The Harmful Effects of Social Networks and Other Electronic Media

Peter S. DeLisi
Santa Clara University

Abstract

During the past several decades, information technologies, such as the personal computer, the Internet and mobile devices, have moved from the corporate space to the individual consumer space. Much has been written about the benefits of these new technologies; unfortunately, little has been written about their deleterious effects.

In this paper, I will describe what I perceive to be the major harmful effects that the new electronic media are having in the areas of safety, privacy, brain functioning, relationships, personal and professional effectiveness, aesthetics and individual psychology. While I present the results of my research in somewhat of a draft form, I'm hopeful that my message will get out and that others will accept my invitation to help me fill in the blanks on my own thinking.

For the past 45 years, I have been an active and vocal advocate for every major, new, information technology (IT). First, as a salesperson for IBM in the 1960s and 70s, and later, as a sales and marketing executive at Digital Equipment Corporation (DEC). At IBM, I aggressively sold the benefits of the electronic computer to an audience that, as yet, did not understand what a computer was, or what it could do for them. At DEC, I continued my promotional efforts with successive generations of minicomputers and desktop computers. Following my careers at IBM and DEC, I have continued my support of new technology as both a consultant and a university instructor.

Recently, I have adopted an uncharacteristic role. Instead of lobbying aggressively for the most recent information technology advances, I have become very concerned about our obsession with many of the contemporary electronic media and feel that I must speak out. I should be clear that this is not an argument to shut these technologies down; obviously there are many positive benefits that we can derive from them. Rather, it is a plea for us seriously to ask what we are giving up with the excessive amount of time we are spending on them and for us to scale down this amount.

Marshall McLuhan's classic pronouncement, "The medium is the message," may serve us as an introduction to a discussion long overdue. Indeed, our modern day use of information technologies is not just about the content that is accessed and exchanged, but rather, about the wider influences these technologies are having on our people, our

organizations and our society. While the benefits of these technologies are many and have been amply stated, until recently, little has been said about their negative impacts.

In 1990, I wrote an article for the *Sloan Management Review* (SMR) entitled, "Lessons from the Steel Axe: Culture, Technology and Organizational Change." The article described a society, the Yir Yoront, that was literally destroyed through the introduction of technology. Citing research and my own personal experience, I went on in the article to describe some of the negative side effects of contemporary information technologies.

Not much attention has been paid to the negative effects of IT in the years since I wrote the article, while in this same period IT has become ever more pervasive. I believe it is time that we pay attention to the side effects of IT --- especially the new social media. In this article, I will describe what I perceive to be the major harmful effects that the new electronic media are having in the areas of safety, privacy, brain functioning, relationships, personal and professional effectiveness, aesthetics and individual psychology. It is my hope that this, in turn, will lead to further research and greater sensitivity about the use of modern technologies.

In this paper, I will point the reader to the increasing body of research that is appearing on the negative effects of electronic media, and especially electronic networks. While the reader may have already seen some of this material, it is my hope that my unique contribution will be to weave a pattern around what is happening and to answer the question that as yet has not been adequately addressed --- namely, *"What is it that is causing our obsession with electronic media? What, for example, would make the appeal so strong that in some cases we would even risk our lives and the lives of others in order to experience it?"*

Defining the New Electronic Media

For my purposes, I will define the new electronic media as inclusive of the following items.

- Texting

- Use of cell phones

- Social networks such as Facebook and My Space

- Twitter and related offshoots

- Email

- Gaming

- Instant messaging

- Internet

- Virtual worlds such as Second Life

- Web 2.0 to include items such as blogs and wikis

In the sections that follow, I will describe the harmful side effects these media are having on our society and its inhabitants.

Safety Concerns

Little probably needs to be said about the safety concerns of electronic media. The use of cell phones while operating a motor vehicle, for example, has reached crisis proportions. Especially concerning is the use of texting while driving. The National Safety Council estimates that each year as many as 1 million crashes – or 18% of all U.S. accidents – may be caused by texting. And many of these are fatal.

On January 27, 2010, the Washington Post featured the following story.

U.S. bans truckers, bus drivers from texting while driving

By Ashley Halsey III
Washington Post Staff Writer
Wednesday, January 27, 2010; A07

According to the Washington Post, the announcement followed a study released in July by Virginia Tech's Transportation Institute that found that when truckers text, they are 23 times as likely to be involved in a crash or close call.

The texting ban on truckers is seen as perhaps a step that might ultimately fuel a push to ban cell phone use by all drivers. On January 26th, a group of senators unveiled legislation that seeks to bar all texting while driving.

While the concern about safety stands by itself, equally disturbing are the underlying reasons that lead to a practice so obviously prejudicial to the best interests of the wider population. What is it that drives people to have to communicate with others while putting themselves at personal risk and endangering the lives of others? We'll answer this question in a section that follows.

Privacy

What has become painfully obvious to many is the visibility and lack of privacy that social media such as Facebook provide. We know, for example, how pictures of an individual drinking at a college fraternity party may become material used to deny

employment to that individual at a later date. In recent months, another major issue has been the stark realization that content on Facebook was not as private as thought by its members. This has caused a tremendous backlash. There are, however, lesser known aspects of this and other electronic media.

In her book, **In the Age of the Smart Machine,** retired Harvard Business School professor, Shoshana Zuboff**,** introduces us to the concept of the "information panopticon" --- the visibility that information provides others about us and our operations. She borrows the concept of the panopticon from the 18th century English philosopher and social theorist, Jeremy Bentham. Jeremy's plan was to construct a prison building in which the prisoners would be universally visible to the guards and other prisoners. He would accomplish this via prison enclosures made of see-through glass partitions and glass ceilings. The guard tower would also be made of glass. His theory was that the universal visibility would act as a form of social control. He is said to have described the panopticon as "a new mode of obtaining power of mind over mind, in a quantity hitherto without example."

Through modern information technologies, we are indeed visible to the whole world. How will this information about us be used? As Shoshana asks, will it be used to control or empower us? We know, for example, that advertisers use information gathered about us to target products and services. And we know the dangers of identity theft.

While not life-threatening, loss of privacy is a concern to many people. Phone calls, texts, emails, tweets and invites to befriend others, make us highly interruptible and often deprive us of precious moments to be by ourselves. As we will discuss later, for some this is a relief from fears that accompany being alone with oneself, but for others, it is a rude invasion of something that we treasure.

Recently, my wife and I were in an airport lounge waiting for our plane to board. Seated two seats away was a middle-aged lady in a loud, cell phone conversation. My menacing glances did little to dissuade her from continuing her interruption of my reading efforts. Finally unable to concentrate on the material in front of me, I had to wait patiently till we were called to board the plane.

We all have our own stories about being interrupted by others' discourteous use of electronic media. It seems that no place is sacred anymore from these distractions. You can go to restaurants, churches, sports events, concerts, and even public bathrooms, and see people disrupt what used to be private occasions.

The ultimate in bad taste may well be the following tweet sent by 43-year-old Penelope Trunk, CEO of "Brazen Careerist" blog. "I'm in a board meeting. Having a miscarriage. Thank goodness, because there's a f*** up 3-week hoop-jump to have an abortion in Wisconsin."

Relationships

Many would argue that social networks such as Facebook and My Space have been a boon to personal relationships. Indeed, we re-establish old contacts, meet new people and even become intimate with some. While this may be true, in this section I will argue that the downsides of these networks far outweigh their benefits.

Many studies have pointed out that strong relationships depend upon face-to-face contact. In my *Sloan Management Review* article that I referenced earlier, I described my own experience with a group of senior executives at a three-day seminar event. Previous occasions of this seminar had produced very strong bonding among the participants. It was not unusual, for example, for the attendees to form life-long relationships. This was based upon a model that featured extensive and prolonged face-to-face interaction.

In our new design of the event, we featured technology as the new way of working in future corporations. As a result, we conducted a business simulation in which the participants communicated almost exclusively via electronic means.

At the conclusion of the three day seminar, the energy and excitement that had been present in previous events were not evident. Interviewing one of the participants as he left the premises, I asked about his reaction to the seminar and proceeded to ask about the relationships he had formed. He answered that he had indeed gotten to know the 2-3 members of his own simulation team, but no one else in the seminar. Asking why this was the case, his response was, "That's simple; you only had us meet face-to-face in that first initial meeting, and then, we never saw each other again."

As we communicate more and more electronically, a related concern is that we will lose valuable, face-to-face, communication skills. The January-February 2010 issue of the *Harvard Business Review* describes a study done by researchers at the MIT Human Dynamics Lab. This study found that face-to-face interaction skills are terribly important to executive success. Using sensors to measure these interactions, the researchers underscored their results with the following comment: "We think face time with colleagues is vital, as much as 2.5 times as important to success as additional access to information."

The concern about losing face-to-face skills is especially true with young people who may never have had the opportunity to have developed these skills in the first place. Are we breeding a population of young people that will feel more comfortable communicating electronically, and therefore, lose the ability to be effective in face-to-face encounters?

The former professor emeritus at the MIT Sloan School, Ed Schein, talks about people's ability to "calibrate" others. He argues that as organizations grow our ability to read others and to read their intentions become less reliable. In a similar way, what can we make of networks with thousands of followers whose face we have never seen?

Dr. Karen Sobel Lojeski, from Stony Brook University, introduces the related concept of "virtual distance." She defines this as "the perceived distance between two or more

individuals when their primary method of communication and coordination is not face to face."

On a final note, are we losing the ability to be intimate with those we love? The famous psychologist, Carl Rogers, once said the following about the power of listening.

> "So, as you can readily see from what I have said thus far, a creative,
> active, sensitive, accurate, empathic, nonjudgmental listening is for
> me terribly important in a relationship."

Several months ago, my wife and I were dining at a restaurant in San Francisco. Seated on the patio outside was a young couple enjoying what appeared to be a very intimate dinner. Upon completion of their meal, their conversation suddenly stopped, as both of them pulled out their Blackberries and proceeded to enter into their own, respective, virtual world of electronic communication – no longer present to each other.

In my own case, I find it increasingly harder to listen and to be present to my wife and children. My thoughts are racing to what I need to do and emails I need to answer. While this has always been the case with my busy work life, I feel it has gotten worse since there is no longer the separation that used to occur between my work and my personal life. In the days before people had computers at home and on their person, I would leave work both physically and mentally. Now, that many of us can work anytime/anyplace, I'm not able to leave it behind. As a result, I struggle to be fully present to those I love.

Personal and Professional Effectiveness

A recent study from the Kaiser Foundation found that young people spend practically every waking minute except for school time using some type of media device. The results show that 8 – 18 year olds spend an average of seven and a half hours per day with media devices, or close to 53 hours per week. Going further, the study found that heavy use is correlated with lower grades and behavior problems. It should be noted that TV use was included as part of this study.

Young people are credited with the ability to be multitaskers --- yet, a study done at Stanford University in 2009 concluded that people who focus on one thing at a time outperformed those who are multitaskers. Specifically, the research team found that people who are heavy media multitaskers do not pay attention, cannot control their memory or cannot switch easily from one job to another as adeptly as low-tech people who concentrate on one job at a time.

An article in the September, 2009 issue of the *Harvard Business Review*, "Death by Information Overload," cites a study by Microsoft researchers indicating that people took an average of nearly 25 minutes to return to a work task after an email interruption. In another study, the article cites researchers at Intel who put Intel's annual cost of reduced efficiency, due to handling unnecessary e-mail and recovering from information interruptions, at nearly a $ 1 billion. Later in the article, mention is made of a another

study commissioned by Hewlett-Packard in which the IQ scores of knowledge workers, distracted by email and phone calls, fell from their normal level by an average of 10 points.

Currently, there is great corporate interest in innovation as a competitive strategy. Some years ago, I had a number of occasions in which I led brainstorming sessions aimed at eliciting innovative new thinking. At the time, a popular technique was to first still the bodies of the participants through a technique called "progressive relaxation," developed by an American physician, Dr. Edmund Jacobson. In this exercise, you would have people alternatively tighten and loosen the major muscles of their body, and once relaxed, you would lead them through guided imagery. The theory was that if you could still the body, the mind would follow and you would have fertile ground for creativity to occur. In the next section, we will strengthen this argument with what we now know about alpha brain waves that are produced during such periods of relaxation.

Brain Functioning

Earlier we discussed the extensive use of electronic media by youth. In addition to the concern about their grades and behavior, a concern is that this may also be negatively affecting their brain development. Jane Healy, an educational psychologist, writes the following in an issue of the *American Academy of Pediatrics*.

> "Neuroscientists have shown that environmental experiences significantly shape the developing brain because of the plasticity of its neuronal connectivity. Thus, repeated exposure to any stimulus in a child's environment may forcibly impact mental and emotional growth, either by setting up particular circuitry ('habits of mind') or by depriving the brain of other experiences. While appropriate stimuli – close interaction with loving caregivers; an enriched, interactive, human language environment; engrossing hands-on play opportunities; and age-appropriate academic stimulation – enhance the brain's development, environments that encourage intellectual passivity and maladaptive behavior (e.g., impulsivity, violence), or deprive the brain of important chances to participate actively in social relationships, creative play, reflection and complex problem-solving may have deleterious and irrevocable consequences."

Earlier writers have described their concern about information overload. In 1997, David Shenk, author of **Data Smog: Surviving the Information Glut**, described our limited ability to absorb information before feeling the effects of information anxiety. He says that "Silicon circuits evolve much more quickly than human genes."

Building on this, another Psychologist, Davis Lewis, has coined the phrase, "information fatigue syndrome." According to Lewis, "This term refers to the data smog that we encounter daily that ultimately interferes with our sleep, concentration, and even affects our immune system."

Edward Hallowell, a psychiatrist and expert on attention deficit disorder, argues that the workplace induces a disorder very similar to the genetically based disorder. He calls this, "attention deficit trait."

In an article in the July/August 2008 issue of the Atlantic Monthly, a former editor of the *Harvard Business Review*, Nicholas Carr, wrote an article entitled, "Is Google Making Us Stupid?" In the article, Nicholas describes how the Internet has altered his ability to engage in deep reading. He comments that "…what the Net seems to be doing is chipping away my capacity for concentration and contemplation. My mind now expects to take in information the way the Net distributes it: in a swiftly moving stream of particles. Once I was a scuba diver in the sea of words. Now I zip along the surface like a guy on a jet ski."

In a piece of related research, the National Institute of Mental Health concluded: "Extensive exposure to television and video games may promote development of brain systems that scan and shift attention at the expense of those that focus attention."

Studies have related the production of alpha waves in the brain to good health. Alpha waves are seen in wakefulness where there is relaxed and effortless alertness. We know, for example, that meditation produces alpha waves. On the other hand, beta brain waves are seen in highly stressful situations, and where there is difficult mental concentration and focus. What will be the result, therefore, of constant electronic activity on our long-term health?

Responding to this, an article from The Biocybernaut Institute makes the following statement.

> "Alpha brain wave production is an innate skill of our brains, but one consequence of the modern stressful lifestyle is that we forget how to produce Theta and Alpha brain waves. Then we easily fall victim to anxiety and stress-related diseases. Anxiety and stress measurably reduce the strength of our immune systems. People who have more Alpha waves have less anxiety. Thus having more Alpha waves could mean less anxiety, and correspondingly, stronger immune systems, and this is good for everyone."

The article goes on also to describe the role of Alpha waves in creativity and peak performance, correlating increases in Alpha wave production with greater creativity and strong performance. It's clear, therefore, that for greater performance and long-term health, we should try to produce more Alpha waves. It's also clear that immersion in electronic media activity does the opposite by producing Beta brain waves, which in turn, produce stress and are prejudicial to long-term health. Later, we will discuss how putting away our electronic media and returning to nature can help us produce the Alpha waves that are so important to us.

Another study takes the relationship between stress and brain functioning to another level. In an article in the journal, Evolution and Human Behavior, Leslie Seltzer, a

biological anthropologist, and her colleagues at the University of Wisconsin – Madison, describe what happened to two brain chemicals when girls aged 7-12, feeling distressed after a demanding lab task, had access face-to-face and/or by telephone to their mother's voice, as against what happened when they had only Internet messaging and Facebook connection. The two chemicals they were tracking were cortisol, a stress hormone produced by the adrenal glands, and oxytocin, a neurochemical linked to love, trust and attachment. The results showed quite clearly that the sound of the mother's voice, whether face-to-face or on the telephone, had a marked effect in reducing cortisol levels and increasing oxytocin, resulting in the child feeling much better and de-stressed. No such effects were observed when the child made contact with her mother by e-mail or Facebook.

Psychological Effects

The American Psychological Association has developed a new label --- Internet Affective Disorder (IAD). Past research suggests that 1.4 percent to 17.9 percent of adolescents are addicted to the Internet, according to a study published in the Archives of Pediatrics & Adolescent Medicine. Definitions of addiction generally include spending a lot of time on the Internet, an inability to cut back on usage and symptoms of withdrawal that include boredom, anxiety or irritability after a few days of not going online.

AOL conducted a survey in 2008 of 4,000 e-mail users. Of this population, nearly 60% reported that they checked e-mail in the bathroom, 15% checked it in church, and 11% had hidden the fact that they were checking it from a spouse or other family member.

One of the psychological concerns is the blurring of reality that occurs with the new electronic media. We have known the dangers of gaming for some years, but a new form, virtual gaming, has emerged in recent years. It's most popular version is the game, Second Life, in which a personal avatar takes part in various simulated real life activities.

The November 15, 2008 issue of the San Jose Mercury News contained a very short news clip entitled, "Second Life affair ends real-life marriage." It proceeded to say:

> "Amy Taylor filed for divorce when she discovered her husband
> cheating in Second Life – an online community where players adopt
> personas called avatars, mingle with others and teleport themselves
> into a series of artificial worlds. 'I caught him cuddling a woman
> on a sofa in the game,' Taylor told the South West News Service.
> 'It looked really affectionate'."

Being a university lecturer in information technology, I am expected to be somewhat conversant with every new technology that hits the streets, so when Second Life achieved popular recognition, I decided I had better learn about it. I created my own avatar, and while he was a much younger version of myself, and had a full head of hair, I couldn't really get "into the game." People looking for me now on Second Life will find a sign that says, "Gone fishing." In this case, it's permanent.

I believe that many of our current electronic media pose the danger for us of losing touch with reality. Plato's "Allegory of the Cave," taken from his book, **The Republic**, could well have been written to describe this danger. In the brilliant passage that follows, Plato places his esteemed mentor, Socrates, into the role of describing what takes place.

> [**Socrates**] And now, I said, let me show in a figure how far our nature is enlightened or unenlightened: --Behold! human beings living in a underground cave, which has a mouth open towards the light and reaching all along the cave; here they have been from their childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall built along the way, like the screen which marionette players have in front of them, over which they show the puppets.
> [**Glaucon**] I see.
> [**Socrates**] And do you see, I said, men passing along the wall carrying all sorts of vessels, and statues and figures of animals made of wood and stone and various materials, which appear over the wall? Some of them are talking, others silent.
> [**Glaucon**] You have shown me a strange image, and they are strange prisoners.
> [**Socrates**] Like ourselves, I replied; and they see only their own shadows, or the shadows of one another, which the fire throws on the opposite wall of the cave?
> [**Glaucon**] True, he said; how could they see anything but the shadows if they were never allowed to move their heads?
> [**Socrates**] And of the objects which are being carried in like manner they would only see the shadows?
> [**Glaucon**] Yes, he said.
> [**Socrates**] And if they were able to converse with one another, would they not suppose that they were naming what was actually before them?
> [**Glaucon**] Very true.
> [**Socrates**] And suppose further that the prison had an echo which came from the other side, would they not be sure to fancy when one of the passers-by spoke that the voice which they heard came from the passing shadow?
> [**Glaucon**] No question, he replied.
> [**Socrates**] To them, I said, the truth would be literally nothing but the shadows of the images.
> [**Glaucon**] That is certain.

Are we far from the Allegory of the Cave when we spend countless hours absorbed in electronic interaction? Is our reality increasingly becoming the medium in front of us, instead of the people and the world around us? Some might argue that this is no different than being absorbed in sports, television, music or a good book. Perhaps, but coupled with the other issues we are discussing, absorption comes with a steep price.

In an earlier paragraph, I asked, "What is it that, despite a number of harmful effects, drives us so addictively to the new electronic media?" In this section, I will attempt to answer this question.

One of the greatest fears we all have is that of being "lonely." Philosophers distinguish between the loneliness of the human condition ("existential loneliness") and the loneliness that we experience as a result of our fear of loneliness ("loneliness anxiety") Expanding upon this, Kelley Kelsey writes in a article, "The loneliness and tension which are a part of the human condition can be creative; the loneliness which is a result of fear usually cripples our human potential….Loneliness anxiety only encourages us to develop a life-style that supports our fear (and fosters neurosis) and that further alienates us from ourselves and from others." Later she adds, "In order to overcome or escape our loneliness, we often throw ourselves compulsively and anxiously into an endless round of activity. Or our fear drives us to withdraw from human exchange. Either way, we are reacting to life out of fear and anxiety, which leaves us less open and responsive to what life offers."

In an article in *Strategy+Business*, David Rock, says that loneliness arouses the human threat response. He cites research by John T. Cacioppo and William Patrick, in 2008, showing that loneliness is itself a threat response to lack of social contact, activating the same neurochemicals that flood the system when one is subjected to physical pain.

It is important for us to make a distinction between being "alone" and being "lonely." It is possible to be "alone," for example, and not feel the pain of loneliness. Indeed, for those who value being alone, the loss of privacy that we discussed earlier becomes even more severe.

Is it possible that we rush to electronic media as an escape from the fear of being lonely? In the process, are we losing the vital ability to be alone? Let's discuss this further.

As children, many of us learned to occupy ourselves. We learned to be creative and make up little, imaginative games to deal with our boredom. Unfortunately, some of this has been lost in modern families that believe they have to program all of a child's solitary activities with external games and other artifacts. It's possible, therefore, that the younger generation has never really learned how to be alone with themselves and rush to the electronic media as an escape from boredom, but how about our adult generation? Returning to our earlier argument, the fear of loneliness is so universal that it is likely that we try to escape it for our entire adult years. And if so, perhaps electronic media provides us such an escape.

Aesthetics

The advice to "stop and smell the roses" has probably never been more appropriate. Earlier this year, I was walking along a beachfront when I encountered a woman coming in the opposite direction and having a conversation on her cell phone – sadly, a too common occurrence. "What a loss," I thought to myself. "This person is missing the

beauty of the sea, the crashing surf, the sound of gulls overhead and the smell of the ocean air." And given our earlier discussion about alpha wave production, I might also have added --- "She is also losing the opportunity to create very life-sustaining, alpha brain waves."

Are we becoming passive observers and losing the ability to see, live and experience the present moment --- to be truly present to and with others, and with the beauty of world in which we live? It seems we are like passengers carried along on a high speed train catching fleeting glimpses of life as we pass through it.

People that are able to be "alone," experience a depth of feeling that most of us never experience. Some search their entire lives for the peace and serenity of these moments. Mystics and Eastern monks tell us about feeling "one with the universe" in these peak moments. Perhaps, it is this that defines what it means to be fully human. And if so, the distractions of the electronic media can only be viewed as prejudicial to the best interests of our society.

Several months ago, our adult daughter embarked upon an extended wilderness trip with her dog. Returning from her trip, I subsequently had the opportunity to inquire about her experience. Asking her if she didn't get lonely being remote from people and external stimulation for so long, she made the following, insightful observation: "Dad, I can be alone in such surroundings, but I never feel lonely. On the other hand, I can be in the big city surrounded by people and all forms of stimulation, and feel lonely."

Conclusion

Perhaps what's called for is a return to old values. In the world of technology, a return to former ways of doing things is viewed as old thinking and lack of progress. I'm not calling for an abandonment of many of the benefits that the new electronic media provide us and our organizations, but rather, a balance. Maybe we would leave work at 5:00 P.M. and be physically and emotionally present for the remainder of the night to those we love. On the weekends, we would walk the beaches, building alpha waves to refresh us for the week ahead.

What in the final analysis would we lose if we were to adopt this prescribed regimen? Perhaps, we would be a little further behind on our email and other communication when we return to work, but so what? How much of it is really all that important?