

AN EXPLORATION OF THE POTENTIALS AND LIMITATIONS OF ADAPTING  
TRADITIONAL TEXT-BASED NARRATIVE TO INTERACTIVE TECHNOLOGY

by

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A thesis submitted in partial fulfillment of the requirements  
for the degree of Master of Arts  
in the Department of Interdisciplinary Studies  
in the College of Graduate Studies  
at the University of Central Florida  
Orlando, Florida

Spring Term  
2010

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## ABSTRACT

Narrative is expressed in many forms, yet the reading of narrative through books may be unique in its transformative qualities. The medium of books has existed for thousands of years as a primary means of passing down and internalizing narrative from generation to generation. Are books now a dying medium in the face of ever-advancing technology in an increasingly fast-paced and technologically-dependent society? Technology now incorporates narrative into interactive environments in various ways often immersing the user in ever more realistic experiential scenarios. Yet, is something potentially lost with these advancements that can only be afforded through the time-tested method of old-fashioned reading? What makes reading so compelling a medium/activity for personal development? Does experience in these interactive environments offer the same transformative intrinsic experience afforded through the tranquil receptive processing, reflective elaboration and insight offered through the reading of books?

This thesis seeks to explore these questions by looking at three major factors that must be considered in furthering our understanding of the potentials and limitations of interactive narrative technologies as they compare to narrative delivered via the established medium of books: 1) theories of self, identity/character, cognitive development and behavior (specifically as these relate to traditional text-based narrative), 2) theory and research associated with narrative transportation and transformation, and 3) current and future efforts to adapt narrative to the medium of interactive technology.

## **ACKNOWLEDGMENTS**

I would like to thank God, friends, family and the faculty of the University of Central Florida who have all been immensely supportive of me in my pursuit of Truth, self-improvement, knowledge, understanding and the achievement of my academic goals through graduate work at the University of Central Florida.

Most of all, To Pop, who read to me every night as a child...until I could read to him.

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## CHAPTER I: INTRODUCTION

*Uncle Tom's Cabin* was a novel written over 150 years ago by one very determined woman with a cause. Her cause was the abolition of slavery. Her novel was a fiction, loosely based on her own observations, and stories that had been related to her (Stowe, 1981, p. 437-446). Some readers may be familiar with the famous account of Abraham Lincoln's greeting to the author upon meeting her. Lincoln is alleged to have said, "So, you're the little woman who wrote the book that made (started) this great war" (Stowe, 1851/1981, p. ix; Brock et al., 2002, p. 3). This novel is not only credited with being a major influence precipitating the U.S. Civil War – or perhaps expressed in a more positive light, compelling the abolition of slavery in America – it is also claimed by some to have been strategically instrumental in winning of the war (Brock et al., 2002, p. 3). Why? By the mid-1850's, perhaps *Uncle Tom's Cabin's* biggest readership was actually in Britain (over 1.5 million copies printed, many illegally reproduced), and may have so disenchanted English public sentiment toward the American South and its institution of slavery, that it prevented Britain from entering the war effort on the side of the Confederacy. To what extent this is true is debated in historical circles, but one thing is sure – its *effect* was profound on both an individual and societal level.

Yet, it might be important to note, that the ultimate outcomes of this effect, those evident in shifts in public sentiment, political climate and of course the dramatic turmoil and societal changes brought about as a result of the Civil War, were not immediate. The war itself began almost a full ten years after *Uncle Tom's Cabin* was initially published. Yet, something seems to

have resonated and lingered in the minds of its readers, something that stirred emotions, and eventually, even spilled over to non-readers – something subtle that persisted, and seems to have taken root and gained momentum through awareness, contemplation and social interaction, gradually, but surely. Avoiding the cliché, “The pen is mightier than the sword,” it was as if Harriet Beecher Stowe planted the seed herself, which grew into the mighty oak of national and perhaps world transformation, to be now representative of our nation 150 years later.

In this reader’s version, *Uncle Tom’s Cabin* is 446 pages long. How many people in today’s society – or more specifically – how many young people, how many *digital natives*, as they are now referred to, in today’s society would take the time to read a book this long (Prensky, 2001)? Reading habit statistics are ambiguous at best. Clearly, people are still buying books. Despite current economic woes, corporations such as Barnes & Noble and Amazon.com report billions of dollars in annual revenue. Yet, more and more these booksellers are becoming an outlet for non-print technology-based multimedia alternatives to traditional books (DVDs, audio books, etc.) – though it is also important to note that two technology-based products, Amazon’s *Kindle* and Barnes and Noble’s *Nook* seem to be making valiant attempts to preserve the practical value afforded through traditional text-based reading within a technology-based medium. Demand for these products has been spectacular. However, the statistics available from government sources regarding reading habits and even reading ability in the United States paint a somewhat different picture.

According to the National Endowment for the Arts 2007 report, entitled *To Read or Not to Read*, “nearly half of all Americans ages 18 to 24 read no books for pleasure” (National Endowment for the Arts [NEA], 2007). Statistics throughout this report attest to the fact that

reading for pleasure has declined over the past twenty years, even among college students. The report states that, “one in three (college seniors) read nothing at all for pleasure in a given week” (NEA, 2007). Reading habits seem to be very much correlated with age, with the average time spent reading daily highest among the 55+ demographic. Interestingly, those ages 15 and younger reported higher average daily time spent reading than those in every other age group except those 55 and higher. This, however, might be explained by required reading within school curriculum, rather than reading for pleasure. Moreover, those who do read in younger age groups indicate a high degree of reading (over 50% of the time) while engaged in the use of other media such as watching television, playing video games, using a computer, texting and so forth. The report further states, “Literary reading has declined significantly in a period of rising Internet use” (NEA, 2007). Also of interest in this very telling report are indications that Americans are reading less well. Even 20 years ago, before the advent of the Internet, professor of literature Joseph Gold expressed the concern that now seems not only self-evident, but statistically substantiated – “There is, I believe, some risk today of increasing illiteracy” (Gold, 1990, p. 3). By the National Endowment for the Arts’ count, annual book sales have declined 100 million units since the year 2000. The bottom line is that when neuroscientist Gary Small and his co-author Gigi Vorgan, the authors of *iBrain* – a recent book suggesting that increasing technology dependence is altering our brains – claim that, “young people today spend much less time reading for leisure than ever before.,” it can clearly be supported with statistical evidence from credible sources (Small & Vorgan, 2008, p. 25).

It is doubtful that Americans have decreased their reading habits simply to stare at the walls or contemplate the meaning of life. As one might guess, the amount of time each day



devoted to watching television is exponentially higher than reading and has been for some time. Yet, it might also be noted that time spent watching television seems to be about the same for readers and non-readers alike (NEA, 2007). What people born after approximately 1980, who are now commonly referred to as *digital natives* (a term first used by Marc Prensky in 2001), are doing is becoming increasingly wired into digital technology, so to speak, whether it be the Internet, interactive gaming, iPods, cell phones with texting and multimedia capability, or whatever else may come along during the course of this writing (Bennett et al., 2008; Simmons, 2009). There is no denying; children today are extremely “tech savvy,” with an insatiable appetite for new technology and keeping pace with any new advancement. They have never known a world without such technological capabilities, and have been indoctrinated into it at a very young age. More importantly, digital natives tend to turn to digital technology mediums *first* to meet their information, entertainment, and communication needs.

The authors of *iBrain* characterize digital natives as fundamentally different, cognitively speaking, from those of older generations, or *digital immigrants*. Although their work is speculative as to actual neurological differences, their description of behavioral differences bears consideration. In short, *iBrain* characterizes digital natives as having a short attention span, craving instant gratification, constantly multitasking, and having the ability to respond faster to visual and auditory stimulation (Small & Vorgan, 2008, p. 24-25). Digital natives further report feeling isolated while reading books, needing to be always ‘connected’ through some form of digital technology, and even consider watching television in itself “sluggish and boring” (Small & Vorgan, 2008, p. 25). These traits in themselves do not seem to be substantiated or correlated as of yet with specific neurological findings. But Small’s fMRI

research at UCLA does demonstrate increased brain function in frequent Internet users, relative to inexperienced Internet users, and perhaps more importantly, relative to themselves and others while reading books. This includes activation “in the frontal, temporal and cingulate areas of the brain, which control decision-making and complex reasoning” (Champeau, UCLA Press Release, 2008). Despite the current lack of conclusive evidence that playing games alters the brain, there is indirect evidence along the following lines. First, we have a growing body of evidence connecting perceptual and psychomotor learning and games (e.g., Green and Bavelier, 2003; Rosser et al. 2007). Second, there is evidence of brain related changes occurring with expertise development (e.g., Gauthier et al., 2000). As such, we have at least suggestive evidence that there could be neurological changes occurring from extended game play. The ramifications of this, however, might be tempered by empirical evidence that suggests spatial expertise, such as that attained through game play, “is highly domain-specific and does not transfer broadly to other domains” (Sims & Mayer, 2002). Nonetheless, my point is not to support or refute claims about technology-induced brain changes. Rather, my point is that this generation, so wired, so immersed in technology, so used to receiving information and knowledge via interactive media, may be at risk of losing what has been referred to as the transformative experience of reading.

In short, digital technology, and the emergence of the digital native operating on a cognitive level corresponding to this technology, in what might be characterized as a hyper-stimulated digital world, is here to stay. So, what, then, is to be the fate of books? Are they even still relevant? Unlike technological advancements that have rendered vinyl disks, eight-track tapes, cassette tapes, and VCRs obsolete while preserving the content, in many cases, interactive

narrative technology represents a complete departure from print text altogether. So the question becomes, can the same qualitative and character-forming cognitive value that narrative has represented in classical literature throughout the ages, and afforded through the medium of books for more than a thousand years, be represented in interactive narrative technology in such a way as to produce the same cognitive outcomes afforded through reading, whereby nothing is lost? Could an '*Uncle Tom's Cabin*' ever have the same cognitive and historical impact in today's world that it did one hundred and fifty years ago, were it distributed through hypertext or a videogame? How would an '*Uncle Tom's Cabin*' even look in the medium of interactive digital technology?

In order to speculate on the future of books and traditional narrative text in a digital world, it is important to understand what role narrative has played in cognitive development throughout human history, how brain function may be changing to accommodate new forms of technology, and what we are technologically capable of in the context of cognitive capacity and societal needs. The following chapters will seek to explore the potentials and limitations of interactive narrative technology in meeting the same needs of traditional print-form narrative by first considering our concept of self and the role narrative as experienced through books has in forming this concept. The developmental process itself is considered in the context of language and the emotions elicited through reading, theories of how narrative as experienced through the reading of books transports and transforms the self, and finally, consideration is given to the experience of actively participating in interactive narrative as it relates to experiencing narrative through reading books, and what the implications are for this in terms of cognitive outcomes.

## CHAPTER II: COGNITION AND NOTIONS OF SELF

Scholars tell us that, “Reading can transform the self” (Oatley 2002, p. 65). Before beginning a discussion as to whether this only applies to books, or whether other technology-based mediums can do the same thing in the same way, it is important to know exactly what we mean when we say “the self.” When we refer to *the self*, there are certainly varying points of view, and it would seem one must necessarily be a bit philosophical to engage in such a discussion. Descartes would tell us, *the self* has very much to do with *thought*, and this would seem to be the best point of departure to begin a discussion of the self. The mind-body problem seems to be the most persistent debate in the history of philosophy and psychology, if not in all of existence. Cartesian dualism contends that the mind is distinct from the body (Schuh & Barab, 2008, p. 70). Yet concepts and notions of dualism in the existential sense are much more ubiquitous and pervading than this debate, starting with the relative dualisms of light versus dark (yin versus yang), or in the Judeo-Christian sense, good versus evil. Daily, dualisms go on to be represented in distinctions of ‘you’ from ‘I,’ self from other, objective from subjective, conscious from unconscious, intrinsic from extrinsic, active from passive, yes from no (or in computational terms, 1 from 0), and on and on – all essentially relative to each other, and generally relative to what we ‘know’ as our *self*.

For the purposes of this thesis, the self can be loosely defined as that which relates to our own sense of individuality and identity in the context of an external world. It is the point of departure for our perceptions, thoughts and actions. As anthropology scholar Elinor Ochs and

Lisa Capps define it, the self can be “broadly understood to be an unfolding reflective awareness of being-in-the-world, including a sense of one’s past and future (Ochs and Capps, 1996). For those of us who have not completely detached ourselves from all relations, emotions and desires commensurate to being situated in a material world, we are yet, to some varying degree, subject to this world’s unfolding circumstances and challenges in the pursuit of our own personal objectives and ideals. We are ever *becoming*, and doing so in the context of a world that we perceive to be separate from ourselves with rules external to ourselves.

Considering the many dualist/monist philosophical and theoretical perspectives that have been put forth as to the nature of the subjective mind in relation to an objective world (or, perhaps, vice versa depending on one’s station or orientation), we might at least note the potential for ambiguity and paradox inherent in some terms and concepts as they relate to the ‘self.’ For instance, the term ‘objective’ generally means a state of dispassionate, detached rationality based on sound judgment – Stoics, Greek philosophers and scientists might use it this way. Alternatively, it might mean a goal or purpose outside of one’s self, existing within the context of an external empirical material world – Behaviorists and self-proclaimed proponent of ‘Objectivism’ Ayn Rand would use it in this context. ‘Subjective’ generally seems to refer to an opinionated, emotionally engaged, indoctrinated and potentially prejudiced personality or point of view, which may or may not be based on sound judgment or reality. Yet this too, could be equally applied to ‘inner’ or the ‘outer’ frames of reference or orientations.

These two terms in particular seem to embody (albeit paradoxically and varyingly) dualities of passion and reason, action and passivity, will and intellect, and so forth. To illustrate this point, a philosophy akin to that perpetuated through the Gospels might promote virtues of

humility, service, selflessness, patience, charity, non-judgment, and a depreciation of self (the flesh) and materialism, as a means of attaining an inner edification and inner joy. Yet, this would be, at least in a sense, *subjectivism* – submission to a religious or spiritual point of view, as well as submission to and acceptance of outward circumstances or, *what is*. A philosophy, such as Ayn Rand’s ‘*Objectivism*,’ promotes a passionate yet rational (at the risk of being a contradiction – which incidentally she would claim do not exist), goal driven, materialistic and self-centered egotism. This might seem the exact antithesis, and would hardly seem rational, or *objective*, to someone governed primarily by inner ‘spiritual’ goals and self-discipline, rather than external desires, objectives, motives and interests. Yet, her point would be that these are prerequisites to achievements, and through this objectified self-interest, we are still serving the interests of others.

The point of this observation is not to contend that one philosophical orientation is better, or preferable, or more ‘right’ than the other, but to merely draw attention to the distinction and potential for confusion given one’s particular frame of reference. The inherent paradox would seem to be that both orientations see themselves as ‘objective’ and the opposing orientation as ‘subjective’ *or* – associate with themselves whichever term happens to be preferable given the context, while projecting the other onto those representing the antithetical point of view. It is important to note, however, that both of these seemingly opposing philosophies/orientations have one very relevant characteristic in common – they both illustrate and perpetuate their position through narrative form.

This dualist distinction between objective and subjective is certainly not final at any rate. In fact, *The Handbook of Research on Educational Communications and Technology* makes a

distinction between objectivism and rationalism/idealism as philosophical perspectives, as well as others, such as realism, empiricism, relativism and pragmatism (Schuh & Barab, 2008, p. 71-72). It is not necessary to demarcate each of these philosophical perspectives for the purpose of this discussion, but it is essential to visit a few key psychological paradigms (variously and often interchangeably referred to in relevant literature as perspectives, approaches, paradigms, learning theories and schools of thought). The reason for this will be evident in the context of narrative transformation and the differing narrative mediums.

Learning theories and their associated psychological perspectives generally seem to fall somewhere within three general categories: *behaviorism*, *cognitivism* and *constructivism* (Molenda, 2008, p. 11-16; Spector, 2008, p. 24; Schuh & Barab, 2008, p. 77-78). These perspectives are by no means exhaustive or concrete. They represent several major overarching psychological schools of thought, with many variations, distinctions and derivative theories within themselves (chiefly in the latter). As starting points, they seem to be particularly useful and applicable in the context of narrative as it relates to ‘the self’ and cognitive development. Further, the term ‘learning theory’ in itself may be inappropriate as a description of the outcome of narrative consumption, for as we shall see later, we are really referring to ‘transportative’ and transformational qualities of narrative consumption and immersion versus the attainment of practically or empirically motivated learning outcomes.

### ***The Behaviorist View of the Self***

Behaviorism was born out of a concern for what is observable in the world. Yet, is behaviorism *objective* or *subjective*? The behaviorist position is that the mind itself, or the

‘black box’ as it is called in behaviorist literature, is irrelevant to that which is scientific, empirical and objective. In other words, consciousness is not publicly observable (Braisby & Gellatly, 2005, p. 10). Learning strategies and instructional methods devised from a behaviorist approach would necessarily be concerned with producing specific observable, predictable and measurable results. These results, of course, would be that which is observable and predictable in the behaviors and actions of the learner, presumably toward specific objectives, goals or outcomes established *outside of* the behaving object. Conditioning (operant conditioning) is the result of the reinforcement of ‘correct’ behaviors, facilitated through the administration of certain rewards and punishments. Computer-aided instruction (interactive technology) is already in existence to facilitate this reinforcement process (Schuh & Barab, 2008, p. 77). Such technology evolved from early teaching machine concepts of programmed instruction, or “carefully arranged sequences of contingencies leading to the terminal performances which are the object of education” (Burton et al., 1996). Today, this technology is perhaps best represented in any number of computer-based/online tutorials where correct responses bring about the positive reinforcement (i.e. positive acknowledgement, allowing the user to progress forward), while incorrect responses result in negative reinforcement (i.e. revisiting of material to be learned, delaying progression). The self from this perspective, it would seem, is little more than a tendency toward correct responses – the epitome of *subjectivity*. In the context of an entertainment medium, such an approach seems equally applicable to basic “first-person shooter”-style video games.

It would seem self-evident that the mind is much more than that. We are neither Pavlov’s dog nor a mechanical tool, though considerable effort has been made toward applying the



analogy. Whereas the interactive instructional technology created from a behaviorist perspective seems primarily concerned with conditioning users to act in a certain way, there is, almost by definition, little evidence that such technology intends to have users think or feel in a certain way. Few would deny that influential books, whether they be religious texts (e.g., the Bible or the Koran), or works of fiction (e.g., *Atlas Shrugged* or *Uncle Tom's Cabin*), though they too may be intended to get the reader to 'act' in a certain way, first and foremost, seek to have the reader internalize certain ways of thinking, moral codes, values, or worldviews, motivating action indirectly through some form of narrative illustration. Thus, it would seem that in order to create interactive narrative technology approaching the same cognitive outcomes afforded through such books, one must look deeper than the behaviorist approach.

### *The Cognitivist View of the Self*

Cognitivism attempts to blend observable behavior with internalized meaning, again generally within the context of predetermined objectives. In essence, this perspective generally seeks to expand on, rather than refute behaviorist theories, blending the empirical epistemology with the rational (Schuh & Barab, 2008, p. 73-74). While cognitivism recognizes the empirical significance of behaviorism, it also recognizes that there are mental states underlying behavior and attempts to address these through some variation of an information-processing metaphor (based on a conceptual model of *input* → *storage* → *output*) with encoding and retrieval strategies and processing inherent throughout each stage. The cognitivist approach recognizes that behavior is more complex than a simple serial process of *stimulus* → *response* (the behaviorist view), where one immediately triggers the other. Certain behaviors may occur in the

context of certain stimuli, yet the nature of these behaviors may be dependent on prior knowledge of context, circumstances or purpose, not necessarily occurring in immediate sequence (Braisby & Gellatly, 2005, p. 12-13).

In short, cognitivism attempts to bring the mind back into the equation, yet, *as* an equation in a very empirical way. At least in early cognitivist theories, the self has now become a computer. David Herman references this analogy quoting, “there are mental processes ‘behind’ what people say and do, that these processes are to be classified as ‘information processing,’ and that the best model for the cognitively active human being is the computer when it is running a program” (Herman, 2007). The self now has knowledge of the goal or objective, and uses feedback loops to evaluate the existing-state relative to the goal-state (Braisby & Gellatly, 2005, p. 14-15). In this sense, the self may be *self*-governing with a certain underlying knowledge base, yet who is establishing the goals, or the associated rules of conduct? Presumably, as with a computer, the goal or outcome, and the programming, still originates outside of the self.

Again, the question of what constitutes *subjective*, and what constitutes *objective* seems to be somewhat paradoxical. Interactive instructional technology, in the form of simulations and other experiential scenarios (often incorporating narrative aspects within this apparatus) does already exist and is increasing utilized by the military and other purpose-driven organizations to create capable and competent *subjects* serving the various purposes of the particular organization to which they belong (Fiore, Metcalf, & McDaniel, 2007, p. 47-55). The question underlying this thesis is not whether this is right or wrong – it is certainly *useful* to those running any

organization – rather, is this why we read fictional narratives in books? *And* – does this do what narrative in the form of books does?

### *The Constructivist View of the Self*

Perhaps more than any other psychological school of thought, constructivism encompasses many variations and distinctions, most having adopted their own distinguishing label (cognitive constructivism, epistemological constructivism, hermeneutic constructivism, personal construct, radical, social...and so on). Yet, it would seem the commonalities outweigh the divergences. Constructivist scholars theorize about a process innate in all of us by which we continually make sense of the world. We operate by a resulting and ever-changing system (or schema) of meaningful understanding, that guides our behaviors, nervous/emotional responses and choices in everyday life (Raskin, 2002). Simply speaking, and at the risk of rekindling the mind-body problem, we might call this evolving system of meaningful understanding by which we operate, *'the self.'* It seems self-evident that it would necessarily encompass the various aspects of our identity and personal relationships, but also something more. It is this *something more* with which we are concerned. Speaking philosophically, what we are conceptualizing would seem to exist somewhere on a continuum between subjective and objective (variously defined and governed, relative to external and internal frames of reference) – yet, always, to some degree, *subjective* (i.e. situated in the world and in a physical body), and continually trying to make sense of, and interpret, our world, and ourselves in it.

In his attempt to reconcile the various constructivist theories, Raskin states, “all constructivist psychologies share the belief that none of the many ways of understanding that

people have developed provide a God's Eye (i.e. purely objective) view of the world." He continues, "All constructed meaning reflect a point of view" (Raskin, 2002). Other constructivist scholars present the same point of view. In referring to Piaget's (perhaps the most well-known proponent of constructivism) schema theory, Von Glasersfeld states that "Piaget's schemes were adaptable conceptual structures and could never be representations of the real world, always being based on the individual's experiential world." (Schuh & Barab, 2008, p. 78). In short, the assertion seems to be, the real world can never be known directly. As the adage goes, "The map is not the territory." Rather, we experience the world through the lens of our personal interpretations. In what seems to be somewhat of a circular process, our lens of personal interpretations are based on our experiences (Ochs & Capps, 1996).

Famed narrative scholar, schema theorist, and psychologist Jerome Bruner discusses the process of mental development from a decidedly constructivist perspective, citing both Gestalt theory and American learning theory as points of departure. Bruner suggests:

Both gave accounts of mental development as proceeding in some more or less linear and uniform fashion from an initial incompetence in grasping reality to a final competence, in one case attributing it to the working out of internal processes or mental organization, and in the other to some unspecified principle of reflection by which – whether through reinforcement, association, or conditioning – we came to respond to the world "as it is."  
(Bruner, 1991).

The abstract thinker might liken such a statement to moving from chaos to order, passion to reason, subjectivity to objectivity, or however else we might explain it in conceptually dualist frames, the building of consciousness toward an understanding of ‘*true reality*.’ Whether we would contemplate this unfolding on the micro-level of the individual consciousness, or the macro-level of human evolution, it seems clear that there is the intrinsic presupposition of a common and cyclical process to existence, where the future is expected to repeat the past, at least on some level (Nelson, 2003). This conception of cyclical continuity and history repeating itself has persisted, from society to society, generation to generation, life to life, and is the thread that makes narrative relevant (Booker, 2004, p. 7). Attempts to explain narrative’s significance has been represented in many ways through the ages, for instance, in a basic sense, metaphorically in the context of the rising and setting sun (the hero’s death and rebirth), or more broadly, simply as “attempts to explain and to dramatize natural phenomena, familiar to all mankind” (Booker, 2004, p. 9-10).

New experiences are either *assimilated* into our existing schema (or ignored), or *accommodated* in such a way as to modify our existing schema (Schuh & Barab, 2008, p. 78). Within these schemas are *scripts*. Scripts are what we come to think of as normal in the course of an unfolding situation or interaction (Bruner 1991). These scripts transcend the individual to be common among groups, communities, societies or human beings in general. These might also be associated with common notions of value or purpose, such as money, titles, roles, etc. – outward *symbols* within a social reality. Scripts, and the similar though perhaps broader concept of *archetypes*, will become important in our discussion of narrative form later on. The important

point here is that on a cognitive level, as it pertains to narrative and meaningful understanding, we are talking about something non-tangible, non-observable, and despite all of our scholarly efforts and triumphs, something still quite abstract – while at the same time, incalculably relevant. Schema theory and the constructivist perspective will be germane to our discussions of narrative characteristics and narrative transformation, throughout this thesis. Though, perhaps as narrative scholars contend, “no single model can successfully account for the impact of stories,” the constructivist concepts of *schema* and *script* (and breach of), *assimilation*, *accommodation* and *equilibration*, seem to be particularly useful as a foundation and point of departure for this discussion of narrative *affect* afforded through reading. For, through consideration of these constructs, which have to do with transforming cognition and aspects of self, it may very well be that they can explain how it might be possible to achieve the same cognitive outcomes, through adaptations of narrative to interactive technology (Brock et al., 2002, p. 12).

### **CHAPTER III: LANGUAGE, NARRATIVE, AND COGNITIVE DEVELOPMENT**

The realization of self begins with language (Nelson, 2003). Such a claim seems particularly appropriate to the adage “ontogeny recapitulates phylogeny.” One might even contemplate its allegorical applicability to the biblical verse, “In the beginning was the Word, and the Word was with God, and the Word was God” (John 1:1). For all intents and purposes (no pun intended), this is when humans became human. Probably more than anything else, language is what separates humans from the rest of the animal world. For the individual, the ‘cognitive self’ and *episodic/autobiographical memory* emerge somewhere between late in the 2<sup>nd</sup> year to approximately age four (Nelson, 2003; Sutton, 2002). Cognitive psychologists and other scholars may debate the exact age one reaches full capacity in this regard, but it seems clear that, at least in Western society, as one’s language and the capacity to make linguistic references and associations develop, so does one’s autobiographical memory.

It might be important to note here that autobiographical memory and what is referred to in relevant literature as *episodic memory* are closely related and overlapping concepts, but it seems clear that a distinction is usually made, and that they are not exactly the same. Generally speaking, both are self-referential, experientially-based and temporally-sequenced. Nelson points out, however, that episodic memories seem to be characterized as less specific in time and context, and tend to be generalized with similar experiences, forming ‘scripts’ – consistent with the constructivist concept. Autobiographical memory is characterized by a continuity of specific

episodic memories, comprising the relevant ‘self-stories’ that constitute a broader sense of ‘self’ (Nelson, 2003). Whether shared or not, autobiographical memories are linguistically-based personal narratives that are measured and communicated verbally, and form the basis of our individuality and identity. They are, however, socially and culturally situated, and the continuity of autobiographical memory might be considered analogous to the continuity of collective societal/communal memory and identity. Indeed, if one were to subscribe to the controversial *Sapir-Whorf hypothesis*, every language has inherent within itself, its own worldview.

The idea that merely giving voice to an experience, the ‘telling’ of it, somehow distorts it, removing it from ‘true reality,’ so that its objective truth is ever lost, simply by virtue of its being told, is not a new one. Lao Tzu seems to have alluded to it with the lines, “The tao that can be told is not the eternal Tao.” Hermann Hesse expressed it in, “Everything becomes a little different as soon as it is spoken out loud.” True or not, by telling a story of past events, whether to ourselves or others, we bestow meaning upon those experiences and events. We define ourselves and others, and we define ourselves in relation to others. Philosophy abounds with discourses on how this seems to work and its implications. One version that seems relevant to our understanding of how we represent the world in our cognitive schemas is Schopenhauer’s view that the world as we know it, consists really of two things: *will* and the *representation* of that will (Schopenhauer, trans. 1955).

Schopenhauer views *will* as inherent in all things, from a blade of grass, to an individual, a nation, a race, and so forth, and it is constantly seeking manifestation. It is the will to live, grow and expand, and not predicated upon consciousness itself. Schopenhauer might also say that this *will* is really one *Will* that is perpetually at variance with itself, while at the same time,



in a process of harmonizing with itself. This seems to be represented from the domains of philosophy to physics in notions of ‘*chaos into order*,’ and the ever confounding “equal and opposing reaction.” Hegel, though a philosophical adversary of Schopenhauer’s, seems to have alluded to such a process through his concept of *thesis-antithesis-synthesis*. Hegel’s proposition seems to be that conflict is necessary for ascension to higher planes of understanding, and telling stories of that conflict (and its resolution) is what gives narrative its value, and frankly, is what makes a story worth telling. Such a view might also be extracted intuitively in a definition of narrative offered by Green and Brock whereby the intentions of a person “are first opposed, frustrated, or are otherwise in doubt, then in some way prevail, succeed, or are redressed” (Green & Brock, 2002, p. 320). Schopenhauer contended that the *will* is metaphysical (Schopenhauer, trans. 1955, p. 249). The *intellect* on the other hand, is merely physical. When we are not asserting our *will* toward some specific objective or end through action, we are not generating resistance or attempts to thwart that *will*, or perhaps attracting favoring forces of *will* embodied in others, that help us toward our goals. It is only when we are moving passionately in accordance with some purpose, or toward some end, obstacles and resistance rise to oppose us (or *support us*, if we are to take a slightly more optimistic view than Schopenhauer presents) – a position clearly illustrated throughout the narratives of philosopher Ayn Rand, and too many self-help books to name.

In Schopenhauer’s view, *Representation* is the ongoing result of a projection of *will* (not unlike Carl Jung’s concept of projection), which we all do, and to varying degrees, are all a product of (Schopenhauer, trans. 1955, p. 163-164). Our opinions and judgments bestow those qualities upon others, and names *can* hurt us. According to Schopenhauer, the world itself, in

any given moment, is a complete and perfect representation of *will*. The point here is that communication, via language and narrative, are ways of sharing, projecting (and in a sense, *planting*) that *will* onto and into others, often indirectly and unconsciously. Through language, we turn a thought (or a memory) into an object that may be observed, manipulated and utilized toward a specific end or purpose (Sutton, 2002).

This is probably best illustrated through our understanding of memory, and how memories can be altered and reframed through interpersonal communication. First, autobiographical memory is characterized as our vehicle for self-expression and definition. It is developed in a shared environment (Cappelletto, 2003; Sutton, 2002). As Elinor Ochs and Lisa Capps assert, “Narrative and self are inseparable in that narrative is simultaneously born out of experience and gives shape to experience.” What these authors seem to be referring to is autobiographical memory – narrative of course being its vehicle for representation. Neurologist Oliver Sacks perhaps illustrates this best in that, “We have, each of us, a life-story, an inner narrative – whose continuity, whose sense, *is* our lives.” He continues, as quoted by Joseph Gold, “It might be said that each of us constructs and lives a “narrative,” and that narrative *is* us, our identities” (Gold, 1990, p. 4). Interestingly, Sacks points out, as do others, such as Seymour Epstein and Victor Nell, that this construction is an *unconscious* process – a combination of perceptions, feelings, thoughts and actions (Epstein, 1994; Nell, 2002, p. 27).

Narrative constitutes the building blocks and scaffolding of our cognitive schemas, belief systems, worldviews, and of course, sense of self, and it is functionally and structurally related to and indeed, inseparable from, the social and cultural milieu in which it is situated. Moreover, “Basic memory is therefore a knowledge source that anticipates future needs; it is not about the

past but about the future” (Nelson, 2003). Episodic narratives then become a means of sharing knowledge relevant to future needs, essentially becoming a vehicle of choice for imparting practical knowledge and wisdom to others, this too seemingly an innate need in those who have experienced the world (Dautenhahn, 2002). Nelson later states, “Like language, narrative is assumed to be a group construction, one that turns individual memories into shared conceptual systems” (Nelson, 2003). Similarly, scholars contend that memory is a filter of past events that extracts only images that support present interests, whether it be toward the individual or the collective’s sense of identity, cohesion and purpose (Cappelletto, 2003).

Going back to the idea that narrative itself is inescapably a departure from objective, or ‘true’ reality, humanities professor Louis O. Mink suggests that whether referring to accounts of history or any other narrative account, “an event must be susceptible to at least two narrations of its occurrence” (Mink, 1981). Narratives are merely versions of reality, representing one or more points of view, rather than objective, omniscient accounts (Ochs and Capps, 1996). Thus, narratives, even those we label ‘true,’ are always subjective, at least on the surface – meaning a conscious level of understanding. This would necessarily include shared memories.

Psychologist David Manier, for example, demonstrates not only the inherent subjectivity of memory representations in distinguishing memories from the *act of* remembering, he goes on to show, through dialectic illustration, how family conversations about remembered events might, through the course of the conversation, alter or reinforce the memories of individuals within the group, in such a way that they conform with the representation of the dominant narrator (Manier, 2004). Similarly, as families encode shared memories and pass them down from generation to generation, the same can be said about all human societies and cultures (Nelson, 2003). Nelson

cites other scholars who have made the claim that human society itself would not be possible without the use of narratives such as myths, legends and morality tales to serve as the “glue” that bonds groups together.

### *Narrative and the Construction of the Autobiographical Self*

So, how does reading books contribute to our sense of self? How does it relate to the autobiographical memories or otherwise, that constitute our sense of belonging in social collectives, *or* our sense of individuality and maturity? Few would deny the claim espoused in religious, philosophical and even scientific realms that the world will see us largely how we see ourselves. If our sense of self can be altered through experience, social interaction and even passively witnessing narrative accounts as a silent listener, then reading subjective narrative accounts of others’ life experiences, and visualizing these experiences in our mind’s eye, whether ‘truth’ or fiction, has the potential to reframe our own autobiographical memories and sense of self in light of the new and diverse experiences and perspectives offered through narrative. “The hero of all narrative is His Majesty the Ego,” says narrative scholar Victor Nell, citing Freud (Nell, 2002, p. 18). Perhaps less abstractly, Fiore and colleagues, citing Bruner, describe how narratives alter our sense of self in that “narratives function as conduits for prior experiences that one has encountered, but they also function as active agents of shaping and reconstructing knowledge as a person experiences a story” (Fiore, Metcalf, & McDaniel, 2007, p. 44). Bruner, decidedly situated in the constructivist camp, would seem to be suggesting a dynamic progression of schema forming and modification whereby experiential processes similar to those of actual experience are taking place on a subjective/cognitive level as one is immersed

within the narrative, not unlike other forms of mental simulation. Narrative scholar Keith Oatley espouses similar constructivist leanings in that “The constructions we make involve enactment: taking an active part in the story in much the same way as we take part in a game or a social encounter, potentially becoming different from our habitual selves in doing so” (Oatley, 2002, p. 51). Here it seems the same constructivist processes, such as that those associated with actual experience in enactive mind theory, apply to the imaginative and intrinsic experience of living vicariously through the characters of a narrative (Klin et al. 2003).

Take for instance the enduring formula for a great story known as the *bildungsroman*, the German term for a “coming of age” novel. Many of the most ‘influential’ novels of all time, such as *David Copperfield*, *Of Human Bondage*, *The Red Badge of Courage*, and too many more to name, follow a progression of experiences whereby a boy or girl ‘comes of age.’ The reader follows the protagonist through the vicissitudes, the struggles, and the trials, often common to all of us, of becoming a ‘whole’ man or woman, or otherwise a fully mature and established adult. The reader can experience with the protagonist, their discouragement, their suffering and despair, and yet know their ultimate triumph, and have that with them, as he or she negotiates his or her own life struggles, trials and setbacks.

As we shall see later, by reading novels, which is usually done alone, and in a relaxed receptive, and hypnotic trance-like state, we are facilitating our own capacity to identify with others, in this case, the characters of the novel, ‘seeing’ things from their point of view, and ‘reliving’ emotions and experiences with them (Nelson, 2003; Nell, 2002, p. 18; Oatley, 2002, p. 41). This in itself may have serious implications for our capacity to experience emotions for others, such as empathy, compassion, and charity. We are also able to reflect on our own life

experiences in light of the experiences and outcomes of the characters within the novel, potentially reframing our own autobiographical memories based on the content of the narratives in the same way as with other social interactions. If we are to subscribe to Nelson's view of the function of memory being largely about how we conduct ourselves in the future, this has serious implications not only for our sense of self, but for how this sense translates into our present and future behaviors, responses, choices, and objectives. More than this though, reading seems to place us on a cognitive track, in union with – if not subject to – the mind of the author. It will be important later on to establish the extent that such identifications can be made through the medium of interactive narrative technology, and if it is indeed the same type of encoding experience with the same benefits and outcomes. It is also important to note, however, that these potential changes to one's cognitive character discussed thus far would be primarily conscious in nature. Few would deny, however, that there is also an unconscious component to our motives, behaviors, feelings, and physiological responses; *that* is much harder to get a bead on. The potential for impressing moral or ethical object lessons upon, while evoking new insights from this unconscious aspect of our psyches may be where reading a book is unique.

### ***Parables and Allegory – The back door?***

Since the earliest recorded narrative accounts, what we now call literature has been rife with allegory and symbolism. Today, we have a treasure trove of different accounts of creation, fantastic stories of suffering and rebirth, death and ascension, despair and hope – stories that warn and constrain, and stories that inspire and edify. We have stories of Gods and spirits, curses and miracles, heroes and demons. Yet, why would we tell such stories? Just for

recreation and entertainment? Where would they even come from? Why would we tell a story that has nothing to do with the true message to be imparted? Or, perhaps we should ask, were Heaven and Earth really husband and wife, who bore Time (*Kronos*, similar in sound to the Greek word for time, *cronos*)? Did Mother Earth and Time really team up to neuter the violent and treacherous Heaven(s), leaving Time to reign? One of the earliest accounts of creation attributed to the Greek poet Hesiod seems to say as much (Hesiod, 1993, p. 64-66). He speaks of the titans, Gaia (the Earth), Ouranos (Heaven) and Kronos (their son). Is it such a stretch now to think of such a story in terms of an early chaotic world that slowly becomes temperate and fertile, with time? The images conjured up in one's imagination twenty-five hundred years ago might be in some ways comparable to the imaginatively-constructed graphic representations of those same events through technological mediums today. Or does one simply take the story at face value – a ludicrous and somewhat grisly story of gods with serious family problems? More recently, we might ask, was *Moby Dick* really about the search for a whale? Was *Watership Down* really a story about rabbits? Was *Animal Farm* really about animals on a farm? Or, are these stories all somehow designed, to impart a deeper understanding of events and circumstances, or 'truths' beyond the words that represent them, beyond the subjectivity of the narrative, and perhaps even beyond our conscious comprehension? Something we feel rather than know? It would seem the purpose of parables and allegory is to help us see with new eyes, as perhaps one of the first allegories, Plato's *Parable of the Cave*, tells us. Jesus also seems to say as much in the Gospels when asked why he teaches in parables.

Yet, allegory may not even always be a conscious calculation on the part of the author. It seems clear that authors write stories based on, or at least from the perspective of their own

underlying feelings. Christopher Booker, author of *The Seven Basic Plots*, suggests in his extensive account of reoccurring narrative constructs that authors do not even realize that their stories are not their own. Rather, Booker argues that authors merely dress up a theme which is already latent in their own psyche. Moreover, he further suggests that this theme is already latent in the minds of the audience. According to Booker, “stories take shape in the human imagination round certain archetypal patterns and images which are the common property of mankind” (Booker, 2004, p. 543). The essence of these stories underlay and transcends the details, the author and the audience. Yet it is this essence, while perhaps already latent as Booker suggests, that is further internalized, reinforced, edified, or otherwise, brought to fro, in our consciousness through allegory.

One of the most prevalent forms of allegory is that of metamorphosis. There is something very profound in the story of a caterpillar becoming a butterfly. Yet, the opposite is also true and just as prevalent in allegoric tales, the adverse transformational outcomes of selfish choices (e.g. arrogance and excess). The very notion of transformation (and rebirth) appears over and over again not only within the works of narrative and psychological theory, but also within scripture, and classic to contemporary narrative – stories such as Ovid’s *Metamorphoses*, Kafka’s *Metamorphosis*, *The Golden Ass*, Orwell’s *Animal Farm*, and too many fairy tales and myths to name. Though the stories speak of physical transformation, they represent cognitive transformation. The narrative of outward experience is really representing what goes on inside the mind. These stories have historically imparted a moral foundation in our psyches through a method and medium, the solitary reading of books, which is conducive to contemplation and internalization. On the optimistic side, such thematic reoccurrences seem to implicitly attest to



the notion of some form of cognitive schema that may be dramatically affected by the conscious, preconscious and/or subconscious accommodation, assimilation or realization of new data or insight, resulting in a new or dramatically transformed *self*, presumably changed for the better. Besides this, whether we realize it or not, such stories increase awareness of our own behaviors, responses and point of view in prior experiences, as well as facilitating an interpretative awareness of those proprioceptive feelings and responses evoked by the reading. This, in effect, makes us the observers of ourselves, perhaps removing us from a purely subjective state of consciousness, at least temporarily, to afford a perspective rooted in detached objectivity, even toward our own behavior and being (Zunshine, 2006, p. 6).

### *Narrative Archetypes*

To talk about narrative archetypes, one must enter into the realm of the controversial and decidedly pseudo-scientific. In other words, one must enter the realm of Carl Jung, the realm of Jungian-influenced Christopher Booker, and the realm of the *unconscious*. In *The Seven Basic Plots*, Booker leads into a broader discussion of archetypes, inherent at least in the enduring narratives, by asserting that “the real key to understanding stories lies in seeing how they are ultimately rooted in a level of the unconscious which is collective to all humanity” (Booker, 2007, p. 543). The notion of a ‘collective unconscious’ itself is a highly controversial and indeed, inflammatory subject in scientific circles, where perhaps it is likened to the behaviorist ‘black box,’ unobservable and therefore irrelevant. Yet, the notion of a collective unconscious (and the closely associated notion of collective memory/identity) still manages to come up again and again, not only among narrative theorists, but also among social/identity theorists

(Cappelletto, 2003). It is these ‘collective’ associations, whether conscious or unconscious that, tied together through narrative, seems to be instrumental in channeling this ubiquitous underlying *Will* that Schopenhauer speaks of, on a broader scale than the individual. Here I refer back to the societal impact of *Uncle Tom’s Cabin* as a case in point.

Much of Booker’s discussion of the archetypes inherent in narratives is framed in dualities (i.e. darkness and light, earth (or hell) and heaven, or perhaps more appropriately, ego versus the unconscious – ego being that product of ‘the fall’ that separates us from the natural instincts, the ignorant bliss and the lack of self-awareness and mortality of the animal world). Much of the basis for such stories seems to be a process common in humanity whereby man struggles with, and eventually conquers his own worldly desires and subjective fears, ideally reaching a maturity characterized by self-control, self-restraint and objectivity – a process of becoming *whole*. Though Booker offers many compelling illustrations of how representations of these dualities and internal processes have manifested into stories that serve as moral and social foundations for societies the world over, the question remains, can this process of delivering such a message with the same intrinsic outcomes be reproduced in interactive narrative technology? In terms of cognitive development, the next logical progression would seem to be to move, at least temporarily, away from the words constituting traditional narratives, to the feelings and emotions underlying them.

## **CHAPTER IV: THE ROLE OF EMOTION IN COGNITIVE DEVELOPMENT**

It seems most fitting to begin a chapter on the implications of emotion and the emotional involvement associated with narrative immersion by alluding to behavioral neurologist Antonio Damasio's suggestion that Descartes' error, "was to say that I am because I think." Rather, narrative scholar Victor Nell cites and seems to support Damasio's suggestion that, on the contrary, we are, because we *feel* (Nell, 2002, p. 18). Philosophers often seem to draw the same conclusion. Emotion is consistently characterized in philosophical literature, as 'engagement with the world.' This might best be illustrated by a view held by the Stoics and often inherent in Eastern and Western philosophy and religion alike, that detachment from the world, or in other words, detachment from 'objective' material and physical desires and goals, and therefore emotions and the fears associated with mortality, is the way to attain objectivity, rationality and 'Self-possession.' In other words, "emotions have been viewed as impediments to rational thought" – whether good or bad, not reflective of 'true' reality but our imagination, and therefore, whatever emotion we feel, in the Stoic sense, is an error in judgment (Yiend & Mackintosh, 2005, p. 463). Though such a meditation could give rise to much philosophical debate as to the virtue and moral implications of either position (i.e. passion versus reason, or a life devoid of emotion, and therefore empathy and compassion, etc.), it is clear that either extreme would seem to have undesirable consequences by general and historical consensus. Rather, taking a 'middle road is best' approach to the role of emotion in cognitive development,

certainly at least a moderate degree of emotion is important in developing any practical perspective of the world in which we live, even if this by definition must be a *subjective* perspective.

The notion that there is an emotional (passionate) and a rational component to our psyches, a duality inherent in each of us, is nothing new. Aristotle presented such a view in his depiction of the human soul over two thousand years ago. Indeed, such a duality has been projected onto all of existence in both religious and philosophical doctrines, allegorically and literally. More recently, Psychologist Seymour Epstein has suggested a theory of parallel interacting *rational* and *emotionally driven* experiential processing systems within the human mind (Epstein, 1994). Perhaps even more interesting, Epstein characterizes these systems as conscious (rational) and unconscious (emotionally driven). Parallels can easily be made here with Schopenhauer's conceptual duality of *intellect* and *will*. His notion of *intellect* is conceptually similar to the aforementioned *representation* in that it deals with our relative perception of things, not absolute reality (*intellect* being that accident of nature that makes us human – along with self-awareness, of course), whereas *will* is that motive power behind it (the emotionally driven aspect) (Schopenhauer, trans. 1955, p. 249-250).

The eternal philosophical and paradoxical question seems to be, which one of these components of our psyche is dominant and in control (or 'supreme' as it were)? – The rational or the passionate, the objective or the subjective, and even more abstractly, which represents the *conscious* and which the *unconscious* aspects of our determining forces? The safest answer would seem to be that it varies with each of us along a continuum. There are certainly compelling arguments on both sides of the question – the words applied to these concepts may

vary, but the underlying conceptual debate is ubiquitous and seems to be the same. If we are to assume that life is a journey along this continuum between passion and reason, surely narrative, so equally ubiquitous a phenomenon inherent in the human condition is instrumental in guiding us in this journey. According to Psychologist Keith Oatley, “If the story and its context do allow us to reflect on the emotion together with its meaning, then the reader may reach an insight, and build a new piece of his or her model of the self and its relations...some cognitive transformation may result.” (Oatley, 2002, p. 54).

Experientially, emotions, and particularly the accompanying (and often adverse) physiological responses associated with the autonomic nervous system, seem, at least at times, to be automatic and out of our control. Yet, as these responses are closely related to our perceptions of outward circumstances, it stands to reason that if we are able to change how we perceive our outward circumstances, we may change our physiological and emotional responses to these circumstances. This would of course bring us back to the notion of constructing a schema of meaningful understanding, in this case, whereby conscious contemplation sinks into unconscious internalization. This constructed experience, provided by a compelling narrative, may very well be programming oneself. Further, literature of hope, from the traditional or philosophical novel, to the moral stories of religious texts, may use emotion to subtly persuade, and, therefore, be the vehicle through which the reader comes to internalize the message or the moral of the story. Through the course of the vicissitudes and ultimate triumphs or vindication of the protagonist, we internalize a sense of our own ultimate well-being, despite the appearances of things. The willful state of restlessness and impatience characterizing immaturity (perhaps the very traits that define the digital native) eventually give way to comforting yet fortifying sense of

faith and acceptance – what we might call presence or centeredness. Narratives that resonate with our innate and abstract inner sense of Truth would tend to endure, whereas narratives that depart from this, quickly fall out of favor and are forgotten. This sentiment was expressed almost 90 years ago in an obscure essay on ‘the purpose of reading’:

If the expression of life in words is strong and beautiful and true it outlives empires, like the oldest books of the Old Testament. If it is weak or trivial or untrue, it is forgotten like most of the “stories” in yesterday’s newspaper, like most of the novels of last year (Macy, 1923, p. 21).

The beauty of narrative as experienced through the medium of books is that through reading, one can experience the emotions of extreme and extraordinary experiences on an imaginative and cognitive level from a position of relative well-being and safety (Gold, 1990, p. 29; Nell, 2002). Though this might also be said of a movie or other visual medium, the difference seems to lie in the degree of psychological and emotional investment that takes place when reading a book. The creative and imaginative component of our minds is activated in a way that perhaps is not through real-world or even virtual reality experiences. When Keith Oatley discusses the importance of emotion in narrative experience, he relates the apparent inverse relationship between our external stimulus and intrinsic representational processes with the following illustration:

The Disney Corporation's claim that their theme parks are worlds of the imagination is somewhat disingenuous. There has been extraordinary imagination, but it is the imagination of the Disney designers and engineers. So elaborate are the effects, so carefully laid are the rails through space mountain or underwater fastness, that the opportunity for imagination on the part of the visitor is correspondingly reduced (Oatley, 2002, p. 41).

When we think of many of the fears that might accost us, (i.e. fears of failing an exam, of our airplane crashing, or of some harm befalling a loved one) or the many of the joys of anticipation (that vacation to Walt Disney World, the wedding), or anxieties of anticipation (that public speech, the wedding), it is easy to see that our imagination and our emotions are very much connected.

When we read, we are often creating visual representations, images in our mind's eye, of the narrative events and characters. Narrative scholars differ on the extent to which we really do create *images* corresponding to the narrative, but, it's clear that the author can only give us so much through the words of the narrative (Green & Brock, 2002, p. 321-322). We must fill in the blanks with our imagination, visually, conceptually, sympathetically, or however we do it. The bottom line is that as the words cross our visual interface, our gears are turning and we are elaborating on their meaning. In the same manner that *Theory of Mind* seeks to explain how we understand what someone other than our self is feeling or experiencing by observing them, their responses and actions in the context of their circumstances, we understand what the protagonist

is feeling based on their circumstances and responses within the story (Zunshine, 2006, p. 6).

Keith Oatley attributes this psychological process to three principal components: *memory*, *identification* and *sympathy* (Oatley, 2002, p. 59). We have discussed these aspects of our minds already in terms of our notions of self, our experiences and now our emotions. Oatley distinguishes narrative *transportation*, the notion that reading allows us escape from our real lives for a while into another world, from *transformation* in that for the 'transformative insight' to occur which has the potential to change how we 'see' the world, therefore changing our consciousness itself, three specific conditions must occur with regard to emotional involvement in the narrative (Oatley, 2002, p. 64).

First, the emotion must occur at a certain distance from 'home' as it were, not so overwhelming that we throw up our defenses and stop reading, yet not so distant and non-applicable to our self that we lose interest and stop reading. The activity of reading itself seems to afford this in many ways by allowing us first to be the controller of what we choose to read, and then, by allowing us to take part in the narrative from a place of comfort and safety, as previously mentioned. We can be transported into the narrative world without perceiving it as reality, while at the same time, suspending our engagement with reality in favor of the imaginative world. What this means is, we can internally experience emotions (consciously recognized), or perhaps on a more subtle level, feelings (as non-conscious general states and biases) that do not produce the outward responses that would correspond to actual experiences. When we read of a horrific event in a novel we may be disturbed by it, but we do not respond as we would if the horrific event was taking place right before our eyes (Green & Brock, 2002, p. 325).



The second condition is reflection, a sense whereby we give meaning to the emotions we are feeling. This is the notion previously discussed with regard to narrative and autobiographical memory. This manner of internal proprioceptive self-analysis and reflection seems to be afforded through reading in that we may choose our own pace, pauses and revisits. Here, a reader's skill level is important. In order to self-pace and have workload left over for reflective purposes, and still progress through hundreds of pages of text at a reasonable rate, the reader must be proficient enough to read without having to continually devote conscious effort to merely comprehending each word. Interactive games as of yet do not generally afford this kind of self-pacing, whether the player is a novice or expert. Though a player may pause the game, or even 'instant reply' events within the game, the action is generally paced according to a design principle of rapid progression and engagement. For example, avatars do not walk, they run from location to location, engagement to engagement. From this, a viable research question might be what would happen if games were designed to allow for explicit or more subtle (concurrent) self-reflection? How this might even be done is an important related question, and one requiring interdisciplinary interaction between cognitive science, game designers, and writers. Granted, it may very well be that designers have already considered these questions and have simply deemed the rapid pace essential to keeping the player (or the digital native player) interested and engaged in extended play. Nonetheless, if interactive technologies are going to continue to encroach upon the experience of reading, these issues become increasingly critical and warrant further investigation.

Oatley points out elsewhere that the emotions a narrative elicits may not be consciously associated with any specific prior experience or autobiographical memory, yet, the emotion itself

may be even more profound than that which has occurred in real life, potentially even bringing us to tears (Oatley, 2002, p. 61, 63). When we read, we are consciously, and unconsciously, juxtaposing the lives and experiences of the characters in the narrative with our own. In essence, we are identifying, indeed, to some degree “self” identifying with the characters. The third condition is what Oatley calls “the space in between” the reader and the writer. This seems key to the transformative affects of narrative immersion; this is where imagination and *Theory of Mind* really come into play. The author gives us essential guideposts within the narrative text, and we fill in the details, the *why’s* and *what for’s* in terms of what the characters are feeling and experiencing (Theory of Mind), based on our own ability to comprehend the circumstances, to sympathize with the characters and to imagine based on what we know about the world, and what we may or may not have experienced in our own lives.

Other narrative scholars point out that more than merely filling in the details imaginatively as we read, we are creating entire microworlds of understanding, or *situation models*, of the entire narrative – which includes all we know about the characters (i.e. their traits and mental states), the settings, the goals, timeframes, obstacles and antagonists, and so forth (Graesser et al., 2002, p. 230-231). We might even include all we know about the author, the genre, the notoriety and fame of the narrative in question, and of course, ourselves. Graesser and his colleagues seem to concur that some variation of a constructivist/constructionist approach to understanding the construction of such a narrative microworld representation relative to our own complex cognitive schemas is most useful. Their focus, however, seems to be more on our tendency toward developing a sense and framework of *coherence* and *explanation*, as opposed to the perhaps more experientially oriented notions of assimilation and accommodation (Graesser et

al., 2002, p. 245-250). Either way, the intent seems to be the same – arriving at a sense of meaningful understanding.

In works associated with psychotherapy and hypnotism (for example, those associated with Milton Erickson), the suggestion is often made that the key to controlling or perhaps more aptly, guiding someone, cognitively speaking, is by capturing their imagination (i.e., to facilitate the images that fill their minds in such a way that they believe they themselves are the originators of these images). Traditionally, this might simply be called *suggestion*. Perhaps, this is too narrow a phrase to capture what happens through narrative, but it seems that something akin to this is the key to all good storytelling. Yet, in terms of the emotions narrative elicits, this can certainly be said of movies as well, perhaps even more so. After all, people often cry at the movies. The difference may be, however, that as in the ride at Disney or the virtual reality environment, in a movie, everything is laid out before us visually and experientially. Reading engages potentially transforming imaginative processes whereas games and movies merely transport through sensory stimulation.

To the third party observer, reading narrative text (as opposed to expository text) would most probably appear to be a state of generally effortless concentration (in the absence of distraction of course) – something relaxing and enjoyable, and externally speaking, almost entirely passive aside from the turning of the page. The fact that distraction can quickly remove the reader from the trance-like state of immersion (or *not*, depending on how deeply one is immersed) would seem to dictate that reading requires one's full attention. Of course, the same can be said of watching a movie, or even the most basic video game. So, the question becomes, does the same hold true for other mediums, such as film, and more importantly, for the ever more

realistic virtual environments of interactive narrative technology? Does experience in these environments offer the same transformative intrinsic experience afforded through the processing, the visualization/conceptualization and the internalization afforded through reading narrative texts?

## **CHAPTER V: NARRATIVE TRANSPORTATION AND TRANSFORMATION**

Before looking further at the content that has made the reading of books so compelling and enduring a medium of cognitive nourishment, and considering the potentials of adapting that to cutting-edge interactive narrative technology, it would seem we must look further at the activity of reading itself. Specifically, we must consider the cognitive implications of the trance-like state that the reader enjoys when immersed in a novel or other captivating works of literature. The pleasure one derives and the cognitive or experiential benefits gained from reading seem to depend on several important factors. Obviously the reader's ability to read would be important, as would be the reader's ability to comprehend what he or she is reading (Nell, 1988, p. 8, 74). As stated earlier, it is also clear from relevant literature that one's attention faculty is important to reading (which would seem to be of particular relevance to the digital native given the cognitive tendencies also previously cited). However, with so many different models of attention within the domain of cognitive psychology, it may not be necessary to visit each one. Rather, in the context of the digital native and his or her relationship to reading versus interactive and real-world environments, it may suffice to simply consider the extent that affective, immersive and potentially schema-altering reading requires one's full attention.

Physiologically, for the able reader, absorbed reading seems to entail a curious combination of outward tranquility and inner arousal. Everything that constitutes the narrative itself is happening in the mind of the reader. In Victor Nell's motivational model of reading, he

states that there are three antecedents necessary to successfully engage in what we might call engrossed or absorbed reading: The ability to read, the expectation that the reading will be pleasurable (the motivation) and the appropriateness of the book for the reader (Nell, 1988, p. 7-9). Once these three antecedents are met and the reader begins to read, changes in the autonomic nervous system begin to occur. When Nell enumerates the physiological changes that take place, it is easy to draw parallels to consciousness altering practices such as hypnotism and meditation, “alterations in muscle tension, respiration, heart beat, electrical activity of the skin,” etc. (Nell, 2002, p. 9). Joseph Gold makes almost the exact same physiological connection between reading and meditation, though pointing out that reading is often more results oriented than meditation in the Eastern sense (and perhaps, more temporally situated) (Gold, 1990, p. 29-33). Hypnotherapists suggest that the key to hypnotism is to get the subject to focus his or her attention on one thing (whether internal or external). Practitioners of meditation similarly argue for a focus of attention (e.g., on one’s breathing). In both cases, the subject becomes receptive, and in the case of hypnotism, voluntarily hands over cognitive control to the guide, or, in the case of meditation, gives up control. Likewise, narrative text has been described as “the author’s means of controlling the reader” (Nell, 1988, p. 39). For the reader, of course, the objects of focus are the linear patterns of black letters on a white page. Visions of the reader’s eyes moving slowly across the page from left to right and then back again might even be reminiscent of the hypnotist’s pocket watch, though this is only an abstraction.

### *Transportation-Imagery Model*

In the survey of literature that seeks to understand how narrative influences and transforms the self, the theory that seems best suited to empirical research, and has indeed served as the basis for empirical research, is M. C. Green's *Transportation-Imagery Model* (Green & Brock, 2002, p. 315-341). Green admits that empirical research into narrative affect is limited at present, and even her research seems to be restricted to short narratives and short timeframes versus full-length novels (Green & Brock, 2002, p. 316). Nevertheless, Green's model takes many of the abstract and philosophical concepts discussed thus far, organizes them into five postulates, and attempts to provide an empirical basis for their support. Green uses the term *transportation* as her preferred conceptual label and the mechanism by which narrative transformation occurs. Though she does not use the term *transformation* per se, Green speaks of narrative *transportation* (previously defined in an escapist sense) as a vehicle by which emotions are elicited, persuasion potentially takes place and beliefs potentially change. Thus, embodied in Green's conception of narrative transportation is transformation as resulting belief change upon one's return to the 'real-world.'

Green's Transportation-Imager Model relies on the ability of the narrative to evoke images, and thereby absorb the reader (activating transportation). It is important to note, that in her model of narrative transportation, Green does not always make a clear distinction between the medium by which narrative is delivered. Rather, Green plainly states, "In our usage, transportation is not confined to the reading of written material... "reader" may be broadly construed to include listeners or viewers or *any recipient* of narrative information" (Green & Brock, 2002, p. 322-323). Green's empirical research attempts to qualitatively measure the

degree to which narrative transportation is demonstrated to have occurred in the “reader” following exposure to a particular narrative. The medium is still taken into account, but as a moderating attribute, as well as the attributes of the recipient, and the artistic craftsmanship of the narrative itself (Green & Brock, 2002, p. 327-329).

Green’s approach seems primarily based on subjective self-evaluation/reflection of readers using Likert-scale posttest analysis, with cognitive, emotional and imagery oriented components. Her postulates contend that the degree of transportation that occurs depends on dispositions and characteristics specific to the reader, characteristics specific to the narrative, and the opportunity for imaginative investment afforded by the medium. She relates her research and conceptual understanding of narrative transportation to several other relevant concepts explored by M. Csikszentmihalyi and A. Tellegen, respectively (Green & Brock, 2002, p. 324-326). The first concept is ‘flow,’ which is characterized by ‘optimal experience’ whereby the awareness of time disappears and a person becomes one with their activity to the extent that they no longer perceive “themselves separate from the actions they are performing” (p. 326). The second concept, ‘absorption,’ is not considered a state per se, but rather, a dispositional characteristic – specifically, a disposition toward susceptibility to hypnotic trance, or in Tellegen’s words, the tendency to “enter under conducive circumstances psychological states that are characterized by marked restructuring of the self and the phenomenal world” (p. 326).

Though Green draws parallels in terms of cognitive states, and in the case of absorption, moderate positive correlation in her empirical analysis, it is clear that the concepts are not identical with her conceptual framework. This seems mainly with regard to the absence of narrative itself. In terms of the narrative’s characteristics, Green notes that there is little or no



direct empirical evidence that craftsmanship or artistry (or in other words, the narrative's quality) affect the degree of narrative transportation, nor is there evidence suggesting the influence of a narrative's prior acclaim (P. 328). She does not, however, seem to discount that these aspects of narrative do matter. There is also little evidence that a narrative being labeled fiction or nonfiction affects the degree of transportation (p. 328-329). Rather, it is suggested that fictional narrative is recognized as non-threatening entertainment, and therefore voluntarily accepted as 'true,' that is, the willing suspension of disbelief.

Factors that do show evidence of being decisive in determining the *degree* of transportation in Green's research are more content related, such as a story of 'murder' indicating a higher degree of transportation than a story of 'kidnapping.' Although it is unclear if there is any empirical support for this assertion, Green also infers a correlation between content and relevant causes/social issues. Her example, which actually seems to be one of the most referenced among narrative scholars discussing narrative influence, is, of course, *Uncle Tom's Cabin*. The content of any novel is delivered in a slow prolonged experience of cognitive immersion (as distinguished from sensory immersion), affording the opportunity of reflection, and subsequent sleep affording an opportunity for internalization. Though other passive mediums of narrative, such as movies and theatrical performances, also afford at least an opportunity for reflection as the narrative unfolds, these are usually delivered to the audience in one brief exchange, and the audience quickly moves on to other things.

Video games and other forms of interactive narrative technology (aside from hypertext, perhaps) seem to afford many of the same hypnotic trance-like cognitive states and internalization processes as traditional text-based narrative, yet, there is a difference (especially

for the faster paced interactive mediums). While absorbing in their own way (a sensory way), these mediums are also physically engaging, requiring greater use of visuospatial skills, motor coordination and reflexes akin to those associated with other physical activities, and perhaps, only allowing for less meaningful reflection. They often do not seem to have the continuity and harmonious flow that would be inherent in the progression and ultimate dénouement of a novel. So, what can we expect from interactive narrative technology in terms of cognitive outcomes?

## **CHAPTER VI: ADAPTING NARRATIVE TO INTERACTIVE TECHNOLOGY**

The potential of adapting traditional text-based/print narrative to interactive narrative technology in such a way that the same or equivalent cognitive/precognitive outcomes are achieved might be approached interdisciplinarily from two disparate angles – *can it do it?* and *should it do it?* The former is clearly a technological question wherein the developmental processes of the mind in relation to language, emotion, narrative and the activity of reading must be thoroughly understood (as well as in actual experience). The latter is a sociological/philosophical question which takes into account individual and societal needs and concerns in much the same way anyone seeking to formulate a moral, ethical, or ideological treatise would rationalize and support the substance contained therein.

In this discussion, each question will be considered independently – the former in the context of current/potential technology and theories of cognition; the latter in the context of contemporary sociological and philosophical ramification potentials expressed in relevant literature. Though the latter question may be moot if we are to believe “resistance is (indeed) futile,” and we are merely facing the inevitable ‘evolutionary’ shift whereby humanity is to become increasingly dependent on and inseparable from digital technology, an open-ended discussion of this potentiality and its implications is nonetheless useful in finding the meaningful understanding we, as humans, seem so predisposed in our very nature to seek. If we can

recognize this dependence on technology (at the expense of the traditional) as a problem, say akin to an addiction, then, perhaps, like addiction, recognizing the problem is half the battle.

As I have argued in this thesis, printed text seems to afford a particular kind of encoding, characterized by depth, which is achieved through the activity of reading in a tranquil receptive state likened to hypnotism. The acknowledged power of this medium as a vehicle for encoding narrative in such a way as to anchor and influence the human psyche, either along channels of conformity, or toward expanded horizons of self-realization, has rendered it at once threat and savior to mankind. Now books themselves are threatened by a new medium that seems particularly suited to the needs of the young minds of this digital age. But is there hope for the survival of books that may be extracted from potential limitations of interactive narrative technology?

### *Can it do it?*

Interactive narrative technology has come a long way since the early DOS-based interactive games of the 1980s that in reflection seemed little more than a series of witty *If...Then* inputs and responses loosely following a superficial and highly abridged narrative context. Likewise, today's high-speed computer graphics and virtual reality imagery make the large-pixeled, slow-moving, purple/green/black/white four-color graphics (or if you were among the privileged and envied few, 8-bit 256-color palette graphics) of the pre-digital native generation seem as laughable now as the early bicycles. Even the simplest of video-games today immerse the user in an environment of fast-paced audiovisual stimulation requiring as much or more active engagement as that required in the 'real-world.' There is no denying such

interactive technology can even now hold the user's attention for extended periods. Note, though, the contradiction in that, in the absence of such intense stimulation, we see the problematic nature of attention *deficiency* among digital natives as one of the greatest causes for concern of this generation (Jackson, 2008). Yet, the 'attention' of interactive game-play often seems to demand intense focus and purpose, requiring quick responses and a high-degree of multitasking. The consequence of this could very well be the absence of deep reflection; the very kind of reflection that I have argued forms the foundation of the experience of reading and, perhaps, the core of the cognitive processes that can produce the kind of transformational experience a powerful narrative can bring. As noted, self-change demands reflection – reflection upon the text, the emerging story, the situation model constructed, and all in comparison to one's world view and own experiences. But, while I suggest that the attending and demanding characteristics of the modern game do not afford the opportunity for reflection in the way books do, and, in fact, may actually prevent it, video games may still afford deep reflection in other ways. In particular, an important complement to consider is the nature and quality of the emotion produced in an interactive narrative environment versus the imaginative environment of books. Any observer of someone engaged in a typical action-oriented video game will note that the emotion elicited is often outwardly expressive and in real-time, and then quickly forgotten. Contrast this with the emotional experience derived from reading. Seldom will it be outwardly expressive and, more than likely, it will not be quickly forgotten (e.g., readers of a novel may, upon remembering or discussing a plot, experience similar levels of emotion as they did when they first read it).

Michael Mateas and Andrew Stern, acknowledged experts in the field of interactive storytelling, are quick to tell us that “(digital-based) games are unable to convincingly address many of the topics and themes of human relationships...” (Mateas & Stern, 2003). This is precisely what print text narrative, in its very reflective way, does do very well (Oatley, 2002, p. 61). Further, they add, “today’s games remain almost exclusively oriented around physical action.” Of course, since that was written, we are seeing increasing emphasis on fantasy and role-playing type games as digital technology is advancing. My point is not to say that video games and simulated environments do not make one think. In terms of problem-solving and goal attainment in the context of a ‘story,’ interactive narrative technology has made amazing strides and the player is, indeed, actively engaged and thinking through the story. The critical difference though, is “what” the player is thinking about, and in terms of cognitive state, “how” the player is thinking and digesting the content of the narrative. From this, we can specifically elaborate on the quote from Mateas and Stern above about the inability of games to address topics and themes of human relationships. We can ask, is the player questioning aspects of his- or *herself* because of the game? Is the player considering broader relationships with family and friends because of the game’s characters? Is the player remembering prior life experiences, similar in some way to the particular plot elements of the game story? In short, to what degree do differences in the form and quality of the narrative experience attenuate the self-changing experiences produced from print-narrative?

The challenge, however, may be more of a paradigm issue than a matter of technological limitations. By definition, interactive narrative implies the user will be actively participating in the story – that is, making choices, performing actions, affecting the environment, etc. This in

itself would certainly have constructivist implications in terms of schema development – experientially speaking. But this distinction seems key to what has always distinguished the cognitive benefits of *experiencing* through reading and reflection from *experiencing* through actual experience. When reading a book, the reader may experience emotions as the result of reflecting on what is happening to the characters within the story in the context of the microworld that the reader has already constructed – as well as the author’s calculated intentions, whereas when experiencing the story through interactive narrative technology, the player is experiencing the dynamic active emotions and responses of actually participating in the story. In a sense, the player is acting as the story’s author, just along set parameters of possibility.

In the attempt to simulate meaningful human interactions inside an interactive ‘story,’ the emphasis seems to be largely placed on the development of artificial intelligence to the point of creating believable agents or non-player characters (NPCs) in interactive social environments that are as realistic as possible in terms of behavioral responses and imagery (Ho & Watson, 2002; Mateas & Stern, 2003). At present, this is accomplished via models such as autobiographic agent frameworks and natural language processing. Mateas and Stern’s *Believable Language* (ABL) is an example of such a model. ABL allows virtual agents within an interactive context to keep track of active goals, behaviors and sub-goal relations as they relate to the player’s avatar using what is called an *active behavior tree* (ABT) (Mateas & Stern, 2003). By means of ABTs, certain behaviors that might have been prompted otherwise will not occur if the context is not appropriate and so forth. This approach, at least as it applies to virtual agents within the ‘story’ seems very much in accordance to the cognitivist notion that human behaviors and their likelihood of occurring in any given circumstance can be accurately

represented in terms of complex contextual equations. Accurately or not, this may be an excellent way to adhere to the structural parameters and character constraints of the narrative, while facilitating the realism.

In the realm of interactive technology, even the application of the term narrative seems to have been adapted to the idea of merely recreating experience (Biocca, 2002, p. 102). The answer to the question of whether this would constitute the *same* value afforded by reading print text would seem to be *no*. Biocca acknowledges what is termed the *book problem*, which recognizes the distinctions necessarily inherent in concepts such as ‘presence’ and ‘being there’ as experienced in a virtual reality environment from that experienced imaginatively and reflectively in a book. Yet, the driving assumption still seems to be, the more real, the ‘deeper’ the experience. Though the implications of this assumption may lead us away from the notion that reading would be ‘deeper’ because it is a tranquil and reflective activity in itself, thus better facilitating belief change, it may also be a basis for establishing what interactive narrative technology has the potential to do *better* than narrative delivered through the medium of books.

It seems certain that virtual reality and other simulated environments will become more and more realistic until they are indistinguishable, practically speaking, from actual experience. The experiential value of interactive technology mediums of this sort would thus seem to be as irrefutable as that of actual experience. The maxim “There is no substitute for experience” will not only stand, it will have increasingly governable avenues for its realization. Given the predisposition toward a progressively increasing need for speed that has characterized each succeeding generation of the modern age, leading up to the digital native generation’s new globally-connected ‘consciousness,’ interactive decision-making and subsequent reflection may



be the practical equivalent. The question becomes, then, do we seek to replace, to substitute, or to create something entirely different? Can this bring a new kind of narrative experience that leverages this powerful new experiential capability in ways that can lead to transformations of self in heretofore, unimagined ways?

As social judgment and some degree of Theory of Mind is necessary in gaining real-time insight into the motives, intentions, perspectives, feelings and realities of others (which books have always done quite well in their own way), first-hand participation in an interactive narrative has the potential to do this through avatars and believable agents matching the appearance and personality characteristics of characters within a novel. The profound impact this may have on the player's perceptions is evidenced already in situations where the characteristics of a player's 'avatar,' or virtual self, are demonstrated to influence the player's judgments and perceptions of others as well as oneself according to his or her avatar's characteristics within the virtual environment (Biocca, 2002, p. 120). Thus, the potential for facilitating the development of the same deep emotive/reflective values such as empathy, compassion and even wisdom and insight might be achieved via an alternative but equally effective means. Whether this would ultimately represent the equivalent level of processing/encoding in terms of depth (and what this would even mean in terms of belief-change and consequent decision-making and behavioral responses in future experiences) would need to be further explored, possibly in extended laboratory research emerging out of closer collaboration between the cognitive sciences and the humanities.

The inescapable difference, which we might look to as the redeemer and savior of books may lie in the nature of the reflection that accompanies the particular medium. In this thesis I have used the more general term reflection to describe the processes such as

contemplation on the meaning of the text as it relates to the self and to the experiences of the self. In the cognitive and learning sciences the term "metacognition" is used to describe reflective and self-regulatory processes engaged by the learner to ensure comprehension occurs (Cross & Paris, 1988; Mokhtari & Reichard, 2002). This captures a more specific form of reflection that would certainly be different during video game play, but, because this thesis focuses more on a humanistic interpretation of the reading experience, I do not delve further into how metacognitive processes differ when reading versus video game play. Nonetheless, this too is an important issue as it does have an impact on how the transformational qualities of a "story" may change when moving from text to game. As such, this too remains an opportunity for interdisciplinary collaboration between the cognitive/learning sciences and the humanities so as to better understand these more specific differences.

In our present consideration of reflection, narrative scholars contend that when reading a book, the reflection is concurrent and automatically with the activity (Green & Brock, 2002, p. 323). Aside from being in a relaxed and receptive state, the reader has control of the pace, and can pause, revisit, and mull over the content as much as he or she wishes. This in itself seems to make the content of a book much more immersive and memorable than the content of say, a film, as well as better affording enduring belief change (Green & Brock, 2002, p. 331; Ellul, 1985, p. xi). But a film is a passive and comparatively brief audiovisual experience, whereas interactive narrative is potentially a prolonged multi-modal/multi-dimensional participatory experience. In actual experience, philosophers and psychologists alike seem to suggest that if the conscious reflection comes at all, it comes *after* the experience, and this would seem to be consistent with

active participation in a virtual environment. Supporting this point, Schopenhauer describes it thus:

In respect to this withdrawal into reflection he may be compared to an actor who has played his part in one scene, and who takes his place among the audience till it is time for him to go upon the stage again... (Schopenhauer, 1955, p. 15).

Nietzsche's famous quote seems to imply the same dichotomy of experience then reflection, "Experience, as a desire for experience, does not come off. We must not study ourselves while having an experience." In like manner, this seems to aptly describe how experiencing a virtual world, then leaving it temporarily to return to the 'real' world, could result in the type of reflection that goes on in normal 'real-life' activities and experiences, but in a more sequential and consistent manner along 'story' structure. To illustrate, as Bruner points out in describing his essential feature of narrative which he calls *canonicity and breach*, though many of our daily experiences and happenings may follow a script or sequence of events consistent with a narrative, they don't constitute 'narrativity' because they simply are not worth telling or one may presume, *reflecting upon* (Bruner, 1991). This further reminds us that conscious reflection really is not a requisite of living at all – nor is reading books for that matter – especially in an action-oriented society where split-second judgments and bold decisive action are considered hallmarks of strength to be admired. Yet, within an interactive narrative environment, all participation in

the ‘story’ of the virtual world is a departure from the norms of real-life, and in this sense it represents the breach that makes it worthy of later reflection.

One way or another, though, narratives do affect us and are essential to forming and altering our worldviews. Mateas and Stern do recognize the necessity of having an underlying story structure in order to preserve the narrative value in interactive mediums. Their solution, quite innovative when first presented, was to describe a dynamic environment that responds to the player’s choices in real-time, yet whereby the progression of play is still channeled along a narrative framework. This would seem, at least on the surface, to help solve the problem of transitioning the inherent archetypes and *narrative functions* characteristic of transformative narratives to interactive mediums (Booker, 2004; Cavazza & Pizzi, 2006). Yet, the specificity of dialogue and sequence that connects the author with the reader in classic literature would, at least to some extent, have to be abandoned in any scenario that would allow the user to *choose*, whatever the context.

In terms of general narrative progression, video games already often intersperse automated (visual) narrative contextual transitions (where the player momentarily stands by as a passive viewer) between the interactive components of the game. The interactive components in themselves often seem to have little to do with the underlying narrative. Rather, they are self-contained sequences where the player performs specific actions toward a specific end in a specific context, such as “operating weapons, running, jumping, fighting, controlling vehicles and so on” (Mateas & Stern, 2003). Other more ambitious games might allow the user to construct objects or environments, solve problems, think strategically, or perhaps, of even more social value, perform actions representative of some heroic, moral or socially conscious motive.

Though the general narrative content may be consistent with the ‘story’ presented via books, it would seem to lack the continuity afforded through the activity of experiencing the story through the activity of reading.

We must remember that reading print-text is generally not an interactive participatory process at all, outwardly speaking (*Choose Your Own Adventure* books notwithstanding, which have already been more or less adapted to digital technology as hypertext fiction). In books, the entire story is laid out for the reader, to be internally digested word for word, sequence by sequence, evoking specific and calculated (whether consciously or unconsciously on the part of the author) cognitive, imaginative and reflective processes along the way. Some of the types of the subjective experiential and emotional progressions inherent in influential literature that could be a challenge to adapt to interactive narrative technology might include qualities such as the social, moral and reflective value of *Uncle Tom’s Cabin*, the allegorical object lesson value of *The Picture of Dorian Gray*, the suffering and perseverance of Philip Carey in the face of unrequited love in *Of Human Bondage*, and so forth. To extract and internalize the full transformative value contained therein, it would seem that strict adherence to their predefined content, complete with its indispensable vicissitudes, setbacks and final denouement, would be essential. No matter how sophisticated the AI behind interactive narrative as experienced in present and future games, it is unlikely that the branching stories that emerge, can reify to the same degree, the same literary elegance of what is experienced in such great books.

Given the above, I suggest that the goal of any interactive narrative technology, which would attempt to replace the need for books, must focus on achieving the same cognitive outcomes through alternative cognitive processing.

While there is little activity outwardly, when a reader reads, inwardly, the mind is rife with cognitive activity – constructions, juxtapositions, associations, inner feelings (as opposed to expressed emotions), etc. This slow-moving unfolding, from beginning to middle to end, can go on for days and even weeks. With interactive technology (and this may be key to a deeper understanding of what is happening cognitively and developmentally), the processes seem to be reversed. The process is fast – it affords instant gratification. Outwardly, the user is behaviorally engaged and physically responsive, expressively emotional, and outwardly stimulated, yet inwardly, he or she may have no psychological or emotional investment whatsoever past a general state of arousal. Philosophically speaking, when reading, the cognitive center of gravity seems to be *inside* the reader; while with interactive narrative technology, the center of gravity (as a basis for judgment and decision-making) is moved *outside* of the player, representing perhaps another kind of duality in terms of cognitive orientation in relation to an objective world.

Persuasion researchers seem to embody this same conceptual distinction in their applied notion of *central* and *peripheral* route processing in their attempt to understand how we relate to the objective world in terms of our judgments, decisions and behaviors. Petty and Cacioppo, two prominent researchers in this field who are also extensively cited by narrative scholars, root their empirical research in their own *Elaboration Likelihood Model* (ELM). In this model, ‘elaboration’ simply means the amount of contemplation or reflection that is likely to take place in decision-making given a certain set of independent variables. These independent variables are often a combination of those with contemplative implications affording central route processing (i.e. written material pertaining to an issue, which may be presented in the form of a narrative),

and/or sensory stimuli affording peripheral route processing (i.e. appearance/characteristics of message source, distractions, etc.). When presented with a combination of independent variables affording both central and peripheral route processing, the basis on which a decision is ultimately made is largely contingent upon the subject's *need for cognition* (Petty & Cacioppo, 1986). This varies from person to person, yet, regardless of whether central route processing or peripheral cues (perhaps coupled with heuristics adopted as a result of past experience) are the basis on which a decision is reached, often this decision is the same with equally valid justification. The point I am making is that one processing route (or medium) is not necessarily considered qualitatively better than the other. Rather, both can be effective methods of decision-making and judgment, not unlike the medium and associated activities pertaining to the potential for belief-change and transformation that takes place through narrative. Thus, perhaps a shift in the balance between these dualities of central versus peripheral processing is warranted; this shift in balance may be a means of achieving potentially transformative experiences via interactive technology; that is, shifting more to peripheral routes, as can be found in modern games, so driven by sensory stimuli, and away from the central routes, as found in traditional print text, so driven by conceptions and arguments.

### ***Should it do it?***

The perception of potential dangers associated with sacrificing depth for breadth is not one that has arisen with the digital age. Allegorically (or *literally*, reader's preference) – *the Word* (symbolically applied to print text narrative throughout this discussion) and *the Image* have been two diametrically opposed orientations for as long as the Judeo-Christian tradition has

been around (if not longer) and seem to represent the same conundrum (Ellul, 1985). ‘The Word’ as it applies to biblical narrative would say, *Thou shalt not make unto thee any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the water underneath* (Exodus 20:4, KJV). Even today, religions (i.e. Islam) still forbid aesthetic images, and instead largely represent art as doctrinal words crafted in beautiful calligraphies. It would seem that religions have long associated *the Word* in narrative form not only with facilitating subjective conformity to and the deep internalization of a set doctrine, but also with virtues such as singleness of mind/purpose, patience and faith, self-possession, etc. Moreover, narrative as experienced through reading causes the reader to (at least temporarily) accept the world presented by the author in lieu of ‘real-world’ facts – accepting the *unseen* for the seen (Green & Brock, 2002, p. 325). For more than one religious tradition, *images* on the other hand represent idealized materialism (idolatry), objective desires and loves, susceptibility to influence and worldliness (and maybe even attention deficit). In many ways, the idea seems analogous to certain personality traits claimed to be exhibited by today’s digital natives.

In today’s society, while people seem to value reading and *the Word* less and less, we put considerable value on images and visual mediums for their aesthetically pleasing potential, instant gratification, and the lack of cognitive effort and psychological investment needed to appreciate them. It is ironic that reading *the Word* can at once be viewed as a subjective source of constraint and a primary means of inner edification and objective liberation, while images/visual and interactive mediums, which might be labeled superficial (cognitively speaking) are yet so alluring and compelling as to keep us coming back for more – bringing us back to that most paradoxical of dualities, *objective* versus *subjective*.



There does seem to be a growing body of literature that envisages serious societal problems resulting from increasing dependence on digital technology based mediums in general that certainly include, yet transcend, interactive narrative technology (Jackson, 2008; Postman, 1993). These consequences have been portrayed by the likes of futurist Isaac Asimov, who in at least one of his novels, imagined a world where people communicated exclusively through holographic technological mediums (in this case, to the point where actual physical contact posed serious health risks), and today, similar concerns from a sociological perspective are illustrated in movies such as *Surrogates* and *Wall-E* – and so many others with the sci-fi genre that they have earned their own classification – *technophobia*. Clearly, we aren't there yet. The concerns expressed today in academic circles are more along the lines of declining social skills in the face of digital communication mediums and Internet information dependence, as well as the previously noted traits stereotypically characteristic of the digital native – attention deficit, lack of concentration, compulsive multi-tasking, etc.

Close examination of many of these concerns as they relate to interactive narrative technology and books, seem to reveal flaws in some of their underlying suppositions. For instance, is using interactive technology more of a catalyst for social isolation than reading books? Did other forms of narrative delivered via technological mediums (i.e. film, audio) usher in the demise of books? Did other forms of communication (i.e. telephone) result in diminished social skills? Have new mediums for learning or conveying information ever caused serious societal repercussions? Are there really any measurably detrimental consequences to quality of life associated with the theoretical concept of sacrificing depth for breadth?

As to the future of books, we live in a society predicated on supply and demand. As long as there is a demand for books, there will be a supply. As a race and a society, we have lost many skill sets and traditions with progress. Most of the craftsman trades that made individuals and individual skill sets so valuable to a community through much of human history died out with the industrial revolution. Yet, they can still be found when they are needed.

Philosophically speaking, whenever we lose something, we gain something in return, and vice versa. As human beings, we rode horses for centuries, and even millennia, to get from place to place. Everyone (loosely applied) knew how to do it, everyone knew how to take care of a horse, and everyone valued the horse as an indispensable transportation medium. In a span of less than 50 years, they became a completely obsolete form of transportation. The preferred medium for transportation has changed and continued to advance, while our corresponding cognitive and practical skill sets have adapted to this new technology. Yet, over a century after the invention of the first horseless carriage, those who still wish to enjoy riding a horse, who value horsemanship as a skill set and a source of edification and escape, can generally find a way to indulge in it. The point is that change is inevitable and as a society we always adapt to that change, no matter how fast it arrives. In the face of inevitable progress, the question of *should it* gives way to *will it?* Fortunately, we can still choose that for ourselves. Just as inevitably, there are always those who remain faithful to the old guard, so to speak, those who recognize and preserve the value of old practices and mediums. As it concerns books, it may be a matter of an individual's *cognitive need* (similar conceptually to Petty & Cacioppo's *need for cognition*). Someone with high cognitive need may be more inclined to continue to seek out the satisfaction of this need as experienced through reading books.

One concern that seems relevant, not just to the reliance on interactive narrative technology as the primary means of enjoying and reaping the cognitive benefits of narrative, but as it applies to all digital technology, are the potential consequences on a societal and individual level if this technology were suddenly taken from us. What I mean is, in the unlikely event that cyber-warfare or some other technological calamity were to take place depriving us of this technology, where would that leave us, having become completely dependent on digital technology for communication, information, entertainment, advice and in many cases, as an indispensable professional resource? Any potential ramifications of such an occurrence would be hypothetical and speculative at best, as it has never happened – at least over the long-term. If it were to happen, as I have noted, we humans have demonstrated an incredible ability to adapt to changing circumstances and new environments throughout history. But, it still bears consideration.

In terms of narrative, the saving grace for books is that they are already available in abundant supply (provided that does not change), and are a relatively inexpensive, self-contained and low-maintenance medium for its delivery. As long as we *can* read, the narratives and narrative worlds as experienced through the medium of books are available to us. As a fallback they would seem ideal. Books require no reliance on even electricity, they are user-friendly, and aside from being somewhat cumbersome to move in large quantities are relatively easy to maintain and manage. If they are taken care of, they have the potential to far outlast almost any technological implement available today. Books have contained the wisdom of the ages for centuries. It would seem wise to keep them around, just in case.

## CHAPTER VII: CONCLUSION

Based upon this review, I now conclude with a set of questions meant to capture the essence of the aforementioned issues. Note that my purpose with these questions is not to provide the answers, but, based on my previous review and discussion, to summarize the implications that need to be considered if we are to come to fully understand the degree to which narrative, as experienced through reading a story in book form is fundamentally, and perhaps qualitatively different than stories presented through interactive technologies.

First, *does interactive narrative technology afford the same type of encoding experience with the same benefits and outcomes?* There seems to be strong indications that the activity and associated encoding that takes place when reading narrative is fundamentally different from that of active participation within a story through interactive narrative technology. In short, reading is characterized as a passive receptive process likened to trance, whereby the reader is immersed in a narrative world formed in the imagination with the help of the author's words; interactive narrative technology facilitates an active participatory process of engagement within a virtual narrative world as it is presented, moving toward the experiential. Narrative as experienced through the medium of books provides a very predefined and formulaic course, and any deviation from this course would seem to undermine both the cognitive bond that is formed between the author and the reader, as well as the intrinsic value of any underlying archetypes inherent within the narrative. It goes without saying; the opportunity to savor the literary elegance of the words themselves is also lost. I have suggested, however, that in terms of

cognitive outcomes this does not necessarily mean books are *better*, or that the same cognitive outcomes cannot be achieved through technology mediums.

*Second, can the same intrinsic outcomes, that is, as relates to the struggles with desires and fears, self-realization and the mastering of self-control, as argued by Booker to be archetypally ubiquitous in narrative plots, be reproduced with interactive narrative technology?*

It may be possible to achieve the same cognitive outcomes and evoke the same degree of meaningful understanding through alternative cognitive processes. While reading in many ways takes an *a priori* approach to reflection in preparing us for actual future experience, interactive technology seems to reverse the process, allowing us to experience first, with the opportunity to reflect later. The key would seem to be to create interactive narrative in such a way as to be conducive to inducing meaningful subsequent experiential reflection comparable to that of actual experience, while leading the player to the same qualitatively and intrinsically useful types of reflections that are evoked in a reader as he or she reads. It would seem that this will require the Vince Lombardi approach of ‘freedom within structure’ and the facilitation of continuity over extended periods in much the same way as when one puts down a book, then picks it up later to continue where they have left off over the course of days or even weeks. A precise effort to set up and evoke the same emotional responses that a protagonist experiences within a novel, within the player in the context of experiential simulation will be no light undertaking.

*Third, to what degree can identification with an author (and the author’s intention) be made through the medium of interactive narrative technology?* As the ability to create believable agents that act and respond in accordance with the personality traits and intentions of the author’s characters and the narrative context improves, it may be possible even in the face of

interactive potentialities to capture the author's intentions in an experiential way, rather than a literal/literary way. In terms of classical literature, this would entail a thorough knowledge of every aspect of the original works (i.e. the author's intentions, underlying archetypes, linguistic structure, literary significance, etc.), coupled with a deep understanding of applied Theory of Mind, and both cognitive and sensory processes (particularly as they relate to the digital native), as well as a strong technical understanding of the interactive technology itself. In short, if this is to be done, it will require an interdisciplinary approach from start to finish.

Last, in consideration of constructivist frameworks for understanding how narrative (delivered in print-form) acts to transform the self and reframe worldviews, a final question might be: *To what degree and in what way do the constructivist concepts describe the cognitive processes taking place while experiencing narrative through interactive narrative technology?* Throughout this thesis, I have suggested that the constructivist approach to understanding how we derive meaningful understanding from the world is the most useful basis for considering how we draw meaningful understanding from the reading of narratives in book form. Constructivism also attempts to explain how we derive meaningful understanding from our experiences, and I have therefore suggested that it is equally applicable to the virtual experience of interactive narrative technology, in terms of cognitive outcomes within the player. As to creating believable agents and a realistic virtual environment within interactive narrative that accurately represents the intentions of the author, and the intrinsic value and cognitive outcomes of the literature itself, it seems that a cognitivist approach would be far more useful. Based on current efforts to create believable agents in virtual worlds, this will allow the developers of interactive narrative technology mediums to create with precision a complex spectrum of socially engaging and

realistic possibilities given the choices a player makes, yet which correspond to the original text in such a way as to channel the vicissitudes and outcomes appropriately.

This Thesis set out to explore the potentials and limitations of adapting classic literature to interactive narrative technology in such a way as to serve the same developmental and societal needs that have been traditionally filled through reading books. To this end, I have reviewed relevant literature to develop an understanding of how the narrative form, when experienced through books, facilitates belief-change and cognitive transformation in the reader, as determinants upon future perceptions of circumstance, worldview, associated behaviors and responses. Consideration was first given to different theoretical perspectives of how the ‘self,’ as a cognitive awareness within a physical body, situated and functioning within an external world, comes to be. Language as the vehicle whereby autobiographical memories are formed and modified, and a sense of meaningful understanding is established, is then discussed as the basis by which narrative in print-text form has traditionally served to alter and reframe how we view our past experiences, ourselves and others. Emotions and emotional involvement within the world, and within narrative worlds, was also considered as a catalyst to personal transformation. In the realm of empirical research, M. C. Green’s *Transportation-Imagery Model* was used to illustrate current efforts to understand qualitatively how narrative presented in varying mediums facilitates belief change. A review of this research led into a final discussion of how the activity of reading itself, differs from actively participating in a story through interactive technology mediums. The cognitive implications of this were viewed as key to determining whether current and future interactive technology is capable of facilitating the same cognitive outcomes as

reading books, and this provided a basis for suggesting what we need to ask ourselves, in any endeavor to do so.



## REFERENCES

- Bennett, S., Maton, K. & Kervin, L. (2008). The 'Digital Natives' Debate: A Critical Review of the Evidence. *British Journal of Educational Technology*, 39, 5, 775-786.
- Biocca, F. (2002). The Evolution of Interactive Media. In M.C. Green et al. (Eds.), *Narrative Impact* (pp. 97-130). Mahwah, NJ: Lawrence Erlbaum Associates.
- Booker, C. (2004). *The Seven Basic Plots: Why we tell stories*. New York: Continuum.
- Braisby, N. & Gellatly, A. (2005). Foundations of Cognitive Psychology. In N. Braisby & A. Gellatly (eds.), *Cognitive Psychology* (pp. 1-32). Oxford, UK: Oxford University Press.
- Brock, T. C., Strange, J. J., & Green, M. C. (2002). Power Beyond Reckoning. In M.C. Green et al. (Eds.), *Narrative Impact* (pp. 1-15). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bruner, J. S. (1991). The Narrative Construction of Reality. *Critical Inquiry*, 18, 1-21.
- Burton, J. K., Moore, D. M. & Magliaro, S. G. (1996). Behaviorism and Instructional Technology. In D.H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 46-73). New York: Macmillan.
- Capelletto, F. (2003). Long-Term Memory of Extreme Events: From Autobiography to History. *Journal of the Royal Anthropological Institute* (N.S.), 9, 241-260.
- Cavazza, M. & Pizzi, D. (2006). Narratology for Interactive Storytelling: A Critical Introduction. *3<sup>rd</sup> International Conference on Technologies for Interactive Digital Storytelling and Entertainment*. Darmstadt, Germany, December.
- Champeau, R. (2008). UCLA study finds that searching the Internet increases brain function. *UCLA Newsroom*. Retrieved March 15, 2010, from <http://www.newsroom.ucla.edu/portal/ucla/ucla-study-finds-that-searching-64348.aspx>
- Cross, D. R. & Paris, S. G. (1988). Developmental and Instructional Analyses of Children's Metacognition and Reading Comprehension. *Journal of Educational Psychology*, 80, 2, 131-142.

- Dautenhahn, K. (2002). The origins of narrative: In search of the transactional format of narratives in humans and other social animals. *International Journal of Cognition and Technology*, 1, 1, 97-123.
- Ellul, J. (1985). *The Humiliation of the Word*. Grand Rapids, MI: William B. Eerdmans Publishing Company.
- Epstein, S. (1994). Integration of the Cognitive and Psychodynamic Unconscious. *American Psychologist*, 49, 8, 709-724.
- Fiore, S., Metcalf, D. & McDaniel, R. (2007). Theoretical Foundations of Experiential Learning. In M. Silberman (Ed.), *The Handbook of Experiential Learning* (pp. 33-58). San Francisco, CA: Pfeiffer.
- Gauthier, I., Skudlarski, P., Gore, J. C. & Anderson, A. W. (2000). Expertise for cars and birds recruits brain areas involved in face recognition. *Neuroscience*, 3, 2, 191-197.
- Gold, J. (1990). *Read For Your Life*. Markham, Ontario: Fitzhenry & Whiteside.
- Graesser, A. C., Olde, B. & Klettke, B. (2002). How Does the Mind Represent Stories? In M.C. Green et al. (Eds.), *Narrative Impact* (pp. 97-130). Mahwah, NJ: Lawrence Erlbaum Associates.
- Green, C. S. & Bavelier, D. (2003). Action Video Game Modifies Visual Selective Attention. *Nature*, 423, 534-537.
- Green, M. C. & Brock, T. C. (2002). In the Mind's Eye: Transportation-Imagery Model of Narrative Persuasion. In M.C. Green et al. (Eds.), *Narrative Impact* (pp. 315-341). Mahwah, NJ: Lawrence Erlbaum Associates.
- Herman, D. (2007). Storytelling and the sciences of mind: cognitive narratology, discursive psychology and narratives in face-to-face interaction. *Narrative*, 15, 3, 307-334.
- Hesiod (1993). *Works and Days – Theogony* (Lombardo, Trans.). Cambridge: Hackett Publishing Company, Inc.
- Ho, W. C. & Watson, S. (2006). Autobiographic Knowledge for Believable Virtual Characters. *Intelligent Virtual Agents 2006 (IVA 2006)*, 383-394.
- Jackson, M. (2008). *Distracted*. Amhearst, NY: Prometheus Books.

- Klin, A. Jones, W., Shultz, R.T., & Volkmar, F. (2003). The Enactive Mind, or From Actions to Cognition: Lessons from Autism. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences*, 358, 345-360.
- Macy, J. (1923). The Purpose of Reading. In L. Abbott et al. (eds.). *The Guide to Reading*. (pp. 19-33) New York: Doubleday, Page & Company.
- Manier, D. (2004). Is Memory in the Brain? Remembering as Social Behavior. *Mind, Culture, and Activity*, 11(4), 251-266.
- Mateas, M. & Stern, A. (2003). Façade: An Experiment in Building a Fully-Realized Interactive Drama. *Game Developers Conference (GDC, 03)*, San Jose, CA, March 4-8, 2003.
- Mink, L. (1981). Everyman His or Her Own Annalist. *Critical Inquiry*, 7, 4, 777-783.
- Mokhtari, K. & Reichard, C. A. (2002). Assessing Students' Metacognitive Awareness of Reading Strategies. *Journal of Educational Psychology*, 94, 2, 249-259
- Molenda, M. (2008). Historical Foundations. In J. M. Spector et al. (Eds.), *Handbook of Research on Educational and Communications Technology* (pp. 67-82). New York: Lawrence Erlbaum Associates.
- National Endowment for the Arts. (2007). *To Read or Not To Read: A Question of National Consequence* (Research report; #47). Washington D.C.: Office of Research & Analysis.
- Nell, V. (2002). Mythic Structures in Narrative. In M.C. Green et al. (Eds.), *Narrative Impact* (pp. 17-37). Mahwah, NJ: Lawrence Erlbaum Associates.
- Nelson, K. (2003). Self and Social Functions: Individual Autobiographical Memory and Collective Narrative. *Memory*, 11(2), 125-136.
- Oatley, K. (2002). Emotions and the Story Worlds of Fiction. In M.C. Green et al. (Eds.), *Narrative Impact* (pp. 39-69). Mahwah, NJ: Lawrence Erlbaum Associates.
- Ochs, E. & Capps, L. (1996). Narrating the self. *Annual Review of Anthropology*, 25, 19-43.
- Petty, R. & Cacioppo, J (1986). The Elaboration Likelihood Model of Persuasion. *Advances in Experimental Social Psychology*, 19, 123-192.
- Postman, N. (1993). *Technopoly: The Surrender of Culture to Technology*. New York: Alfred A. Knopf, Inc.

- Prensky, M. (2001). Digital Natives, Digital Immigrants. *On the Horizon*, (MCB University Press) 9, 6, 1-9.
- Raskin, J. (2002). Constructivism in Psychology: Personal Construct Psychology, Radical Constructivism, and Social Constructivism. *American Communication Journal*, 5, 3.
- Rosser Jr., J. C., Lynch, P. J., Cuddihy, L., Gentile, D. A., Klonsky, J. and Merrell, R. (2007). The Impact of Video Games on Training Surgeons in the 21<sup>st</sup> Century. *Archives of Surgery*, 142, 181-186.
- Schopenhauer, A. (1955). *The Works of Schopenhauer* (Durant, Trans.). New York: Frederick Ungar Publishing Co. (Original work published 1859)
- Schuh, K. L. & Barab, S. A. (2008). Philosophical Perspectives. In J. M. Spector et al. (Eds.), *Handbook of Research on Educational and Communications Technology* (pp. 67-82). New York: Lawrence Erlbaum Associates.
- Simmons, L. K. (2009). Teaching Digital Natives. In *Foundations of Education and Instructional Assessment*. Retrieved March 10, 2010, from [http://en.wikibooks.org/wiki/Foundations\\_of\\_Education\\_and\\_Instructional\\_Assessment/Edition\\_4/Foundations\\_Table\\_of\\_Contents/Chapter\\_13/13.5.2#Defining\\_22Digital\\_Native.22](http://en.wikibooks.org/wiki/Foundations_of_Education_and_Instructional_Assessment/Edition_4/Foundations_Table_of_Contents/Chapter_13/13.5.2#Defining_22Digital_Native.22)
- Sims, V.K., and R.E. Mayer. (2002). Domain specificity of spatial expertise: The case of video game players. *Applied Cognitive Psychology*, 16, 97-115.
- Small, G. & Vorgan, G. (2008). *iBrain: Surviving the Technological Alteration of the Modern Mind*. New York: HarperCollins.
- Spector, J. M. (2008). Theoretical Foundations. In J. M. Spector et al. (Eds.), *Handbook of Research on Educational and Communications Technology* (pp. 21-28). New York: Lawrence Erlbaum Associates.
- Stowe, H. B. (1851/1981) *Uncle Tom's Cabin*. New York: Bantam Books.
- Sutton, J. (2002). Cognitive Conceptions of Language and The Development of Autobiographical Memory. *Language & Communication*, 22, 375-390.
- Yiend, J. & Mackintosh, B. (2005). Cognition and Emotion. In N. Braisby & A. Gellantly (eds.). *Cognitive Psychology* (pp. 1-32). Oxford, UK: Oxford University Press.
- Zunshine, L. (2006). *Why We Read Fiction: Theory of Mind and the Novel*. Columbus, OH: The Ohio State University Press.