive, and the network is

nothing but users taking the time to experience snapshots of others' lives. With the ubiquity of

social media and the normalcy of perpetual status updates, describing a "real" life and a "digital"

life or "digital identity" is futile and, frankly, unnecessary. Users of Facebook, Twitter and other

social media do not reserve their online interactions for people outside of their daily interactions.

These spaces are a mix of audiences, contexts, and social circles and the user negotiates these

various aspects online just as they do in real life because their interactions in social media are

just that: real life. Status updating broadens our interactions, but those digital interactions do not

form a separate, online existence. Because status updating requires a reliable online identity

(unlike a message board like 4chan), the distance between digital narratives and lived actions dissolves into just *lived action*. This collapse allows for us to meaningfully emote in digital space.

Status updating and ambient awareness of other lives, no matter how emotive or mundane, extends our emotional repertoire by exposing us to a vast range of emotional snapshots, and this is the chief difference between the way we've always understood emotions and the process of digital emotions. The context of emotional experiences is shifting to real time feeds of hundreds of individuals working through the ups and downs of daily life. Our involvement with those emotion-laden updates ranges from slight awareness to modified behavior, empathy, or outright activism, but we experience involvement no matter what, and this experience, no matter how strong or weak, is normalizing our paradigm scenario. Constant exposure to digital emotions lays bare a spectrum of emotion that we have worked through for generations through our own lives, and through literature, film and other media. Today, they are often reduced to a few sentences and carefully selected emoticons or links that can convey the complex cognitive process that is an emotion.

Networked communities large and small, contrived and spontaneous, fuel digital emotions because with each new connection users embody the (re)experience of the original emotion thanks to the speed and ubiquity of the medium. Civic-minded social media, such as Ushahidi, capture the cognitive surplus of web users and create a dynamic tool for social awareness and change. Ushahidi's creation was born from a need to connect people quickly and easily through the power of status updating and empathy. The platform works because users are emotionally invested in their ability to help others in their own situation—navigating a political system and country on the brink of collapse. But what if we could create programs that utilize

cognitive surplus and the cognitive power of emotion before a crisis takes place? Ushahidi was created when Ory Okolloh, a Kenyan blogger and political activist, became so overwhelmed with the individual updates coming from observers on the street that she asked for help to aggregate the updates. Two programmers came to rescue and Ushahidi was born.[232] Game designer Jane McGonigal believes that gamers can apply the same type of urgency and cognitive power to solve problems like Okolloh's through games that can then be applied to real world problems. McGonigal believes that a network of dedicated gamers can change the world by fusing their skills, their ingenuity, and the empathy that drives them towards what she calls the "epic win." The success of these civic minded, "alternate reality games" (ARGs) depends on two dependents factors: the ingenuity of the community, and the power of their emotional connection in digital space.

Massive Multi-player Games

In the summer of 2004, a brief, almost hidden URL flashed across the screen of the trailer announcing *Halo 2*, the sequel to Microsoft's blockbuster, sci-fi video game *Halo.* With their curiosity peaked, astute viewers followed the link to www.ilovebees.com and subsequently began the largest, most complex alternate reality game to date. What later came to be known as *I Love Bees*, began as a marketing ploy to generate excitement, and to bridge a narrative gap, between the two *Halo* games, although the result of the game exceed the expectations of the designers and over 600,000 collaborators. Over four months, participants in the *I Love Bees* game worked together both on and off line to unravel a complex series of events surrounding a

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[232] Shirky, *Cognitive Surplus*, 15.

hacked website on beekeeping. Led by cryptic clues left on the *I Love Bees* website, blogs, emails, social media, MP3s, private phones, and almost one thousand pay phones across the country, these gamers collaborated on a massive scale to uncover the story behind "Melissa," the mysterious AI trying to piece her intelligence back together after the spaceship she controlled crash landed on Earth. A small team of computer engineers and designers closely monitored the tens of thousands of chat entries, wiki updates, and general conversation threads as collaborators worked to decipher the clues. This team of engineers designed the next steps of the game based on the emerging group intellect of the collaboration—also known as a "hive mind"—throughout the course of the game. One of those engineers was Jane McGonigal. McGonigal's chief responsibility for *I Love Bees* was to oversee the collective intelligence of the players as the lead community designer,[233] and she makes some compelling arguments about massively scaled communities, collective intelligence, and the power of gaming based on her experiences. *I Love Bees* shows us the sheer force of human collaboration on a massive scale and how that collaboration is made possible through the power of emotion. I believe that McGonigal's ARG projects explicate the current state of gaming, and provide us a glimpse into the future of global problem solving, which, perhaps unsurprisingly, rely heavily on our emotional connections and emotional intelligence to solve daunting problems.

McGonigal frames her work with *I Love Bees* within the media theories of Pierre Lévy, a pioneering voice on collective intelligence and cyber culture. Lévy, in his arguably utopian view of the future of networked computing, believes that a large-scale network of users will pool their

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[233] Jane McGonigal, "Why *I Love Bees*: A Case Study in Collective Intelligence Gaming." *The Ecology of Games: Connecting Youth, Games ,and Learning*, ed. Katie Salen, The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning (Cambridge: The MIT Press, 2008), 202.

intelligence to create new ways of thinking and new ways of utilizing global, real-time communication to benefit society.[234] Unlike the abstract identity soup of transindividuation, Lévy argues that massive collaboration, and the resulting emergent intelligence, ultimately leads to self-awareness where individual users are mutually recognized and their singular contributions to the network are personally fulfilling and exponentially fulfilling to the whole.[235] *I Love Bees* tested Lévy's new media vision by forcing users to work collaboratively (the game could not be solved by any one user alone because different clues were nationally distributed) and by playing to various talents, or emergent ways of thinking within the groups. For example, the game revealed a list of coordinates as one its early clues, and a particularly diligent group of four thousand gamers, dubbed "The Beekeepers," disagreed on how to approach the coordinates. Users quickly realized that they could make more progress by splitting into ideological groups based on their individual talents to work on the coordinate problem. One group worked on a literal translation of the coordinates—namely that they were to physically arrive at their location, another group focused on the coordinates as clues to landmarks that could hold further information, and the final group investigated whether or not there were mathematical clues within the coordinates.[236] Ultimately the "literal" group prevailed as the coordinates pointed to about one thousand pay phones across the country where the gamers physically met to receive messages from "Melissa." McGonigal notes that observations and input from each of the teams led to their final determination, and no one particularly felt left out when the literal hypothesis

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[234] Pierre Lévy, *Collective Intelligence: Mankind's Emerging World in Cyberspace*, trans. Robert Bononno (Cambridge: Perseus Books, 1997).

[235] McGonigal, "Why *I Love Bees*," 199.

[236] Ibid., 211.

rang true.[237] Lévy's "collective intelligence" theory forwards the idea that as a problem solving

pedagogy, collective intelligence is "extraordinarily inclusive" and "engages a set of players that

is as broad and diverse as possible in order to work through problems of unprecedented scale and

complexity." [238] Scaling up, in essence, is what McGonigal believes will change the world.

Working against the famous Dunbar model that claims meaningful, individual connections peak

at about 150—a number that media theorists such as Clay Shirky abide by—McGonigal cites

ARGs such as *I Love Bees* as well as flash mobs and other massively scaled communities created

through digital networks, and argues that social networks, thanks to digital media, are

"significantly more scaleable than was previously thought to be possible or, in some cases, even

desirable." [239] According to McGonigal, and as evidenced by *I Love Bees*, massively scaling

digital communities leads to "the emergence of important changes in our understanding of the

network, of the possibility of digital community, and indeed, of community itself." [240] Gaming,

at least the type of massive scale gaming that McGonigal helps to create, pushes the boundaries

of perhaps dated notions of games as play, or games as insignificant wastes of time. Virtual

gaming is not, perhaps, the trivial simulacra that Baudrillard despises, but more along the lines of

Lévy's virtualization, which McGonigal notes, has little to do with the imaginary. Lévy states

that, "the virtual is by no means the opposite of the real. On the contrary, it is a fecund and

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[237] Ibid., 213.

[238] Ibid.

[239] Jane McGonigal, "Supergaming: Ubiquitous Play and Performance for Massively Scaled Community," *Modern Drama* 43. no. 3, (Fall 2005): 472.

[240] Ibid., 476.

powerful mode of being, which expands the process of creation, opens up the future."[241] The complex, emergent and highly successful game *I Love Bees* (and other examples of ubiquitous play, such as flash mobs) challenges dominant notions of weak connections in digital media. Perhaps recent evidence from massive, multiplayer games points to a digital network that has the capacity for exponential strong connections if provide the right context—and the right emotional impetus.

McGonigal describes three stages of game play that emerge from massive, multi-player games: massively distributed content, meaningful ambiguity, and real-time responsiveness. *I Love Bees* distributed different content around the country to ensure that the game was collaborative, furthermore, the designers constructed purposefully ambiguous clues to promote creative thinking, which worked—the designers often found themselves inspired by the ingenuity of the gamers and built their hypotheses into the game itself. This type of responsiveness led to what one of the designers described as a "jazz-style" flexibility that constantly pushed the intellectual rigor of the game.[242] With such an intellectual investment to a game created with so much plasticity, it comes as no surprise that the gamers found themselves emotionally tied to the characters, content and context of their adventure. As the gamers pieced together the story of "Melissa," an AI who is trying to reconstruct her memory, they became emotionally connected to her isolation and quest for answers. With thousands of pre-recorded messages being phoned in all over the country, a real-live conversation with "Melissa" was quite unique. *The New York Times* details one of these encounters:

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[241] Ibid., 488.

[242] McGonigal, "Why *I Love Bees*," 216.

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…After weeks of listening to her struggles, many players have said, they feel an emotional bond with the character.

Some of the talks were surprisingly poignant. When "Melissa" asked Lenore Henry, a 40-year-old freelance editor in San Francisco, to sing her favorite song, Ms. Henry responded with a wavering rendition of "Amazing Grace."

"Why is that your favorite song?" "Melissa" asked.

"Because it's sad, but it's about redemption, as well," Ms. Henry answered.

"It is sad," the character said. "It's about being lost. Do you feel lost?"

"I do," Ms. Henry responded. "Both of my parents died. And I feel like an orphan."[243]

Ms. Henry's response to "Melissa" echoes the emotional connection that research subjects experienced when talking to ELIZA, the 1966 computer program that elicited emotional responses and connections with human subjects. As with ELIZA, participants in *I Love Bees* exceeded the expectations of the game because of their emotional connection to the story, and their emergent emotional connection to the hive mind's successes in the game. McGonigal believes the purpose of a game is to "provoke wholehearted engagement with some sort of challenge or obstacle," and she continues that, "it's a particular emotional state that causes positive stress and makes us more creative, optimistic and more likely to co-operate with others."[244] While gamers find themselves experiencing a range emotions, this heightened emotional state peaks during the "epic win," where the outcome is so positive that the user does

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[243] Noah Shachtman, "Sci-Fi Fans are Called into Alternate Reality," *The New York Times*, November 4, 2004, http://www.nytimes.com/2004/11/04/technology/circuits/04bees.html?_r =2&n=Top/News/Business/Companies/Microsoft%20Corporation&pagewanted=all&position= &oref=slogin&oref=slogin (accessed April 3, 2011).

[244] Jane McGonigal, "Living and Working at the Top of Your Game: Game Designer," *Canadian Business*, February 28, 2011, 57-58.

not even realize it until it is experienced.[245] It is not that these types of emotions, and the concept

of the "epic win" is absent from other types of games, such as sports or gambling, but that the

emotional investment building up to the epic win is incredibly collaborative in nature. Online

gaming is social gaming, despite the perception of isolation. Furthermore, McGonigal and others

have found that these emotional, social connections do not weaken as the community grows, but,

counter to popular belief, they strengthen due to the desire to complete the mission. With users

spending three billion hours week playing online games, the incredible problem solving potential

of gamers could be put to use to solve real world problems—McGonigal believes that we need

twenty-one billion hours of game play per week to achieve this goal.[246] Real-world problems

require collaboration and emotional investment, they are abstract and ambiguous, and the

consequences are often felt in real-time. Life *is* a game that we keep on playing, and the games

within the game make for shockingly good practice if we put our most astute gaming athletes to

use.

The communities that arise from massive multi-player games are born from a single

purpose: to solve the puzzle and complete the game. Their emotional connections, while perhaps

driven or exacerbated by their own emotional repertoires (such as Ms. Henry's connection to

orphaned "Melissa") arise due to their shared purpose and their desire to work together. Massive

multi-player games provide us a glimpse into how important empathy and emotional connections

are for socialization and problem solving. A shared sense of accomplishment, even in the face of

apparent defeat, strengthens the commitment of the whole, and while individual expertise and

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[245] Jane McGonigal, "Gaming Can Make a Better World," TED Talks, February, 2010, http://giantbattlingrobots.blogspot.com/2010/05/epic-win-jane-mcgonigal-on-ted.html (accessed April 4, 2011).

[246] Ibid.

ingenuity are critical to the collaboration because they arise as a result of the shared feedback itself. Social media in the context of gaming is, quite obviously, different, but not due to an illusory divide between the "real" world and an "imaginary" world. While the consequences of epic wins and epic failures in gaming do not have any global consequences, it is not because the games are not "real"—just as our interactions on Facebook and other social media sites are not strictly "online." In general, social networking in digital spaces is so tightly woven into our analog lives that the distinction between our online and offline selves is no more stark than any other aspect of our social lives, whether it is our lives and behaviors at work, at home, or with friends or family. So when we apply the framework of digital emotions to ARGs, some of the requirements of digital emotions are challenged while others are reinforced. Most importantly, the framework highlights the incredible potential of massive multi-player games by emphasizing the importance of emotional feedback in our socialization and constructions of self.

Immersive games rely on short, emotive descriptions to convey complex emotions, although these descriptions build the community much differently than status updating and microblogging. In ARGs, these short emotional descriptions are a combination of action and conversation as the "physical" involvement in the game plays out parallel to a running commentary/brainstorm on message boards in chatrooms. In many ways, this parallel collaboration within the game mimics fast and slow emotional appraisal with the behaviors of the individuals working to solve problems quickly and a more cognitive, problem solving collaboration occurring through short, textual messages. The feedback that occurs from these actions and conversations occurs on such a massive scale that the group perpetually out-smarts its smartest members. Just as McGonigal describes, the collaborators in *I Love Bees* were constantly surprised by their quick and ingenious successes and the designers worked diligently

to keep up with the emergent intelligence and problem solving skills of the hive mind. ARGs also provide an example of the malleability of digital emotions. While we often think of social media services, such as Facebook, *as* social media, ARGs provide a unique example of social media that relies on bigger and bigger networks to survive. The bigger the network, the better it becomes, and this phenomena is not as transferable to social media services like Facebook where personal status updating and profiling is featured. The common purpose that arises from gaming is quite unique and useful to complete complex tasks.

While different from the communities that Facebook and Twitter build, massive multi-player games do exhibit the characteristics of digital emotions, and we can learn a great deal from how they manipulate the power of digital emotions in virtual worlds. First, the games that McGonigal describes show us the *benefits* of normalizing paradigm scenarios across large, seemingly disparate populations, second, they show us that emotional plasticity is critical to problem solving, and finally, how this flexibility is an aesthetic in itself. While our emotional repertoires will always reflect the various, individualized experiences during our lives, the more we experience life together, on a grand scale, the more these experiences will coincide with others within our digital and physical communities, thereby creating a new, massive, digitally induced paradigm scenario. The overwhelming feeling of an epic win as experienced by 600,000 people who have been emotionally involved over a four month period is a significant emotional experience. Most of the *I Love Bees* collaborators never met in person, yet they shared in the successes and failures throughout the game. Because ARGs require a temporary suspension of belief to fully inhabit the alternative reality, the gamers are all on the same page, so to speak, and their emotional experiences work in concert to advance the group toward a solution. In this situation, we can see how normalized paradigm scenarios are incredibly useful to the group,

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while the group continues to recognize the importance of diverse emotional repertoires. If a group of 600,000 all experience an epic win and all of the joy, sense of accomplishment, fulfillment that such a win entails, then that group of people will probably more likely to seek out such an experience again knowing the power of the ultimate reward. McGonigal believes that gaming can save the world if we utilize the power of online collaboration to solve real world problems. I believe she's right, but I believe she's right because the incredible capacity and plasticity of our emotional connections will make it possible. The feedback process of digital emotions adapts to many types of connections, and the connections made in these online games are incredibly powerful because they are so focused. Despite the incredible scale of some ARGs, the emotional connections remain tightly woven because of a shared sense of purpose, but that also means that the entire group had to shift emotional gears when necessary. The malleability of the group feedback is essential to the success of the game. Finally, this flexibility is what makes the game beautiful. As collaborators in *I Love Bees* attest, the collaboration itself and the emotional connections that resulted exceeded the victory over the game. In the case of *I Love Bees*, the aesthetic experience was a result of the awe that such a large number of people worked together to solve an incredibly complex puzzle. The awe and inspiration increases the valence, or attractiveness, of the digital emotions. In her case study of *I Love Bees*, McGonigal relates a conversation between some of the collaborators:

> The creator of this…have definitely put some thought into the storyline, and they definitely consider us SOMETHING. I wouldn't be surprised if we ARE supposed to be the bees…I'd call us The Hive or HiveMind…after all, we are a collective…Dude, that means that WE are the bees!...You know how an individual bee isn't too intelligent, but the entire hive acting a whole can display remarkable cohesion—becoming more than the sum of its parts, so to speak? And

you know how an individual silicon computer chip can't do a darn thing, but if you put enough of them together in the right way, whoa, you get the Internet?[247]

They players exhibited an incredibly amount of self-awareness early in the game, yet they played with intensity nonetheless. Their emotional connections to the game and to each other, even through play, were not compromised, but perhaps strengthened by the shared experience.

Perpetual status updating and massive multi-player online games are two examples of digital emotions at work in our networked popular culture. The emotional investment and connection that arises through these diverse communities shows the importance of understanding emotions in digital contexts as significant to our daily lives and our collaborative futures. Although status updating may foster weak ties, those weak ties are not a result of virtuality, but of the construction of the media platforms. The success of *I Love Bees* strongly suggests that strong ties are possible on grand scales when there is a shared sense of purpose and a shared emotional connection driving the collaboration. Furthermore, these diverse communities both create and reinforce social and emotional ties because of the power of real time communication, which is perhaps the single strongest force in perpetuating the feedback of digital emotions. Real time communication allows these digital communities to integrate into our daily lives seamlessly and blurs the distinction between a virtual life and a "real" life. Communities online are vast, and the good ones proactively understand the power of emotional connections to building community and utilize those connections to their fullest advantage to keep the network alive. This has nothing to do with surrendering identity to become a part of a hive mind, or mindless scrolling through status updates, but instead these communities have the potential to reinforce your own individuality while introducing you to a vast array of emotional experiences. Within the popular culture, our emotional experiences in digital space are vast and varied, yet they are incredibly

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[247] McGonigal, "Why *I Love Bees*," 208.

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intimate and real. The simulation that we experience when we embody emotion is simulation whether or not we are interacting digitally or face to face—a face that is reinforced by the countless lab experiments that test our emotional response.

Chapter 6

Aesthetics

The first movement of Jonathan Harris and Sep Kamvar's new media artwork *We Feel*
Fine bursts onto the computer screen in a stunning, chaotic swarm of colored dots. Each dot
represents an emotion conveyed online over the past few minutes, along with any other notable
information digitally attached to the inscription—the name of the inscriber, their location, the
weather outside their door, their gender, age, and any visuals that the user linked to their original
emotive text. The dots react to the movement of the mouse making the digital space interactive
and seemingly sensitive to touch. Once the mouse hovers for a moment over a dot, the entire
emotion laden transcription appears on the screen. Suddenly, the user obtains keyhole access to
someone's inner world amid a galaxy of emotion specks. Whether the inscription reads, "I feel
like things will begin to change and the darkness of the last 8 years is being washed away," or "I
feel alright,"[248] the diversity and simplicity of the emotions is magnetic. Madness, the title of the
opening movement, is one of six distinct movements that uniquely display, shape, and organize
over thirteen million expressions of emotion that flow through the website.[249] The beauty of *We*
Feel Fine compliments the fascinating and unprecedented collection of emotions from around
the web, while providing a glimpse into the public, yet private, emotional lives of web users all

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[248] Jonathan Harris and Sep Kamvar, *We Feel Fine*, www.wefeelfine.org (accessed April 11, 2011).

[249] Sep Kamvar, "An Almanac of Internet Emotion," *Scientific American*, January 26, 2010, http://www.scientificamerican.com/article.cfm?id=almanac-internet-emotion (accessed April 11, 2011).

over the globe. The artwork manages to do what no technology has done before: take the emotional temperature of the pulsing, social network.

As the network expands, the focus on aesthetics to differentiate digital spaces, to attract users, and to inspire affective experiences has expanded as well. For example, immersive data visualization is now a rather commonplace, yet highly effective (and affective), communicative tool for online news.[250] The ever-popular TED Talks increasingly embrace visually stimulating presentations to wow the audience, such as David McCandless's compelling presentation on the importance of communicative, beautiful, and inspiring data visualizations.[251] From a technological perspective, new media platforms, such as the iPad, have changed the way web designers approach information since the touchscreen on the iPad lends itself to more fluid gestures than a conventional mouse. The lack of a separate keyboard on touchscreen devices also privileges image over text, which influences the design of popular websites as they adjust to a touchscreen platform. Despite these intuitive and creative advances, the vast majority of digital space is unfortunately rather mundane and uninspiring. Social media sites typically convey a rather homogenous aesthetic that benefit the status update culture they perpetuate—a scrolling, mostly-text based aesthetic prevalent on Facebook and Twitter as well as many messaging boards. (Perhaps counterintuitively, MySpace, a social media site where users could easily customize their profile page, gave way to the homogeny and functionality of Facebook.). While

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[250] see "Top Secret America," from *The Washington Post*, http://projects.washingtonpost .com/top-secret-america/network/#/overall/most-activity/ (accessed April 19, 2011); "The Jobless Rate for People Like You," from *The New York Times*, November 6, 2009 http://www.nytimes.com/interactive/2009/11/06/business/economy/unemployment-lines.html (accessed April 19, 2011).

[251] David McCandless, "The Beauty of Data Vizualization," Ted Blog, August 23, 2010 http://blog.ted.com/2010/08/23/the-beauty-of-data-visualization-david-mccandless-on-ted-com/ (accessed April 11, 2011); see also Hans Rosling on Ted.com.

many social media services (and websites in general) facilitate aesthetic experiences for the user, few underscore the importance of the aesthetic experience in transmitting information and facilitating communication more affectively.

Large-scale data visualizations and image heavy web applications are not the only digital spaces making inroads on the aesthetic front; however, they may be the most recognizable. Massive multi-player games display shockingly beautiful and realistic interfaces for gamers to traverse, explore, and conquer, yet users are typically required to submit to the aesthetic experience provided to them.[252] Of course, submitting to a pre-designed aesthetic does not negate the process of digital emotions in these spaces. The goal of the spatial design simply exists for a particular purpose—the landscape of the game itself. If we imagine the digitally affective value of the aesthetic experience as a spectrum, ARGs would fall somewhere in the middle, although with new technologies making gaming more and more immersive, this location will surely shift. Affective computing, while still transitioning from the lab to the streets, falls toward the weaker end of the spectrum as many of these technologies currently focus on functionality rather than aesthetics. Nonetheless, it is reasonable to suggest that affective computing will only embrace the power of the phenomenal, aesthetic experience as functionality becomes normalized and user efficacy can be fine-tuned. The aesthetic experience that contextualizes digital emotions is more than a flashy accessory affixed to the process. The use of vivid images, spectacular data visualizations, and/or original art amplifies the phenomenological experience of the user by casting a wide net into the mind's emotion-laden memories. Since users are more likely to share emotion-laden information in the network, the process of digital emotions is heightened when a richer context (that speaks to users' paradigm scenarios) compliments the text. Furthermore,

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[252] Some interactive platforms, such as SecondLife, allow for users to design their own space for their avatar.

these heightened experiences add to the emotional repertoire of the user and, if they multiply

over time, increasingly populate a user's emotional repertoire with decidedly *digital* emotions.

With the emerging world of affective computing, the robust social networks, or the innovative

landscapes of ARGs, our emotional experiences depend on the relationship between the

technology, the network, and the aesthetic experience. While the technology facilitates the

interactions, and the community drives the feedback, the cognitive reach of the aesthetic

experience makes the entire process memorable, therefore transformative.

Beautiful images and conversations abound on the web, yet images, or even conventional

notions of beauty, do not solely define aesthetic experiences. In *The Other Side of Language*,

Gemma Fiumara argues that listening is a critical aesthetic that is perhaps lost in the Western

tradition. The aesthetics of listening drives what art historian Grant Kester dubs "dialogical art,"

which focuses on the "creative facilitation of dialogue and exchange."[253] Dialogical artworks

highlight the dynamic, generative process of conversation that comes to embody the artwork.

Using Kester's dialogical approach to community artworks, as well as an inclusive description of

aesthetics, this chapter explores the impact of dialogical community artworks in digital space—

pieces I call digital community artworks—and their role in the process of digital emotions.

Digital community artworks describe websites that collect and aesthetically arrange instances of

human emotion with the goal (either implicit or explicit) of building community through

empathy. The short, emotive inscriptions that fuel the feedback of digital emotions give way to

the overall aesthetic of the artwork and create a new context for the inscription. Unlike many of

social networking sites discussed in chapter five, digital community artworks impose a new

context on the emotion by juxtaposing the emotion and/or emotional experience with other

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[253] Grant Kester, *Conversation Pieces: Community Communication and Modern Art*
(Berkeley: University of California Press, 2004), 8.

emotion inscriptions. The result is an unprecedented collection of human emotions that, through mass assembly, appear to present a singular, feeling subject: the emotional network. Digital community artworks, although limited, typify the future of digital media and our emotional lives as they redefine our understanding of "community" art and the depths of emoting in digital space. By combining emotional, aesthetic, and digital experience, they really define what "new media" continues to become—an immersive, highly affective *experience* with intrinsic value and increasingly relevant consequences.

This chapter explores in depth two digital community artworks that represent the range of emotive, digital community art online: *We Feel Fine* and *PostSecret*. Both websites integrate a unique aesthetic experience with the process of digital emotions while providing us a glimpse into the possible future of digital communication where digital emotions have more reach. The chapter begins with a short history of affective, collective art, both off and online, and ends with my own quasi-utopian view of the future for digital community artworks and digital emotions in general. Using digital community artworks as my primary example, I hope to show the importance of aesthetics in pushing the limits of technology, in creating community, and in forging new and more salient memories (i.e. emotional repertoires). Digital community artworks are not the culmination of all affective new media technologies, yet they portend the power of empathy on a massive scale and the impact of mass empathy on identity.

(Digital) Community Artworks

Digital media lends itself to participatory art due to an already established, massive network of users, yet participatory art has a long and robust history. The term "participatory art"

is perhaps a misnomer though, since the value of art is inextricably tied to some level of participation from the viewer. Art critic and theorist Boris Groys' argues that contemporary art tends toward collaborative, participatory practices where universally accessible art events are created in the "here and now, beyond education, professionalization, and specialization." [254] According to Rudolf Frieling, participatory art "is an open invitation: the viewer's refusal to participate, or the participation of only a small number of people, counts as much as total physical engagement," he continues, "watching others participate—what is called 'lurking' in the online context—is an inherent part of the experience."[255] Expanding the scope of participation to include those who watch from those who interact brings participatory art into the digital age where the popular "90-9-1" social rule applies. (The rule claims that out of 100 web users, only one percent contribute content, nine percent comment or add to that content, and ninety percent "lurk," or observe without contributing.)[256] Frieling applies this rule to interactive art both on and offline, yet online works complicate the context of reception. In the space of a gallery, the work is readily designated as "art," according to Frieling, but occurring elsewhere "the project becomes more closely associated with community work even invisible as art, vanishing all together into the fabric of real life."[257] Artists have worked to overcome, or embrace, this distinction long before Web 2.0. Kester believes that artists who embrace participatory art are

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[254] Ibid., 29.

[255] Rudolf Frieling, *The Art of Participation: 1950 to Now* (San Francisco: Thames and Hudson, 2008), 12.

[256] Jakob Niesen, "Participation inequality: encouraging more users to contribute," Jakob Nielson's Alterbox, October 9, 2006 http://www.useit.com/alertbox/participation_inequality.html (accessed April 11, 2011).

[257] Frieling, *The Art of Participation*, 43.

"context providers" as opposed to "content providers."[258] Viewed from this perspective, participatory artists carve out space in the "real" world and provide a dynamic location for communication and interaction. As artists create a context for dialogic exchange, and as that context, or location (however loosely defined) becomes populated by the community, the artwork, as Frieling explains, often dissolves into the action of the group. What we then have is not necessarily an artwork with a defined frame, or beginning and end, but a spark that ignites a collaborative artistic *process* that is inherently unique to that particular time and place.

Whether we call this type of art participatory, conversational, community based, or dialogical, the similarities override the differences. The context and audience defines the work as the art is able to "catalyze emancipatory insights through dialogue."[259] As artist Peter Dunn explains, these "emancipatory insights" describe the "empathetic identification" that occurs when individuals participate in dialogic artworks.[260] Artists utilize the power of empathy to breakdown barriers between individual participants and to destabilize identity. For example, Cleve Jones, the creator of the NAMES Project AIDS Memorial Quilt, embraced the power that such a destabilization could evoke. During the AIDS crisis of the 1980s, Jones recognized the disconnect between mainstream society and communities hit hardest by the epidemic, so he began what later became known as the AIDS Quilt to, in many ways, democratize and lay bare the devastation of AIDS. The largest community art project to date, the AIDS Quilt is a living

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[258] Peter Dunn, interview by Grant Kester (London, October 25, 2001), quoted in Kester, *Conversation Pieces*, 1.

[259] Kester, *Conversation Pieces*, 69.

[260] Ibid., 78.

memorial with over 40,000 three foot by six foot panels, weighing over fifty four tons.[261] In

many ways, the quilt represents an analog version of digital emotions where each panel provides

a glimpse into a vibrant life lost, but the impact of the entire piece takes on a power much larger

than the individual parts. The sheer magnitude of the quilt reinforces the devastation of the AIDS

epidemic, while also reminding us of the tragic impact of our collective negligence during the

Figure 2. The AIDS Quilt, *LIFE* Magazine

early 1980s. The quilt is a living memorial that integrates folk art, memory, empathy, and

community. The empathetic recognition of the AIDS crisis allows participants to see each other

as "co-participants in the transformation of both self and society."[262] Participatory art is then

inherently dialogical and reliant on empathy to spur and sustain interaction, whether or not the

interaction is active or passive. As understood by embodiment theories, empathy is the rapid

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[261] "The Quilt," The Names Project Foundation, http://www.aidsquilt.org/ (accessed April 11, 2011).

[262] Ibid., 80.

(re)experience of emotion where one individual simulates the emotive behaviors of another. And while these bodily experiences may never reach consciousness, they are critical to our understanding of self and other.

Participatory art, then, exhibits four key factors that distinguish it from other types of artistic endeavors: (1) it provides context within real-world environments, (2) it is dialogic, meaning it facilitates some sort of interaction, (3) it is dynamic and plastic, (4) it relies on empathy to spur both creative and social transformation. These components are incredibly inclusive and encompass a wide array of on and offline participatory artworks—from John Cage's famous piece *4'33*, which explores the nuance of silence, to Alan Kaprow's "Happenings," which break down the barrier between artist and audience, to more recent works by Adrian Piper, George Legrady (*Pockets Full of Memories*), and Aaron Koblin (*The Sheep Market*). The shift to digital platforms poses both problems and opportunities for artists and potential participants. Groys argues that participatory art must move beyond specialization to promote interaction, consequently he views the hyper-evolution of digital technologies as a barrier to entry.[263] (Groys also argues that "in the case of virtual communication and participation…the body of the person using the computer is of no consequence,"—a position that ignores the intimate, embodied feedback that occurs when we interact in digital spaces.) Brian Massumi notes that interacting with a work of art does *not* make it interactive. He explains,

> It is not enough to champion interactivity. You have to have ways of evaluating what modes of experience it produces, what forms of life those modes of experience might develop into, and what regimes of power might arise from those

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[263] Boris Groys, "A Genealogy of Participatory Art," in *The Art of Participation: 1950 to Now*, ed. Rudolf Frieling, (San Francisco: Thames and Hudson, 2008), 29.

> developments. The power element is always there, at least on the horizon. You have to strategize around it.[264]

Massumi attempts to differentiate between the increasingly immersive and affective worlds of digital games and interactive art. Yet, the line between gaming and interactive art online is constantly being blurred, with ARGs such as *I Love Bees* embracing the power of narrative, interaction, and collaboration. *I Love Bees* achieved many of the goals that participatory artists seek to achieve in their work by tapping into the emotional power of gamers and using empathy to spur innovation. Yet, Massumi warns against this "gaming paradigm," and other media theorists, such as Lev Manovich agree. Manovich believes that we look at much of this dynamic, interactive, "artistic" content on the web and fail to ask fundamental questions: Is this content being driven by the consumer electronics industry? Social media companies? Is the mass production of cultural objects progress? Are these programs just relying on cultural templates?[265] Manovich's concerns are legitimate—*I Love Bees* was a marketing ploy for *Halo 2*—but those concerns should not negate the emergent power of certain games and commissioned pieces. The four factors of participatory art do not require a lack of corporate sponsorship to be affective. Corporations frequently sponsor athletes, dancers, and musicians and we rarely question the legitimacy of cyclists competing in the Tour de France, the many performances by the Rockettes, or any artist signed to a major label. The requirements for participatory art must remain broad and inclusive because the possibilities for such art will always be beyond our current understanding as technologies and culture co-evolve. Furthermore, this evolution should not be seen as a barrier to entry, but an opportunity to exploit technological innovation for the good of

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[264] Brian Massumi, "The Thinking Feeling of What Happens," in *Interact or Die*, ed. Joke Brouwer and Arjen Mulder (Rotterdam: V2_Publishing), 78.

[265] Lev Manovich, "Art After Web 2.0," in *The Art of Participation: 1950 to Now*, ed. Rudolf Frieling (San Francisco: Thames and Hudson, 2008), 70.

the network. We should question the motives and value of participatory art, but we should not dismiss works based on an individualistic, purist paradigm. These questions should seek to enhance the conversation surrounding the art and embrace the participatory community, no matter how "pop." Approaching digital community art from this perspective allows us to understand these types of new media pieces as inhabitants of popular culture while maintaining the aesthetic characteristics of more traditional participatory artworks.

Digital community artworks mimic many of the more salient and community-minded features of massive multi-player games, but they do not share the same goal. The most prominent difference between what Massumi dubs a "gaming paradigm" and digital community artworks is the concept of the epic win. As with many participatory artworks, the success of a digital community artwork resides in the dialogic process—active listening, self-awareness through empathy, and, ultimately, creative transformation. These artworks are never finished because they are always being accessed, engaged, and refreshed. Arjen Mulder claims that "interactive art is the art of the age of globalization. Everything and everyone is continually involved in the exchange…Interactive art addresses the situation itself, tries to grasp it at the moment it is taking place, presentationally, as consciously lived experience, instead of the language of yesterday or after tomorrow."[266] Digital community artworks tap into this aesthetic of the now because they live on the web and come alive through the network. Even when some digital community artworks come to an end, such as Miranda July and Harrell Fletcher's famous art project *Learning To Love You More*, the archive of the community artwork allows the piece to live on not just as an archive, but also as a living document that continues to encourage participation.

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[266] Arjen Mulder, "The Exercise of Interactive Art," in *Interact or Die*, ed. Joke Brouwer and Arjen Mulder (Rotterdam: V2_Publishing), 69.

Learning To Love You More began in 2002 and officially ended in 2009, although contributors

continue to complete the "assignments" given on the site and post them on the web. During the

project's active years, July and Harrell posted assignments to the website and encouraged anyone

to contribute their completed projects. The projects ranged from the reflective "Make a flier of

your day" to the poignant "Take a picture of your parents kissing."[267] Participants (ranging from

elementary school classes to inspired individuals) sent in their completed assignments to be

posted on the website. The result is a chronicle of personal, whimsical, and powerful artistic

snapshots of users lives and/or their interpretation of the world around them. The whimsy of

Learning To Love You More makes it accessible and appealing to a wide variety of users that are

perhaps seeking a creative and pleasurable interaction on the web. The magazine/website *Found*

shares the creative imagination of *Learning To Love You More* by inviting users to submit found
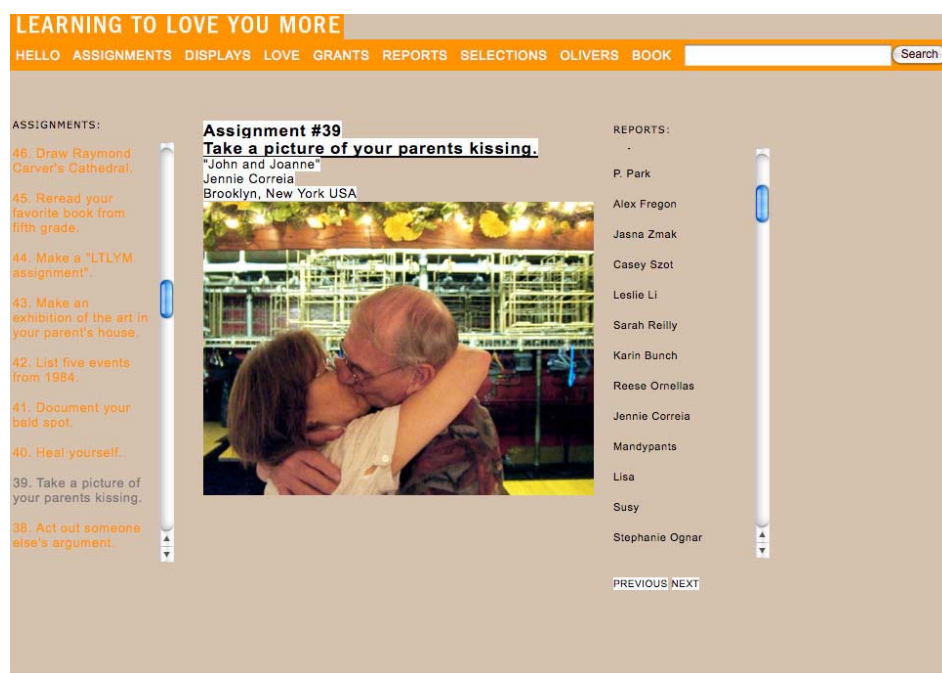
Figure 3. *Learning To Love You More*, Assignment #39, screenshot

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[267] Miranda July and Harrell Fletcher, *Learning To Love You More*, http://www.learningto
loveyoumore.com/index.php (accessed April 11, 2011).

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notes, invitations, letters, and such. that provide a glimpse into a stranger's life. The result is a collection of offbeat, funny, and at times heartfelt messages that float through our lives. *Found* brings these analog messages into the digital world thereby giving these bits of text a second life within the expanse of the network. Users can comment on the artifacts, but comments or no comments, it is impossible to flip through the scribbled notes and not imagine the story behind each. Unlike many digital community artworks, *Found* is folk art by accident. The inscribers
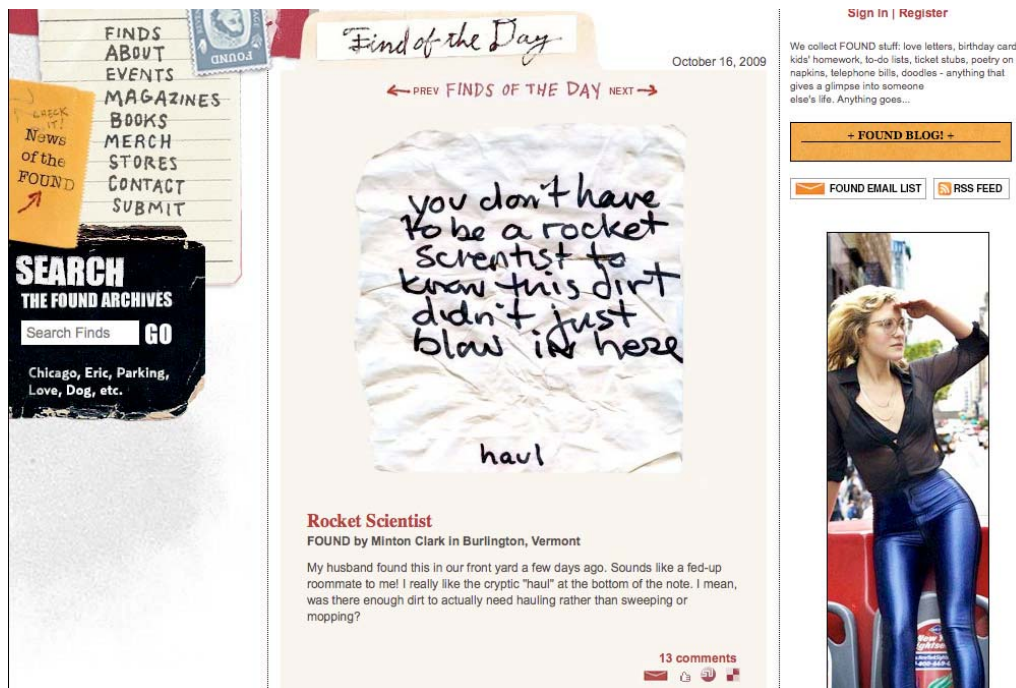
Figure 4. *Found*, "Finds of the Day," October 16, 2009

never intended for their scribbles to find another context, another life, outside of the original, intended purpose of the communication. Yet, these messages bring our perhaps mundane, unintentional emotional lives to the surface, and the result is, well, humorous—what a relief.

Other digital community artworks, such as *Dear God* and *The Dear God Project* attract users that seek a combination of solace, prayer and community. Bill Tikos, creator of the now defunct *Dear God*, described the site as a

global project for people around the world to share their innermost hopes and fears through prayer. It doesn't matter what your version of God is…Jesus, Allah, Buddha or simply a spiritual universal energy… praying to a higher power soothes and heals. It is believed that people who pray are healthier, happier and more resilient. Share your prayers here and help us create hope one prayer at a time. Simply send us your personal letter to your God and/or a picture that sums up your message visually. (*Dear God* will source a picture if you don't have one).

This mission statement was followed by a short disclaimer that reads: "This website is totally independent and non-denominational. We are not a religious or spiritual/new-age organization. We have no affiliation or relationship to any church or religious or spiritual group or organization."[268] *Dear God* published an array of narratives (or prayers) that range from one sentence to multiple paragraphs. These narratives were more detailed than many of the short, emotive descriptions that appear on other digital community artworks, such as *We Feel Fine* or *PostSecret. Dear God* allows for a broader emotional context, yet categorizes the prayers by subject. One prayer may find itself under the title bar "sex," while another may find itself under "confessions," "joy," or "stress." These categories break down the context of each prayer as they are juxtaposed with similar emotions and situations. The overall aesthetic of *Dear God* is hip, and the photographs are typically provocative. While many prayer sites exist online, *Dear God* combines the prayers with a kitschy design and provocative images, which places the website in the realm of digital community art. Working through the various prayers and images in *Dear God*, the user cannot help but question the role of emotions and how the emotions are affected by the images and overall organization of the site. The complex interplay of images, narrative text, emotion, and user feedback inspires questions that push our understanding of online communication and artistic community. For example, what if the image that *Dear God* provides distorts the narrative's context? Or is completely antithetical? The overall aesthetic and purpose

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[268] Bill Tikos, *Dear God*, http://www.dear-god.net (accessed March 16, 2008).

of *Dear God* garnered a fair amount of press[269] but never took off, and the site was closed in

2009. On the heels of Dear God's exit came The Dear God Project, a decidedly more faith-based
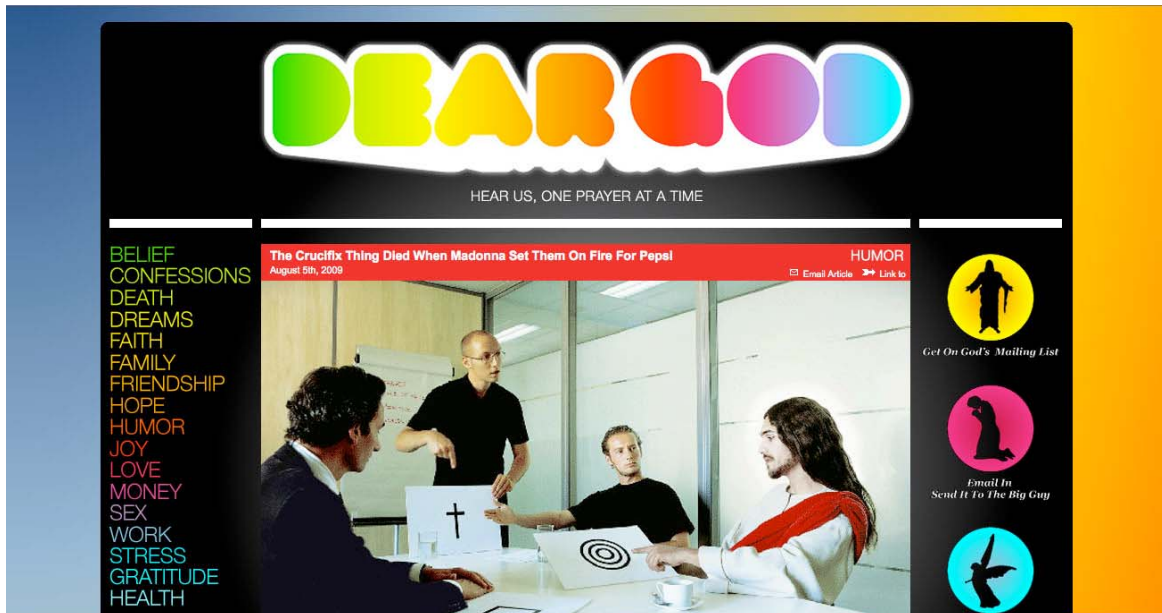

Figure 5. *Dear God*, opening page

initiative created by Josh Stephens. Stephens keeps his name and identity from the site but he

discusses his purpose for creating and maintaining the site on his personal blog: "I love

God…The Dear God Project is a mission of mine. Sometimes I like to refer to it as my Noah

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[269] Rachel Wells, "Dear God, your inbox is bursting," Brisbanetimes.com.au, April 20, 2008 http://www.brisbanetimes.com.au/technology/technology-news/dear-god-your-inbox-is-bursting-20090618-cl7k.html (accessed April 17, 2011); Conor McMorrow, "Searching for God? Now you can send him an email," www.tribune.ie, April 27, 2008 http://www.tribune.ie.archive/article/2008/apr/27/searching-for-god-now-you-can-send-him-an-email/ (accessed April 17, 2011); Snejana Farberov, "Wired worshippers log on to God," The Post and Courier, May 18, 2008 http://www.postandcourier.com/news/2008/may/18/wired_worshippers_log_on_god41159/ (accessed April 17, 2011).

mission…"[270] *The Dear God Project* began in 2009 with many of the same kitschy submissions

that Tikos's site fielded, yet over the past three years the "prayers" have become much more

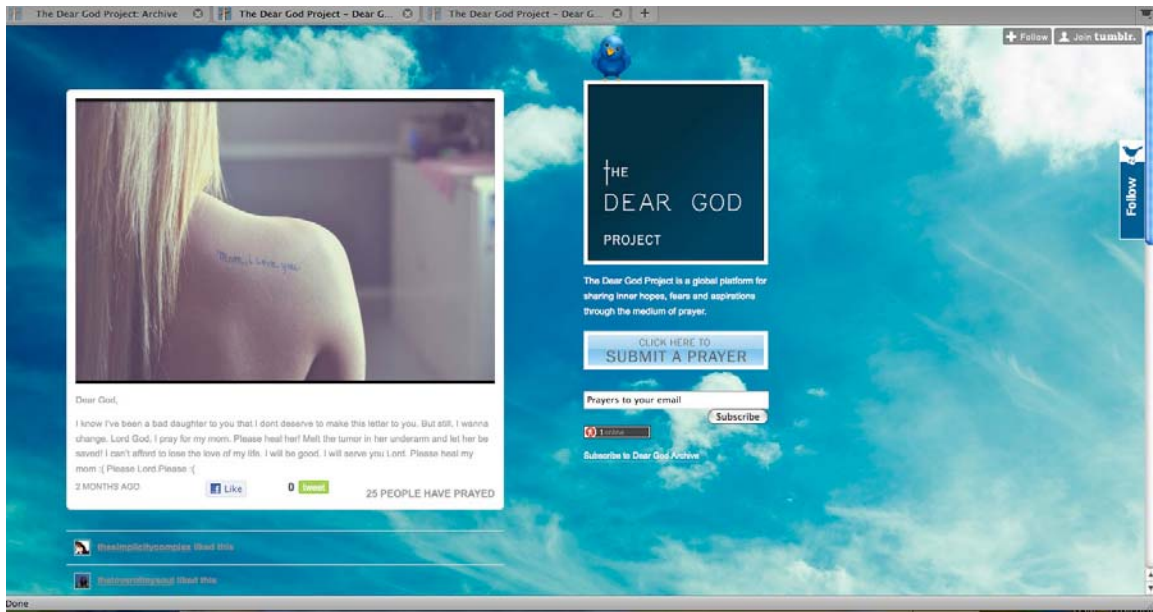faith-based and emotionally driven. The more recent prayers are also juxtaposed with provactive

Figure 6. *The Dear God Project*, individual prayer screenshot

images, which begs the same complicated questions concerning context that *Dear God* inspired.

What is the impact of these sites when the images seem contrived to, perhaps, sensationalize the

prayer? What role do the comments play in the feedback process? And exactly what kind of

context is the site creating with all of these private prayers/confessions?

     Learning To Love You More, *Found*, *Dear God*, and *The Dear God Project* blur the line

between dialogical websites (such as message boards) and net.art or web art in general. The

attention to aesthetic detail and the focus on emotive texts differentiates them from the thousands

of message boards and comment fields online, yet they feel more pedestrian than large-scale,

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[270] Josh Stephens, "About," Nonfictionality Blog, http://josh-stephens.com/about/ (accessed April 17, 2011).

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highly acclaimed web-based community art, such as Aaron Koblin's *The Sheep Market*.[271] Consequently, defining Internet art introduces a number of problems, especially when the neon world of pop culture and the general, sometimes vulgar, population at large is not only invited but also encouraged to participate. The startlingly low barrier of entry in these projects may make the term "art" seem forced, or even a mischaracterization all together, yet these distinctions burden traditional forms of participatory art as well. They just so happened to be magnified in the wild id of digital space.

Where Kester describes dialogic artworks as "context providers," I believe digital community artworks are *context amplifiers*. They cull the short bursts of emotion that drive digital emotions and display them on an unprecedented scale. In fact, the display itself becomes larger than the sum of its parts. As McGonigal argues, it is possible to scale up community interactions, and digital community artworks do just that by creating new layers of context for these emotional transcriptions while still retaining their original *raison d'être*. Similarly to the dialogical encounters Kester explores, digital community artworks seek to retain individual identity, even when the inscriber is anonymous. As Kester explains, "identity is only partially transformed. These partial transformations can no doubt accumulate over time, and the aggregate effect may be to radically transform subjectivity or identity."[272] Of course, this bit-by-bit transformation lies at the heart of digital emotions. Only through these small, but sustained interactions do we come to accept the emotive power of digital exchange and all the while these experiences are populating our emotional repertoires and shifting our paradigm scenarios. Digital

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[271] Koblin asked on thousand workers on Amazon's Mechanical Turk to draw a picture of a sheep facing to the left.

[272] Kester, *Conversation Pieces*, 157.

community artworks make visual what digital emotions do in various technologies and through various social media online and they suggest that valuable emotional exchange does not require dialogue in the traditional sense, but can be created, sustained, and highly effective through short, emotive transcriptions. With the scale and dynamism of digital community artworks, a little emotion goes a long way.

<center>*PostSecret*</center>

Beginning in the winter of 2004, artist Frank Warren created and released original artworks into the world to be serendipitously stumbled upon by unassuming individuals. Almost like *Found* with a conscience, the messages (sometimes in a bottle) intrigued the community with their artistic flair and cryptic, yet hopeful, messages.[273] The final movement of the project asked individuals to post a secret:
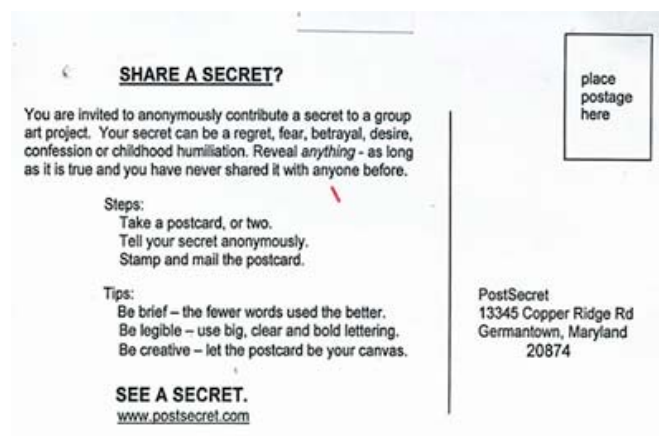

Figure 7. Original *PostSecret* postcard

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[273] Mah, Jacqueline, "Mysterious Bottles Found in Clopper Lake, *Gazette.Net*, August 25, 2004, http://www.gazette.net/gazette_archive/2004/200435/gaithersburg/news/232429-1.html (accessed April 17, 2011).

The response was overwhelming, and *PostSecret* was born. Over a half million secrets later, the

PostSecret community art project thrives in multiple media (books, blogs and a traveling show)

and has become one of the most notable blogs on the Internet.[274] (*PostSecret* is also the largest

advertisement-free blog in the world, with over 430 million hits.) Contributors to *PostSecret*

simply mail a postcard with their secret (Warren kindly asks that the secret be truthful) and a

small visual to Warren's home in Maryland. Some secrets make it on the weekly blog update,

some make it into the books, some go on the road, and others are never displayed. Warren

believes that the medium of the postcard is deliberate, yet accessible, for almost everyone, and he

regards the artwork as an important aspect of the secret. He explains:

> The art is important. Sometimes the pictures add another level to the meaning,
> making it humorous, or very personal and homey. I think of each postcard as a
> living work of art. I find inspiration in that they are coming from everyday people.
> The artwork is special and moving. Perhaps courage is more creating art that can
> really change lives. For me, many times, it's the non-verbal art that conveys the
> deepest sentiments of the secret—the part of the secret that is so uncomfortable,
> they can't put it into words.[275]

Over the years, *PostSecret* has become a fixture of fleeting emotional transcription on the web.

The postcards inspire collective action, such as the Please Don't Jump Facebook page and

suicide prevention rallies detailed earlier, as well as a thriving online community that shares

personal struggles and words of encouragement through the *PostSecret* online forums. Users

embrace the power of empathy within the community and show support for many of the

anonymous participants in the project. While some secrets divulge humorous instances (one

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[274] *PostSecret* won "Weblog of the Year" in 2006 and 2007.

[275] Harper Collins Publishers, "Author Interview with Frank Warren," Harper Collin's Authors, http://www.harpercollins.com/author/authorExtra.aspx?authorID=30756&displayType =interview (accessed April 17, 2011).

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secret reads, "My prison pen pal (who I've never met) writes all the time about how we'll go camping together when he gets out. I'm not so sure. Maybe ☺"),[276] most describe considerably darker emotions and circumstances. These secrets often depict a sense of loneliness, anticipation, anxiety or despair, much like the suicide secret that sparked the Please Don't Jump community. *PostSecret* exemplifies the potential power of digital community art where users seek out empathetic experiences to contribute positively to the community, even if this contribution is not directly reflected on the site. The medium of the postcard, although seemingly nostalgic, accurately reflects our short-text, status update culture. With only a few words or sentences, contributors must reduce their secret into an emotive package that successfully conveys the emotion and context. Not unlike a traditional postcard that documents geographic locations during one's travels, *PostSecret* documents an emotional location on a grand map of human thought and feeling. The postcards exist in a world of tactile treasures and fleeting digital noise simultaneously, and the success of the project is a testament to how we can negotiate our emotional lives in an increasingly hybrid world of analog and digital culture where space is negotiable and correspondence is scaled up.

We can better understand the potential impact of a digital community artwork like *PostSecret* through the framework of digital emotions. Instead of seeing the project as a quirky collection of secrets on display, viewed through the lens of digital emotions, the success and influence of *PostSecret* suggests a way forward when discussing emotions in digital space. Two specific phenomena emerge from the artwork: the power of explicit empathy as a condition for entry into the community and the power of images to support short, emotive transcriptions. These features of *PostSecret* provide a glimpse into a digital landscape where emotions can

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[276] Frank Warren, "PostSecret" http://www.postsecret.com/ (accessed April 14, 2011).

strengthen the emotive power of the network despite the network's growth. The resultant

intimacy has the potential to transform emotional norms in the culture because secrets, in most

cases, reflect the undesirable or shameful thoughts and actions of those who keep them. In an era

of status updating and an increasingly collaborative and communicative network, a space such a

PostSecret can lay bare common, yet concealed, thoughts, fears, and experiences.

Sissela Bok, in *Secrets: On the Ethics of Concealment and Revelation*, claims that "we

experience as secret the spaces from which we feel shut out,"[277] which makes a space like

PostSecret a wonderful paradox in an increasingly public digital culture. Sharing anonymous

secrets with the network allows individuals to take control over their secret through artistic

expression, physical release (posting the secret) and public sharing. Secrets help shape our

identity because the very act of keeping secrets presupposes an identity that is being negotiated

in a larger social world. Confessing secrets, either openly, selectively, or anonymously, is a

universal urge in nearly all humans,[278] and, as Bok notes, "institutional practices of self-

revelation may bring solace, alleviation of guilt, group acceptance, personal growth, even self-

transcendence."[279] It turns out that secrets are effective communicators and in their silence, their

whispers, or their outright confession, they are inherently dialectical. As Luise White explains,

> Keeping a secret requires negotiating a social world at least as much as lying
> does. Keeping a secret isn't something a self does, it's something that continually
> has to be reconstituted and renegotiated through changing political and discursive
> practices—and these changes don't necessarily have to be over time, they can be
> at the same time. This means that secrets aren't a single thing; their meaning, and
> their value both as spoken and unspoken assertions, change and are negotiated

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[277] Sissela Bok, *Secrets: On the Ethics of Concealment and Revelation*, (New York: Vintage, 1989), 10.

[278] Ibid., 80.

[279] Ibid., 88.

and renegotiated regularly. Secrets and secrecy are social acts, constantly aware of audiences and publics.[280]

The service that *PostSecret* provides is perhaps not revolutionary in the context of secrets as social acts, yet the scope that the project boasts, and the virality of certain secrets fundamentally alters the history of secret negotiation and revelation. In fact, it is reasonable to suggest that the web itself has fundamentally altered secrecy. For the first time, secrets, like little magnets from all over the world that never knew other magnets, are pulled together and what was once alone is now normalized, or at least alive in a population that may have not existed otherwise. Just as White argues, secrecy is a social act that is constantly being negotiated based on environmental context, so something kept secret in your small hometown may not be secret in the bustling city. In the context of the digital network, the variety of the bustling city explodes and secrets coalesce to form communities. *PostSecret* differentiates itself from anonymous message boards like 4chan or Group Hug[281] and carves out a place for a community based solely on empathetic connections for all types of secrets, despite their context. The secret is thus remediated and amplified by thousands of users that *actively seek* the (re)experience. Even outside the space of *PostSecret*, divulging of secrets begets secrets. One contributor writes,

> I've had a PostSecrect card in my bag for weeks. I kept meaning to send it in but just never seemed to get around to it. So I stuck it to the wall of a public restroom. I had a feeling or relief wash over me—it was wonderful to know the next person to use the bathroom would know my secret, and a tiny part of my burden was gone. Just out of curiosity I went back in there at the end of the day. To my delight there were at least ten other secrets on the wall, all on pink Post-it notes, ranging from someone who had helped her elderly neighbor take an overdose

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[280] Luise White, "Telling More: Lies, Secrets, and History," *History and Theory* 39, no. 4 (December 2000): 22.

[281] *Group Hug* (www.grouphug.us), founded by Jeff Veit and James Dogopoulos, is a confession website that follows many of the same aesthetic principles of status update, social media platforms. The confessions are never edited and most are submitted anonymously.

when Parkinson's had got too much to cope with, right down to the lady who can't walk past cans of fizzy drink without shaking them up. What a wonderful feeling! P.S. I'm the fizzy drink lady.[282]

Within the space of *PostSecret*, secrets spur comments, conversations, and more secrets. The *PostSecret* community forums chose secrets from the Sunday posting and carry on rather in depth discussions. In response to a secret that claims, "In crowds I pretend to text people in order to feel less alone," community members in the forum readily confirmed the behavior as normal. One contributor writes, "I'll do this...I'll just look through my phone at pictures or read old texts sometimes...I hate being alone :/"[283] Many of the posts confirmed these feelings, yet one member notes, "[Sometimes] When I'm alone, I look for other alone people to strike up a conversation with. I disregard you if you're buried in your phone."[284] The secret takes on a dual role as both an artifact representing one individual's experience while providing a context for others to share their own experiences. Once published, the network populates the secret with similar emotions— filling in the blanks of the text to fit familiar narratives. This act of populating the secret is a conscious, empathetic action based in (re)experience.

Empathetic identification yields permission to participate in the artwork and furthers the lifespan of each secret, while the images on each postcard reinforce the emotive power of the text by creating a further glimpse into the context of each secret. The images presented participate in a unique *PostSecret* culture that relies on the juxtaposition of text and image to

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[282] Frank Warren, *A Lifetime of Secrets*, (New York: Harper Collins, 2007).

[283] 10:55 [pseud.], comment on "In Crowds I pretend…," PostSecret Community, comment posted April 10, 2011, http://www.postsecretcommunity.com/chat/viewtopic.php?t=338487 (accessed April 19, 2011).

[284] Parliament [pseud.], comment on "In Crowds I pretend…," PostSecret Community, comment posted April 10, 2011, http://www.postsecretcommunity.com/chat/viewtopic.php?t =338487 (accessed April 19, 2011).

relay highly affective information. These images share common themes, such as text or other marks distorting photographs, hand drawn representations of a secret, or a representation or photograph of an artifact that relates to the secret. The contributors to *PostSecret* are typically not artists by trade, yet Warren considers them all artists in the context of the project. In the spirit of the AIDS Quilt, the pastiche of postcards is a folk art project larger than the sum of its parts. The images that accompany many of the secrets amplify the emotive experience by further mining reciprocal memories in our individual emotional repertoires. The image is always bound up with the body as it is up to the body to understand the image as a representation of a certain time and place. As W.J.T Mitchell argues, "We experience the image as a double moment of appearing and recognition, the simultaneous noticing of a material object and an apparition, a form or a deformation. An image is always both there and not there, appearing in or on as a material object yet also ghostly, spectral, and evanescent."[285] Digital media, according to Mitchell, owes its success to the power of the image. Without the ones and zeros adding up to familiar and inspiring images, "it is unlikely that the digital revolution would have gained any traction at all."[286] Mitchell underscores the importance of images in the midst of what was initially a text-based medium. The connective power of the network thrives on images, even in our status update culture. In many ways, the images accompanying the secrets are as much a part of the secret as the explanatory text. The image grounds the secret and provides context while creating a phenomenal, aesthetic experience for the user.

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[285] W.J.T Mitchell, "Image," in *Critical Terms for Media Studies*, ed. W.J.T. Mitchell and Mark Hansen (Chicago: University of Chicago Press, 2010), 39.

[286] Ibid., 44.

Few contemporary images embrace the ghostly duplicity like the final images of the

Twin Towers on September 11, 2001. Covering the front page of almost every major newspaper

throughout the world and relived countless times through video and sound, the smoking towers

signify not only the tragedy of 9/11, but also a turning point in modern history. The "9/11 secret"

utilized this highly affective image and became one of the most viral *PostSecret* entries to date.

(Frank Warren cited the secret during an interview in 2009 as the one secret that "made his blood

run cold."[287]) Even though the image is blurry and not directly indicative of a cityscape, the

smoke cloud enveloping the top World Trade Center is unmistakable, and the burnt top edge of

the image implies a second death within the context of 9/11.

Figure 8. The "9/11 secret"

The text of the secret reinforces this reading as the secret indicates that the inscriber experienced

a unique death on September 11, 2001—the death of his or her identity as they began a new life

after the attacks. This secret is not typical of *PostSecret*, but its curiosity demonstrates the range

of submissions. Furthermore, the 9/11 secret is a good example of how the new, imposed context

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[287] Allison Levy, "Creator of PostSecret brings even to campus," *The Dartmouth*, April 20,
2009 http://thedartmouth.com/2009/04/20/arts/postsecret (accessed April 18, 2011).

that *PostSecret* facilitates can overshadow the original inscription. The circumstance of the

inscriber, most would agree, is not common, but the unity and common empathy surrounding the

9/11 attacks is pervasive in American culture. The result of this rather odd juxtaposition

reinforces the power of the image and the second life that the secret takes on in the digital realm.

It comes as no surprise, then, that the 9/11 secret became viral after the initial posting on

PostSecret, appearing on dozens of blogs and websites.

The empathetic commitment and affective power of the image makes *PostSecret* a

fascinating example of not only digital community art, but the influence of aesthetically charged

emotions on the web. Individuals that participate in the artwork submit their secrets to a highly

emotive network of users and while the submissions are anonymous, the community built around

their revelation is vibrant and ready to help. *PostSecret* shows us the power of embodiment in

digital contexts, and the power of art, no matter how simple, to convey emotion. Furthermore,

the collection of secrets continues to lay bare many social, cultural and economic problems, such

as homophobia, anorexia, xenophobia, debt, and many other common, yet concealed social,

cultural and economic problems. Just as all secrets are necessarily negotiated in a social world,

the secrets that arrive in Warren's mailbox *want* a second act. They arrive in the hopes of being

part of this empathetic community, and the users who created them can now participate in the

artwork as both a participatory artist and as a viewer—perhaps the most powerful position within

this feedback system.

PostSecret is an intentional community artwork. The participants spend time finding the

balance between text and image and work to materialize their secret within the limited

parameters of a standard postcard. The *PostSecret* community activates the secrets through

discussion and perpetuates the secrets in other digital spaces, such as the *PostSecret* Archive and

other blogs and forums not officially affiliated with the project. Yet not all digital community artworks function in this way. *We Feel Fine* is an artwork that garners participation unbeknownst to the user, and its methods raise compelling questions for the role of digital community artworks online and the function of emotions on the web.

<center>*We Feel Fine*</center>

Jonathan Harris began *We Feel Fine* with Sepandar (Sep) Kamvar, a fellow computer scientist and professor of computational mathematics, in 2006. While *We Feel Fine* is perhaps the most emotive piece in Harris's portfolio, his other works speak to the vastness and beauty of data and making that data more human—or at least more beneficial to humans. His projects finetune the art of narration through mass collection and, in many ways, quiet the noise of the web
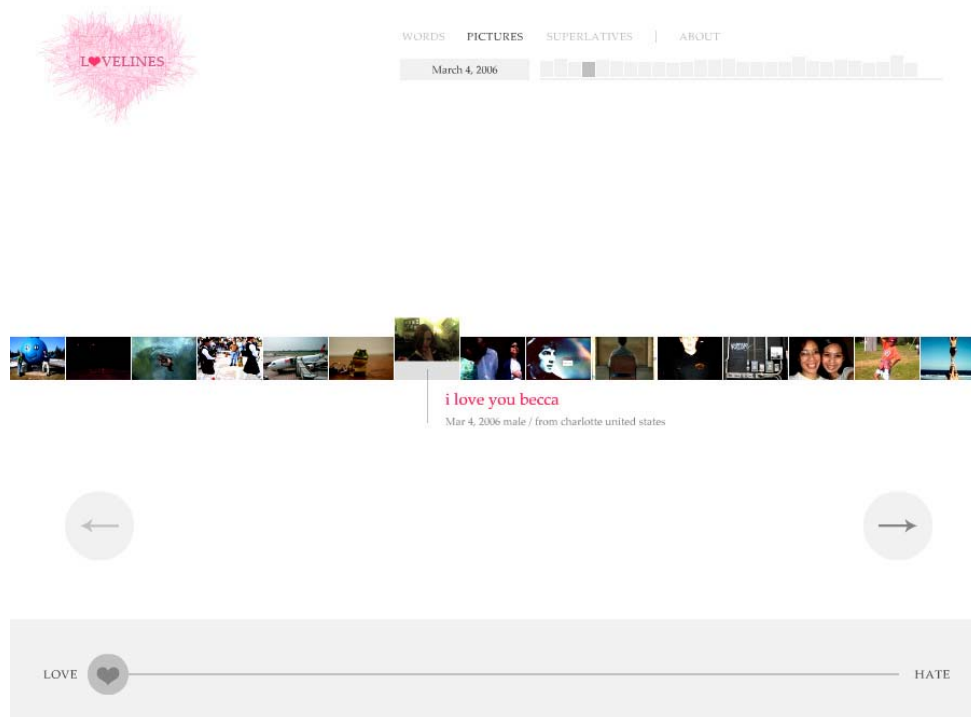

Figure 9. *Lovelines*, "Pictures," screenshot

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while making it stunningly beautiful. *Lovelines*, also created in collaboration with Kamvar, collects emotions on the continuum between love and hate from online journals and displays the results on a crisp white screen. The program pulls images from the blogs associated with the text as well, thereby creating a pastiche of emotion-laden photographs. Other projects, such as *I Want You To Want Me*, explore user profiles on online dating sites and organize the data based on users' desires, turn-ons, and such. The result is an interactive display of floating balloons each representing hundreds of online daters. Harris has also taken on the news by aggregating the top stories from over twenty thousand online news sources into a single cosmos-inspired constellation of information organized by keywords, images, and quotations. (The displays are so beautiful that you sometimes forget that you're looking at real news.) *Universe*, *I Want You To Want Me*, *Lovelines* and *We Feel Fine* only represent a portion of Harris's portfolio—they keep company with other digital projects that, as Harris describes, "reimagine how we relate to our machines and to each other."[288] Although his sites unwittingly collect participants, he cites increasing empathy as his primary motivator for culling vast amounts of personal and emotional information.[289] He also recognizes the importance of compelling aesthetics in facilitating empathetic feedback. In an interview in *Wired* magazine, Harris explains:

> Besides my interest in storytelling for its own sake, I also feel a strong responsibility to help shape what the web can be. I believe in technology, but I think we need to make it more human. I believe that the internet is becoming a planetary meta-organism, but that it is up to us to guide its evolution, and to shape it into a space we actually want to inhabit—one that can understand and honour both the individual human and the human collective, just like real life does.

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[288] Jonathan Harris, "27," The Work of Jonathan Harris, http://www.number27.org/index.html (accessed April 18, 2011).

[289] Behance Team, "Jonathan Harris: *We Feel Fine*," The 99 Percent, 2008 http://the99percent.com/articles/5604/Jonathan-Harris-We-Feel-Fine (accessed April 19, 2011).

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Over the past several years, the web has witnessed an astounding aesthetic homogenization, with leading websites converging towards an increasingly uniform "aesthetic of the web". A quick look at sites like Google, Craigslist, Facebook, Twitter, Flickr and Amazon reveals basically the same aesthetic solutions to very different problems. Aesthetic homogeneity makes (some) sense when building tools like web search or shopping. But when building digital homes that increasingly house our lives, this aesthetic homogeneity crushes human individuality, and makes us all look the same. This is a problem I feel it's important to solve, and what I will be working on next.[290]

Harris echoes the rationale behind affective computing: digital technologies should exemplify the very best of what it means to be human. In other words, digital spaces should be affective,
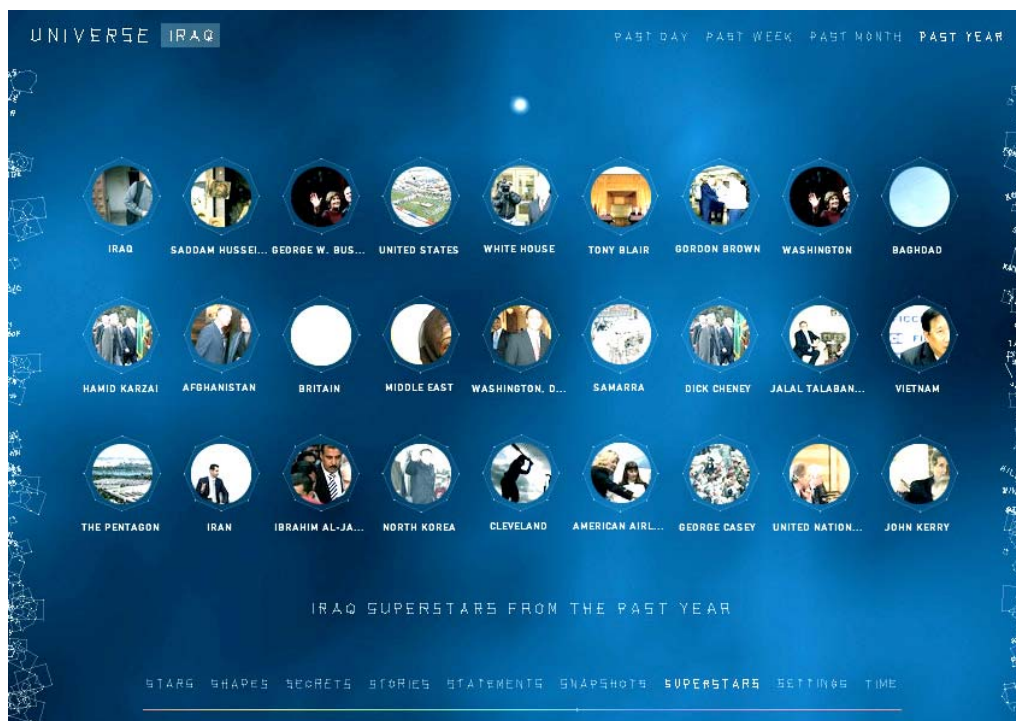

Figure 10. *Universe*, "Superstars," screenshot

[290] Maria Popova, "The sum of all emotions: Jonathan Harris Q &A," Wired.co.uk, December 2, 2009 http://www.wired.co.uk/news/archive/2009-12/02/the-sum-of-all-emotions-jonathan-harris-qa.aspx (accessed April 19, 2011).

they should be visually engaging and challenge our assumptions of the network, therefore each other. Artworks such as *We Feel Fine* embrace the basic principles of our status update culture, yet they amplify them by scaling up the level of participation beyond the scope of actionable human interaction to the level of algorithm. The result is a meta-view of the emotive network (thanks to a humble but smart piece of software) that consequently became the largest database of human emotion in existence.

The scope and scale of Harris's projects embraces the scope and scale of our networked lives. His art represents the enormity of digital culture while reminding us that beauty and design make the vastness comprehensible and digestible. His works underscore what Kamvar notes as the most interesting shift over the past few decades—not the shift in technology, but the "cultural shift…where people now feel comfortable sharing their whole lives online."[291] In the context of digital community artworks these projects, specifically *We Feel Fine*, complicate the framework. Digital community artworks are dialogical, therefore participatory, but when these emotions are culled together through a web crawler that scans Facebook, Twitter, and numerous other social media programs for text following the words "I feel…," who is participating? Where is the conversation? And what it is about? And, perhaps most importantly, does the focus on aesthetics overshadow the original, emotional inscription completely? Is it possible in an attempt to make emotion-laden data accessible and affective that Harris and Kamvar made it kitsch and alienating? These are important questions to engage because if we are to look at a wide variety of spaces through the framework of digital emotions, we have to understand where they fall on the spectrum in order to grapple with their potential influence. Where digital community artworks like *PostSecret* engage the network as active participants, *We Feel Fine* shifts the emotional

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[291] Sep Kamvar, "An Almanac of Internet Emotion."

burden to the receiver, thereby removing any aesthetic or contextual responsibility from the inscriber. They become a piece of data in a network of emotions that seeks to convey information much broader than any individual emotion. *We Feel Fine*, indirectly, utilizes the *I Love Bees* model of participation where users relinquish individual recognition so long as they are contributing to an epic revelation. (While also knowing that the only way to achieve this epic revelation, or win, is through this active submission.) It's a hive mind mentality in many respects, but with perhaps more altruistic motivations. The following analysis of *We Feel Fine* attempts to frame the artwork within the parameters of digital community art, and within the parameters of digital emotions. By viewing *We Feel Fine* through the compound lens of community art and digital emotions, the potential of the piece becomes apparent and provides a sneak peak into some possible futures of emotions on the web.

The six movements that comprise *We Feel Fine* organize and distribute data about emotion in various ways. The opening screen begins with Madness, which invites the user into a galaxy of 1,500 colored specks that reveal the text of the emotion when prompted by the curser. Each colored speck corresponds to the tone of the feeling (red is angry, yellow is happy, and such.), and, upon inspection, reveals the text of the emotion and any images corresponding to the text. Harris and Kamvar explain, "The tiny colorful particles represent a bird's eye view of humanity—like standing atop a skyscraper and looking down at the street...from the skyscraper, the notion of individuality is hard to recognize."[292] Once you single out a speck and delve into the emotion, it consumes the screen and becomes the center of the universe, so to speak. While the opening movement provides us a view of the many, it still allows access to the individual.

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[292] Jonathan Harris and Sep Kamvar, "*We Feel Fine* and Searching the Emotional Web" (paper presented at *WSDM'11*, Hong Kong, China, February 9-12, 2011), 4.

Both the macro view of human emotion (the data) harmonizes with the mirco-view (the individual emotions and personal narratives).
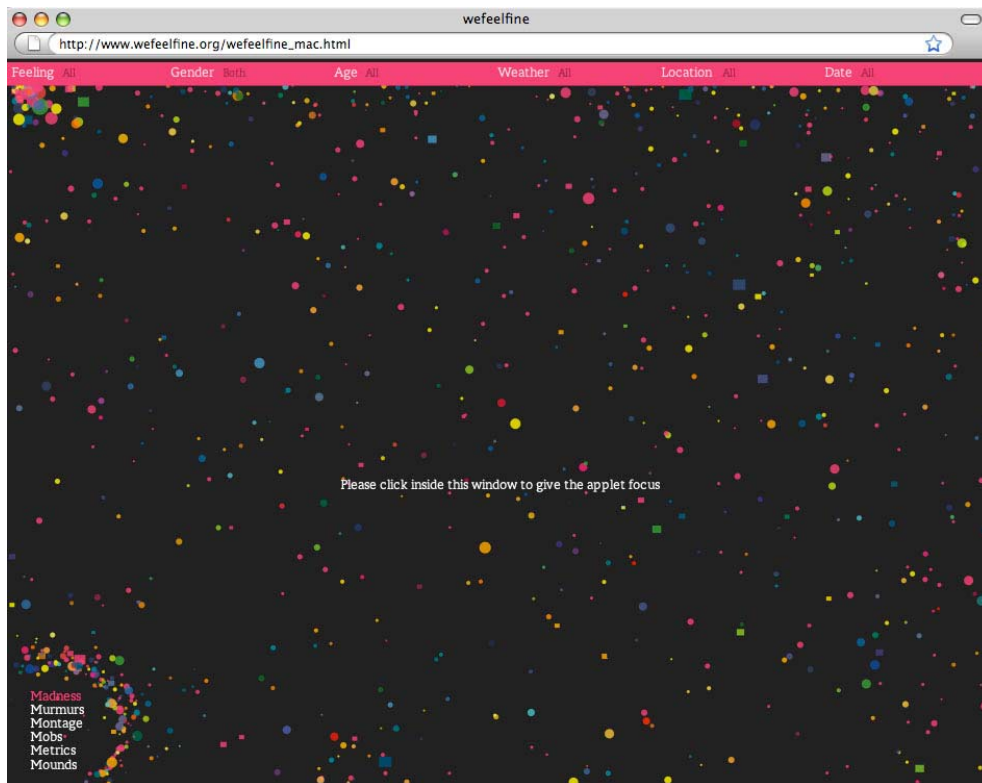

Figure 11. *We Feel Fine*, "Madness," screenshot

Murmurs, the second movement, pushes the chaotic scatter of specks to the top of the screen as each one falls slowly south. A narrative of emotions results as the user begins to read the emotions one after the other. The third movement, Montage, organizes any image data collection by the crawler into an image-only grid. The quilt of images, like the colorful particles in Madness, allows users to explore the micro data when a single image is clicked. Mobs focuses on a macro view of the emotions by organizing them into frequency of occurrence with the
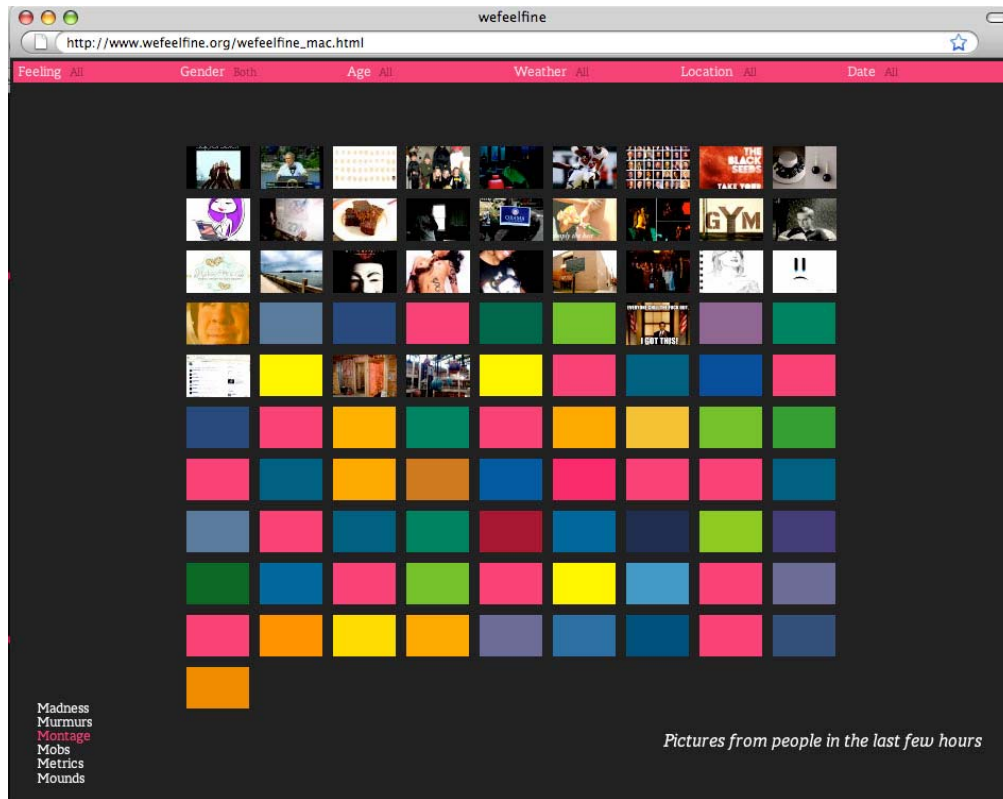
Figure 12. *We Feel Fine*, "Montage," screenshot

express option of sorting them by age, location, date, weather and gender. Metrics takes the data

from Mobs and averages them based on previous data. Lastly, Mounds organizes common

emotions in mounds for a graph-like display of the most common emotions being reported at the

time. Each movement relies on the same data collected from the blogs, but displays each piece of

data in such a way that the user becomes gradually exposed to the larger, intended context of the

emotion. The site moves the user full circle—from the indistinguishable individual among many,

through individuation, to the combination of the whole. The overall aesthetic immerses users into

a neon world where emotions rule, while providing glimpses back into the "real world" (or "real"

digital world) where the emotions are linked back to a context and a narrative.

The site, for the average web user, is only the front matter of a much larger database of

emotion. Kamvar explains,

> The statistics on the *We Feel Fine* website are relatively superficial. Due to the
> real-time constraints of the web browser, the online statistics are based only on
> the most recent 2,000 feelings. Our database, however, consists of over 12 million
> feelings (and growing all the time)….We wrote custom software and set aside a
> dedicated server to run offline statistical analysis on our database, producing far
> deeper and more interesting statistical findings than could ever be computed in
> real-time.
>
> For instance, we were able to identify the main reasons why people feel a given
> way, how given feelings fluctuate over the course of a typical lifetime, how
> geography affects emotion, how weather affects emotion, how the news affects
> emotion, how people go from feeling one thing to feeling another, and many other
> insights too.[293]

The larger data set inspired the book version of *We Feel Fine*, where Harris and Kamvar were

able to delve deeper into the data. Researchers at Stanford and the University of Pennsylvania

also used the data to conduct research on the relationship between happiness and age.[294] While

providing such an unprecedented data set of emotions is useful to researchers, this is not the

primary goal of the site. Harris and Kamvar conducted their own small study to measure the

site's affect on typical users. Ten males and ten females, ranging in age from eighteen to sixty-

one, were told to spend fifteen minutes exploring the movements. Expecting to receive feedback

concerning the usability and aesthetics of the site, Harris and Kamvar were surprised to find that

the users wanted to discuss the emotional effects of the data itself. Two patterns emerged from

these exit interviews: increased emotional self-awareness and an increased sense of connection to

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[293] Popova, "The sum of all emotions: Jonathan Harris Q &A."

[294] Cassie Mogilner, Sep Kamvar, and Jennifer Aaker, "The Shifting Meaning of Happiness," *Social Psychological and Personality Science*, (December 20, 2010).

others.[295] Almost every user (without being prompted) began discussing how they felt as they explored the site further. One user explained:

> Now, I just want to give a little personal note here. I am sitting here in the afternoon reading these really deep esoteric statements by people from who knows where and I'm really enjoying myself right now. It feels surreal, sitting here talking to somebody who I have just met and will not see again and seeing the emotions of people who I do not know or will not meet. I feel pretty good.[296]

Harris and Kamvar note that bloggers who write about *We Feel Fine* display similar sentiments. They often discuss how they feel after touring the site, whether describing their overall feeling from reading through the collection of emotions, or relating personally to one or more of the emotions. On the subject of empathy and feeling connected to others, some participants responded to the emotion as though it were a person, while others confessed that they felt "connected" to the inscriber of the emotion and to the larger world around them after working their way through the site. "It is comforting if you are feeling down to search by 'sad' or 'sorry,' and see millions of others who share your sentiment. You feel less alone and the world seems smaller." Another user explains, "I feel that witnessing everyone's feelings of failure and success gives me a keen sense of belonging in the world."[297] The empathetic reactions to the data and the visual displays responded to emotions on both the macro and micro level. Users found themselves empathizing with individuals and with the overall zeitgeist of the emotion collection enterprise—they simply felt more emotionally aware in general. The results of this informal study suggest that the framework of digital emotions can successfully apply to a digital community artwork where the inscriber does not knowingly participate in the artwork. The

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[295] Harris and Kamvar, "Searching the Emotional Web," 5.

[296] Ibid.

[297] Ibid., 7.

responses from the study participants, and from bloggers who write about their *We Feel Fine* experiences, show an affective engagement with the emotion data in every level that the piece explores, which also suggests that digital emotions can elicit empathetic responses to emotion-laden text and/or images when that data is dramatically scaled up. The aesthetic experience that *We Feel Fine* provides delivers the data in such a way that users become immersed in the various permutations of emotions that are alive in the network. The aesthetic experience, instead of obscuring the data, rather activates the imagination and inspires users to explore, create, or relate to the emotions presented. The context of the emotions shifts within the artwork and allows the emotions to take shape in digital space as either inscriptions existing outside of the movement, or as a piece to a larger emotional picture of the network.

Every few minutes, the *We Feel Fine* software searches the web for new emotions. As a result, the emotions on the site are constantly refreshing and exhibit a variation of what N. Katherine Hayles calls "flickering signifiers." An effect of information technologies, flickering signifiers describe the "unexpected metamorphoses, attenuations, and dispersions" that occur when simple command changes enact arbitrarily constructed code and result in rippling consequences within the network.[298] Hayles contrasts the concept of flickering signifiers with the materiality of print culture where a print book correlates to the physical body. In contrast, the virtual world is subject to coding and randomness. Hayles explains:

> If my assessment is correct that the dialectic of pattern/randomness is displacing presence/absence, the implications extend beyond narrative into many cultural arenas. In my view, one of the most serious of these implications for the present cultural moment is a systematic devaluation of materiality and embodiment. I find this trend ironic, for changes in material conditions and embodied experience are precisely what give the shift its deep roots in everyday experience. In this essay I have been concerned not only to anatomize the shift and understand its

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[298] Hayles, *How We Became Posthuman*, 30.

implications for literature but also to suggest that it should be understood in the context of changing experiences of embodiment. If on the one hand embodiment implies that informatics is imprinted into body as well as mind, on the other it also acts as a reservoir of materiality that resists the pressure toward dematerialization.[299]

 She explores new media literature to elucidate this point, but I see digital community artworks, especially a scaled up digital community artwork like *We Feel Fine*, as a more salient example of how random interactions within a equally random data set can produce affective, therefore embodied, responses in users.

By embracing affective computing, whether it be specifically targeted affective technologies, social media platforms, or digital community artworks, the neglectful shift towards a "devaluation of materiality and embodiment" becomes less worrisome as emotive HCI and CMC is highly embodied. *We Feel Fine* is accessible to anyone with an Internet connection and it relies on a certain level of engaged reflexivity to spur the feedback that is a digital emotion. Yet, as Harris and Kamvar have shown, the aesthetic package and sheer volume of the site ignite the feedback process rather quickly. New media installation art, such as Tina Gonsalves's interactive video *Chameleon* (2008-2010), ambitiously engage emotional cognition, and the result is a highly affective viewer experience. *Chameleon* is a wall of networked monitors displaying emotional expressions of humans that develop their own algorithmic code of expressions based on emotional responses from the virtual group and the viewer. Gonsalves describes the work as a "poetic interactive video and sound art installation driven by emotional expression of [the] participant." Art critic Darren Tofts, in a review of the work, gushes, "*Chameleon* interprets the notion of empathy as a kind of code that can be simulated in an installation context. The work continues and expands upon the artist's interest in the intimacies

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[299] N. Katherine Hayles, "Virtual Bodies and Flickering Signifiers," *October* 66, (Fall, 1993) http://www.english.ucla.edu/faculty/hayles/Flick.html (accessed April 19, 2011).

and vulnerabilities of human emotions. It is a genuinely interdisciplinary work that breaks new

ground in terms of the dialogue between art, science and technology."[300] *Chameleon* embraces

the process of digital emotions in installation form, no doubt, but so does *We Feel Fine*, a digital

community artwork that is accessible to most, was developed in 2006, and is an active part of the

network it seeks to describe. Delving into a neon, kitschy artwork that embraces our status

update culture *and* encourages affective feedback is pop culture at its finest.

Participatory art, as Rudolf Frieling so aptly describes, often vanishes altogether "into the

fabric of real life." Digital community artworks are no different. Woven into the pulsing digital

network, the projects reflect the interactions that we have come to cherish both on and off line,

but that are simply scaled up. Living on the web, digital community artworks are subject to the

seeming contradiction of being both expansive and limited as they are always being refreshed,

yet archived, linked, frozen in time, or removed completely. One emotive inscription can become

viral, such as the postcard that inspired the Please Don't Jump Campaign, or the 9/11 postcard,

or they can fall from the feed, as many emotions on *We Feel Fine* do each day. Digital

community artworks thrive on the feedback of digital emotions because they rely on users to

supply the empathy needed to perpetuate not only the emotion, but the artwork as well. The

result is an active, emotive *culture* of empathy that boasts a range of emotional experiences.

Digital community artworks embrace the power of aesthetics to create a rich, digital experience

for the user, while also recognizing the inherent artfulness often lying dormant in the personal

narratives of millions of users. The websites showcase these narratives and combine with other

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[300] Darren Tofts, "Courting emotional contagion: Tina Gonsalves' Chameleon," *Digital Creativity* 21, no. 2, (June 2010). http://www.informaworld.com.proxy.library.vcu.edu/smpp/ content~content=a924269278~db=all (accessed April 19, 2011), 77.

narratives, thereby creating a portrait of the emotional web that is an aesthetic unto itself—an aesthetic of listening amidst the noise of millions of online transactions. I believe that digital community artworks embrace the transformative potential of digital emotions as they balance the individual with the collective and technology with the human. They have the potential to create massively scaled up emotional repertoires for millions of users to share within the network, and such a normalization of emotionals knowledge could truly change the world. We aren't there yet—4chan, in all of its id glory will continue to remind us how precarious transindividuation can be—but the window is open, no doubt.

Coda

I recently attended a small conference titled "Theorizing the Web" hosted by the University of Maryland, and after I presented a condensed version of this research an audience member expressed a profound thought that has stuck with me ever since. She said that our lives are being programmed in another department. There we were, a group of academics "theorizing the web," as though it were an already established, petrified system, when the system we all seek to understand *is currently in production*. Whether in a university training a new generation of computer engineers, in Silicon Valley, or in the local advertising agency, the people making these decisions seem to be elsewhere. Lev Manovich has a point when he decries the conflation of new media art and advertising, but when one of the only places where all of the chips come together is in an ad campaign, so what? Maybe we have a thing or two to learn from *I Love Bees* and other private sector collaborations. We definitely can learn from Rosalind Picard's call to get studies out of the lab and into our daily lives—the biggest, most accurately complex lab of all—where the humble user/theorist can influence our digital futures to our benefit. Our lives are being programmed in another department, but they can be imagined anywhere.

As we continue to communicate, and thus emote, in digital space, we must assume that our emotional repertoires are adjusting to this transition. Furthermore, it is reasonable to suggest that the emotions involved in the feedback process between digital technologies and our bodies is something entirely new considering the massive connectivity that the network provides. As the arguments surrounding emotions rage on, it seems almost foolish to introduce yet another complication, term, or concept to the debate, yet it seems equally if not more naïve to pretend

that we are not participating and creating an entirely new emotional paradigm. This research began with two simple questions: are there such things as uniquely "digital" emotions, and, if so, what are they? Based on the wide spectrum of emotional encounters in digital space, and the unique ways in which they affect individual users and online communities, I have tried to show that there is a unique process that describes distinctly "digital" emotions, and that their influence will alter the ways in which we understand each other in the twenty-first century.

The framework of digital emotions is constructed with substantial malleability to adjust to the inevitable changes in digital technologies and digital communication. At the heart of the framework are embodiment theories of emotion, a loose set of theories that argue the importance of culture and simulation to create and shape our emotional lives. Whether one subscribes to the theory of mirror neurons as "empathy" neurons, or Damasio's "as-if" body loop, the importance of neural plasticity and (re)experience to construct identity and build relationships seems to be established. Embodiment theories also dramatically widen the scope of what our "emotional lives" entail—our emotional lives are our rational lives, our social lives, our cultural lives, and perhaps the very foundation of the self. Digital space and the many media that construct it utilize similar feedback tools of simulation to create emergent systems within the network. The eruption of digital culture over the past few decades is the result of hypersimulation and has thus been criticized for being false, illusory, or somehow less than the "real" world. Yet, new neurological research suggests that simulation is the bedrock of what makes us emotional humans. Embracing the natural role of simulation in our lives can perhaps allow us to embrace the simulation of digital space as a new frontier of human connectivity and emotional experiences that is not only equal to, but in a process of becoming, our lived environment. As the line between digital space

and the "real" world continues to fade, perhaps we can embrace the power of simulation as empathy and use it to our advantage.

Embodiment theories privilege the phenomenological experience, which democratizes this type of emotion theory and research. Feelings matter, so when users describe being emotionally transformed after spending fifteen minutes on the *We Feel Fine* website, that information is valuable. It tells us something about the power of mass assembled emotions in digital space. Embracing what web users tell us about their emotional experiences in digital space is an important piece in understanding the influence of emotions in networked communication. Furthermore, it allows us to see popular media spaces in a new light—as affective media. The examples discussed through this text—iCalm, Easy with Eve, *I Love Bees*, 4chan, Facebook, Twitter, *PostSecret*, *Dear God*, *We Feel Fine*, and many others—each utilize simulation and culture in different ways, yet they are all transforming the way we relate to technology and the ways in which we understand ourselves and each other. The dynamism of culture is electric, and our culture is being shaped by our interactions in these spaces, for better or worse. The role of digital narratives and lived action are conflating to become *just lived action* and the speed at which these digital emotions navigate the network makes studying them in context all the more important. Harnessing the power of culture and simulation as a medium of affect can transform theses space and the future of the network, and the potential is not lost on people like Rosalind Picard, Jane McGonigal, and Jonathan Harris. As more and more computer engineers begin to bridge the gap between the program and the emotive user, the more the emotive user (and the theorist) have to meet them in the middle with some potential ways of seeing.

Of course, digital emotions are not without their problems. The network is full of tensions and contradictions that expose the most precious and cruel aspects of our dynamic emotional lives. Anonymity plays a complicated role in digital emotions, as does the process of remediation in dramatically scaled up communities on the web. The process of digital emotions relies on the power of empathy to perpetuate emotional experiences in digital space, yet empathy, although innate, can be suppressed and twisted based on individuals paradigm scenarios. In a digital world where the power and context of the subjective experience is being constantly negotiated with the power and context of the network, it is easy to generalize experiences. The framework of digital emotions suggests that understanding emotion in digital space as a process that values the successful interplay between technology, community, and aesthetic experience can help illuminate some of the more salient interactions on the web, while still respecting individual experience. Perhaps once users can see the process, they will be affected by it.

This framework of digital emotions that I have presented is theoretical, untested, and ripe for interrogation. It is also ready to be populated with hundreds if not thousands of new applications that enrich the spectrum I explored in part two. I hope that the framework helps the everyday user understand the implications and possibilities of our interactions in digital space, and I also hope that it opens the door to more collaborations between neuroscientists, media theorists, computer engineers, artists, and everyday users. Our brains are plastic, and this plasticity relies on patterns of experience and recognition to shape what we know to be the world and ourselves. The network mirrors this plasticity, and in both cases the power to influence behavior exists within the very system that it seeks to define. Confronting this change with the power of empathy could revolutionize the revolution, no matter how short the message. That's my quasi-utopian future.

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