ICARUS'S PARACHUTE

An Anthology on Technology

Winter 2011

The following essays were written for the course "Developing the Technological Imagination" led by Terry Schenold in Winter of 2011 for the Comparative History of Ideas Program at University of Washington. This anthology represents the first part of the Technology Matters Project, which is completed by a series of panel-discussion podcasts that are also available for download on the project website.

Each section of the anthology is organized by a specific technology, conceived broadly, and the essays take up the particular critical interests of the individual contributors. These eight sections correspond to eight podcasts which explore concerns through open discussion. In each case, the guiding inquiry consists in critically imagining how these technologies matter –their implications for culture. We hope that others find these writings inspiring and fruitful for further consideration of the increasing importance of thinking about technology.

Terry Schenold
April 4th, 2011

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by Bobby Beaulac

With the launch of the iPhone on June 29, 2007, smartphone technology was changed forever. Prior to the launch of the iPhone, the United States smartphone market was dominated mainly by the Blackberry, produced by Research in Motion (RIM for short). With the arrival of the iPhone, everything changed; instead of carrying around a Blackberry for cell phone/text messaging and an iPod for listening to music, now it was possible to combine the two devices into one. Further, the iPhone promised a better interface to access the Web, as well as Google mapping technology.

The first iPhone was a giant leap forward. However, the second version of the iPhone (the iPhone 3G, launched July 11, 2008) brought with it access to Apple's "App Store," a portal through which users could add to the applications that came pre-loaded on every iPhone. These applications had to be approved by Apple before they became available in the App Store. However, once the application was approved, any third-party vendor could sell their application on the App Store (for which Apple received a 30% cut of all profits). However, even prior to the creation of the App Store, there was a small subset of iPhone users that had begun to run applications created by third-party vendors on their iPhones. These users accomplished this through a process called jailbreaking. In addition, users with jailbroken iPhones could install an application that "unlocked" the device, allowing it to be used not only on the official United States iPhone carrier (AT&T Wireless) but on T-Mobile's network as well. In this paper, I aim to examine the process of jailbreaking, unlocking, and what impact this will have on the future of the iPhone going forward. More specifically, the question I will be looking to answer is this: what does the battle between Apple and the jailbreaking/unlocking community mean for the future of "open-access" applications and network functions for the iPhone?

To understand fully what jailbreaking is, it is necessary to examine the process by which an application is loaded on an iPhone. In order to install an application on an iPhone, the application must first obtain what's called a "cryptographic signature."[1] This signature is generally obtained from an Apple server, and is meant to verify the application as being approved by Apple and available for download. When one "jailbreaks"

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[1] "iPhone". Taken from Wikipedia, http://en.wikipedia.org/wiki/IPhone. Accessed March 3, 2011.

the iPhone, they replace the operating system of the iPhone with a modified version of the same software; the modified software does not require this signature in order to install applications. Thus, any application created for the iPhone can be installed on an iPhone without first being reviewed by Apple. Users install these apps using an "alternative" application store; the first of which was simply named Installer, and was bundled with the modified operating system installed via jailbreaking. All the user had to do was launch the Installer app, find the application they wanted to install, and tap the "Install" button. Today, the most popular of these installer applications or "alternative" App Stores is named Cydia, and it contains thousands of applications available for download, many of which are free and designed to circumvent Apple's original design intentions for the iPhone. Cydia also allows developers to charge for apps, much like the Apple App Store. However, Apple never sees a cut of the profits for apps purchased in the Cydia Store.

iPhone users who choose to jailbreak their iPhones have a wide variety of unauthorized applications available to download. One of the most notable of these applications is named MyWi. With MyWi (a $19.99 purchase), an iPhone user can create a personal Wi-Fi network using the iPhone's mobile data connection. This network can be accessed by users on any device that can connect to Wi-Fi; allowing a user to share their data connection with multiple other devices. This process, normally referred to as "tethering" when limited to a single device, has recently been authorized by the United States iPhone mobile service provider, AT&T Wireless; however, AT&T charges $20 per month to tether, whereas downloading the MyWi application allows you to tether without paying this charge.

Another application available to jailbreakers is called biteSMS. Initially free to try for two weeks, biteSMS allows users to respond to received text messages, or compose new text messages, from within any currently-running app. Under Apple's standard text messaging system, users must quit out of the in-progress app to respond to or compose a text message. The application also allows you to set custom messaging tones for individual contacts and compose messages to be sent at a later time, neither of which are functions that Apple's messaging system provides.

So if these applications are so useful, why will Apple not allow them to be sold in its own App Store? One reason is because Apple has very strict rules regarding what parts of the operating system applications can access. Another is because applications that are seen to "duplicate existing functionality," such as an alternative web browser for the iPhone like Opera Mini,[2] are against Apple's rules for developers. Finally, another reason that these applications cannot be sold through Apple's App Store is because developers cannot offer functionality that goes against carrier regulations; that is, unless it is released through Cydia or another "unauthorized" application loader.

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[2] "Opera Mini for iPhone: Will Apple Approve It?" Taken from PCWorld, http://www.pcworld.com/article/189509/opera_mini_for_iphone_will_apple_approve_it.html. Accessed March 3, 2011.

Apple vs. the World

Jailbreaking, Unlocking, and the Future of the iPhone

by Bobby Beaulac

It goes without saying that Apple has tried several measures to thwart would-be jailbreakers. With each firmware release, Apple attempts to patch the holes in their own code that jailbreakers use to modify the operating system. However, it's usually only a matter of days or weeks until the jailbreaking community finds another hole to exploit. Apple has also released firmware updates that add no new functionality and are specifically meant to block jailbreakers; version 3.1.3 of the iPhone operating system was one such example of this. Apple policy states that jailbreaking one's iPhone voids the warranty on it. In addition Apple has stated in the past that jailbreaking "can severely degrade the iPhone experience and cause the iPhone to become unreliable."[3] However, any jailbroken phone can be restored to stock software, just as if it had never been jailbroken. Thus, the only way for Apple to enforce this policy would be if one brought their iPhone in for service without having restored it to stock software first. Apple attempted to argue for years that the Digital Millennium Copyright Act made jailbreaking an iPhone illegal. However, on July 26, 2010, the Library of Congress ruled that jailbreaking the iPhone was exempt from the scope of the DMCA.[4] While this exemption is good only for three years (after which time it must be reviewed again), it does provide jailbreakers with a measure of legitimacy to their actions.

So what impact has the battle between Apple and the jailbreaking community had? Well, for one thing, it has created competition. Some of the features that Apple has released for iPhones, such as video-recording capability from the rear camera, were first demonstrated to the public via jailbroken apps (Cycorder, the first video-recording app, was launched in the Cydia installer app in August 2008, beat official Apple-supported video recording to market by nearly a full year; iPhone operating system 3.0, released June 17, 2009, contained this functionality for the stock Camera application). Another consequence of the jailbreaking battle has been increased scrutiny on Apple's policies regarding the iPhone. Just recently, Apple has decided to enforce an often-overlooked section of their Application rules regarding in-app subscriptions. Apple's rules have stated that applications that offer subscription services from within the application (Netflix, for example) must be offered for the lowest price that they are offered via other methods. However, Apple will still take their 30% cut of the profits. This places a strain on developers who may be already operating with a razor-thin profit margin. It is conceivable that some developers may make the move to Cydia to release future apps to avoid having to comply with this new edict. While jailbreakers are currently in the minority of iPhone users (one estimate put the total at around 10% of all iPhones), there are certainly enough jailbreakers in existence to be able to show a profit with the right application.

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[3] Fitzgerald, Thomas. "Breaking Into The Smartphone (Risks Included)". The New York Times, November 25, 2010.

[4] "Jailbreaking officially granted DMCA exemption." Taken from Macworld, http://www.macworld.com/article/152935/2010/07/jailbreak_exemption.html. Accessed March 3, 2011.

Apple vs. the World

Jailbreaking, Unlocking, and the Future of the iPhone

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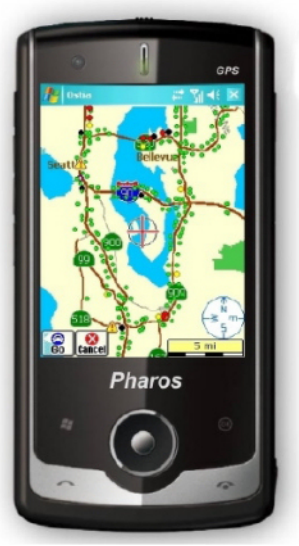
The issue of "unlocking" the iPhone is a separate issue entirely. In the United States, AT&T was the exclusive distributor of the iPhone from the launch of the first iPhone in 2007 until just recently with the launch of the Verizon iPhone. However, every version of the iPhone, from the original model to the iPhone 4, has eventually been unlocked by the jailbreaking community, allowing people to purchase an iPhone and use it on T-Mobile's network, often at a much lower cost for minutes and data. T-Mobile, for their part, has done nothing to block iPhone users from their network. Both AT&T and T-Mobile use the same GSM technology in their cellular networks, which is why only a software unlock is required in order to use the phone on T-Mobile's network. Sprint and Verizon, the other major network providers, use different technology, which is why the Verizon iPhone was constructed using different materials.

While jailbreaking the iPhone is protected by an exemption of the DMCA, unlocking the iPhone is not protected under the same provision. Technically, one is violating the exclusivity agreement that AT&T holds by unlocking the iPhone for use on other networks. However, both jailbreaking and unlocking play into one single important concept; the idea of an open-source iPhone. Who really should control how the iPhone is used? The company that created it, or the end user who paid for the piece of property? Should it be a requirement to use complicated methods to jailbreak an iPhone, just to install a few programs that Apple doesn't want you to run? What if when someone purchased an iPhone, they were free to use it on any network, and install any programs they wished (similar to how we use personal computers today?) How much would you pay for an iPhone with this capability? Certainly more than the subsidized price Apple sells them for today of $199; in fact, this phone would probably be closer to $1000 retail price, when one factors in the lack of contract, lack of subsidy, and open-source rights. This price would be comparable to some of the early PC's of the early-to-mid 1990's. Would this price be too steep for the general public?

I believe that the future holds great promise for the idea of an "open-source" iPhone much like modern PCs are sold today; with a number of applications pre-loaded by the manufacturer but with the capability to install any application made for it. I'm not sure that the same promise holds true for the future of unlocking; while cell phones in Europe can and often are sold unlocked, the United States market has never operated under this sort of flexibility and the logistical issues in moving towards this sort of standard are probably too great for the near future to solve. Just as Windows enabled the personal computer to step forward into the future, it's possible that we could someday look back on this time period and the battle between Apple and jailbreakers as the catalyst for a whole new movement in smartphone technology.

Smart Phone, GPS

by Tanner Nilsen



Before one would fully be able to comprehend and understand the complexity of a device such as a smart phone they would need to first define what a smartphone is and know where they came from. A smart phone can be defined as “a mobile telephone with computer features that may enable it to interact with computerized systems, send e-mails, and access the web.”[1] To delve into the capabilities of a smartphone further one must look at a specific feature of a smart phone first. One aspect of a smart phone is the GPS capabilities that it possesses. GPS stands for “global positioning system,”[2] which in layman’s terms is the application on one’s smart phone called “maps,” or “Locations.” How GPS technology works is a cellphone acts as a two way radio, so for example, a service such as T-Mobile has towers all over the country, and when your T-Mobile cellphone is within the range on the tower it gets service and allows one to connect to the network. Once connected the network can locate the exact location of the phone, and then when the information of where the phone’s owner wants to go the information is sent to the network and then, turn by turn, directions are sent to the phone and it allows one to know where they are and where they are going at all times. The technology we are used to today is not the technology that we have had for very long. We currently live in a world where technology is changing by the day, and no one knows what we will have tomorrow.

The first smartphone came to the market in 1992 by Nokia and was called the Simon. Compared to the technology we are used to today the Simon would look dull in comparison. The Simon had features such as a calendar, notepad, games, world clock, and calculator. The phone did have a touch screen but a stylus was needed for the phone to recognize the information the users were trying to input before it could be recognized. The Simon was “the turn of the century”[3] in the sense that it was leading the way for cellphone technology. Then in 1996, Robert Rennard created TeleNav a company that gave GPS-Based technology to mobile telephone companies that allowed

[1] “The History of GPS." U.S. National Park Services. Available from http://www.nps.gov/gis/gps/history.html. Internet; accessed 04/03/2010.

[2] Ibid.

[3] "GPS Is Smartening Up Your Cell Phone : NPR." Available from http://www.npr.org/templates/story/story.php?storyId=6097216. Internet; accessed 3 March 2011.

Smart Phone, GPS

by Tanner Nilsen

"emergency services to locate a caller's cellphone's geographical position."[4] Since then the cellphone market has boomed causing a "Bigger and Better" outbreak between all of the cellphone network providers. The cellphone technology that we have today is the product of year after year companies putting out a newer model of their products. The smart phone technology didn't really take off until 2007, when Apple unveiled the first iPhone which had capabilities extremely more advanced than any other phone on the market. Today we see two main power houses in the smartphone market, Google's Android and Apple's iPhone. These two companies are coming up with new ways to use the GPS technology in creative and exciting new ways. Since the first GPS system was installed into a cellphone the technology has grown into the amazing technology that we are using today. The simple concept of knowing where someone is at all times has been taken to a new level.

Cellphone GPS technology today has so many amazing features that our society today takes for granted. To start, the original reason the technology was created is one that is used constantly: whether people are going to the store around the corner or out of town on a road trip, they will have their phones out and either be "Map Questing" or "Google Mapping" their way from point A to B. Another example of how this technology is being used is for child safety. Parents now are able to give their children a cellphone, turn on a tracking system that is built into the phone that allows them to know where they are at all times. Also, our world's cellphones are advancing just as fast to keep up with our demand for a bigger, better, faster GPS. Now when one is walking down the street they are able to take out their cellphone and hold it out in front of them, and as they walk past stores be able to see what the store is called and what deals they are offering at the time. This is possible because the phone is able to locate where it is and also locate where the stores are as well allowing it to show the user what is around them at all times. Another aspect that GPS technology allows us to have is star gazing. Smartphones now allow us to simply hold our phones up to the sky and locate any constellation that we want with an application. Then there is the ability that allows us to know the weather that is taking place around us. Phones with GPS are able to locate their location and feed the user information about the weather that is going on around them and will update them with what they can expect later that day and week. Then one can finally this technology has allowed us to connect much easier. With the right cellphones one is able to pull up a map that shows them the streets around them, that has a dot on where they are located and also has dots of where all the users' friends are on the map. Then, simply by touching the dot of one's friend the map will output turn by turn directions to get to where they are. This complex concept of a phone connecting to a satellite in space then relaying a message back to the phone that will not only telling me where I am, but where I am going, and where everyone I know is around me as well is a very futuristic technology.

With the current market that we have today, where everyone is trying to get a piece of the pie and invent the "next

[4] DeMichele, Matthew. "Gps Tracking and the Law Enforcements Role." 82.2, no. (2009): 134-48

generation"[5] of this technology it really makes one wonder where the world is going and what we will be able to discover next. This though processes of what is coming next, brings up a bunch of pros and cons to the future and the power struggle that will take place with the power that would be created with these advancements in science. Some pros to this new technology come from such authors as Julia Turner, who speculates about installing GPS systems into every vehicle, which will advance the world past the point of needing road signs. This would obviously save on several man-hours and resources that could be put to better use in the society that we live in today. Blake Miller discusses another pro to GPS with the ability of no one ever getting lost while hiking or camping because they will know where they are at all times. Lastly, Al Colombo in his book "Futuristic look at Police use of GPS technology,"[6] he discusses how in the future every car will be made with GPS built in and how this will allow the world to function without highway patrol. Cars will be self-monitoring, meaning if one speeds the GPS system will know and the driver will be mailed a ticket.

While, on the other hand, all of the pros of GPS come with cons that detract from the excitement from growing GPS technology, meaning that with increasing power restrictions need to be put in place to maintain order. One con in particular is that with no need for traffic signals there would be a loss of several jobs from the signs being made to the people who place them in the proper locations. Another negative of GPS technology is addressed in Blake Miller's book which discusses how people relying on their phones GPS forget the little details, such as remembering to "tell people where one is going and where they will be just in case" one loses their phone or becomes separated from it. Lastly, a con to using phone GPS systems in vehicles is, if the police department isn't actually on the road and is relying on GPS to write tickets, it will take away from routine traffic stops that lead to the arrest of law breakers.

All in all, technology is something that is growing at an extreme rate and is something that can't be measured. In particular cellphone GPS technology is something that is leading the pack in the technology race. GPS made its name back in the day with only certain privileged people being able to use it, to what we are more used to today with it being available to millions. This did not take place over night and GPS has gone through several changes to get to the stage it is at now that we are used to. Weather or not this growing technology is used in a positive or negative way one thing is clear, this technology is going to keep growing and advancing past the point where anyone today would be able to predict where it will end up.

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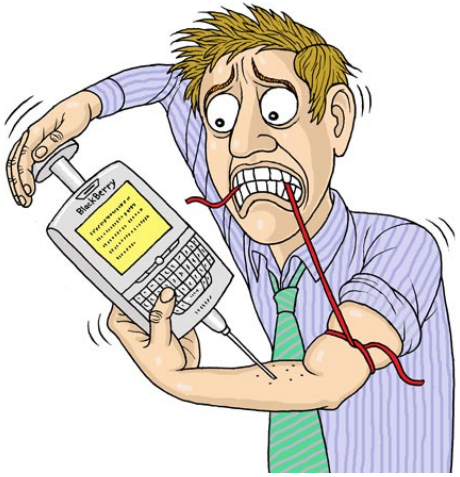
[5] Zhong,GE. *Approaches for Location Privacy.* Waterloo: 2008.

[6] DeMichele, Matthew. "Gps Tracking and the Law Enforcements Role." 82.2, no. (2009): 134-48

From "Always on" to "Always on the Clock"

How the Smartphone has Enabled a Hyper-culture

by Lauren Marriott



The pace of life is increasing exponentially in post-Industrial societies. What is the cause? Many technological theorists and consumers alike point the finger of blame at electronic technologies. In 1998, Stephen Bertman published his book entitled *Hyper-culture*, in which he agued that individuals living in our current moment are plagued by feelings of stress, anxiety and a blurred perception of reality since our experience is being mediated more and more by electronic technologies. These devices operate at the speed of electronic data or even light, and far surpass the human physiological speed of perception[1]. We have come to adapt our actions and expectations for response or gratification to be just as instantaneous as the electronic devices that deliver digital information to us.

No device in recent history has been so pervasive, intrusive and revolutionary to everyday life than the smartphone. Since arriving on the market, these mobile phones have evolved into an all-purpose device that is constantly connected not only to digital telecommunication networks but also the Internet. Cellular phones, PDAs and personal computers have converged into one handheld device that promises the user constant access to information. That level of access is addictive and crippling as much as it is enabling. As more and more segments of the post-industrial populations adopt these technologies, certain speeds, luxuries and practices of life are being left by the wayside. A new, hyper-multitasking life has eclipsed most other ways of living.

Anyone who owns a smartphone will tell you about that pull or urge to be in perpetual contact. The device enables it and the culture that uses it demands it. Hence, how the Blackberry came to known colloquially as the "crackberry". When the first adopters in the public and private sectors came to find that they had constant access to their professional and personal lives they soon became addicted to and dependent upon their smartphones.

MIT professor Sherry Turkle chronicles this dependency in her book *Alone Together*.[2] In it she argues that smartphones create an environment in which the individual is "always on": always

[1] Stephen Bertman, *Hyperculture: The Human Cost of Speed* (Westport: Praeger Publishers, 1998) 1-39.

[2] Sherry Turkle. *Alone Together*. (Basic Books, New York, 2010)

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connected, always working, always communicating and never still. This phenomenon is fairly ubiquitous in today's high-speed world, and the effects are being felt physically and psychologically in overstressed adults and over stimulated children. She argues that constant connectivity costs us in many ways, as we are retreating from being physically present and engaged with the people around us and are instead burying our noses and busying our minds within private networks.

In her research, she explored just how tethered adolescents and adults alike are to their electronic networked devices. One classic scenario she paints is that while it would have once been inconceivable for a family member to be texting at the dinner table, now it's all too common. In today's modern family, Mom is probably checking her email while Dad is responding to a client while the kids are texting or updating their Facebook statuses. What's amazing is that all of this can be done with one type of device in the palm of your hand.

We simply don't turn off because we don't turn off the phone. Adolescents born into the generation of digital natives will grow up without ever knowing that there was another way of living; that in a simpler or perhaps just slower time, an individual's attention was not divided among three different simultaneous conversations or inquiries on multiple networked communication devices.

Our tending to the devices, and the needs of those who try to connect to us through the technology has become in many ways compulsive. Our behaviors regarding the object are becoming more and more like conditioned responses as the mobile devices often intrude upon our attention at inopportune times. Adolescents and young adults have developed a heightened sense about the state of their phones. They know when they have received a text message because they can either hear a tone, see the screen illuminate or feel a vibration[3]. The devices are always kept close, either at hand, in a pocket or in a bag within eyesight. If the phone is not close by, they feel anxious. Users of mobile phones are so conditioned to the sounds or sensations of the device that they are actually aroused by them. Many individuals report feeling phantom vibrations from their devices or hearing the sound of the phone vibrating and will check it reflexively. The phone has become for many like a phantom limb[4]. Viewers of television shows or movies will also compulsively check their devices when they hear the sound of a vibrating phone or chime in the show. I have noticed that I have begun to react to the sound of a vibrating phone in a similar way to how my dogs react to the sound of a doorbell on a TV show. It has become reflexive.

This compulsion, while in some ways a conditioned physical response to an object that we are tethered to, is perpetuated by an unspoken social contract between users of these technologies. Since the messages are instantaneous, and most people keep their phones with them at all times, there is frustration when the human recipients do not respond with the same instantaneity. As Bertman puts it, with electronic devices and speeds come "high-speed frustrations and electronic

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[3] Turkle, 186.

[4] Turkle, 37.

expectations."[5] It has become expected that the proper way to communicate is to respond promptly. Not doing so is considered rude or worrisome.

This tethered experience; the dependency on the device and the habitual tending to the mobile phone has many repercussions on the speed and quality of everyday life and business. It's an important phenomenon to unpack because the smartphone, and all its capabilities, is now irreversibly linked to other technologies that we feel are indispensible in our daily functioning. Why do the digital natives feel so tied to their smartphones? I believe it's because the device has also become one of our most handy tools for checking the time. The digital readout of the smartphone screen is the new watch for many young adults, adolescents and children, and those individuals will habitually check their phones just as older generations of adults checked their wrist or pocket watches. As we are more and more pressed to monitor time, users who habitually use smartphones for this purpose also develop a reflexive "cycling through" the interface of the device, checking for and responding to every SMS, phone call and push notification that pops up.[6]

Undoubtedly, smartphone technology enables individuals to do more on the go. However, it makes certain necessities of life or luxuries of time hard to achieve in our perpetual connection to the global network. One such necessity is downtime or more specifically vacation. It is my belief that the quality of leisure time has been eroded by smartphone technology, more so than any other device that came before it or was incorporated into it.

The claim that vacation no longer exists because of an emerging technology is not a new one. Many feared this was the case when cell phones in general were first introduced. In a study comparing cross-cultural attitudes toward mobile phones, Enid Mante concluded that more so than their Dutch counterparts, who adopted mobile phones very quickly, Americans held a belief that because people expect you to be reachable; it is your duty to be reachable for almost all purposes or reasons.[7] Extended, this means that American employees have assumed the belief that because their employers expect to be able to reach them at all times, that their mobile devices should serve that purpose. The network has expanded to do so. The 3G and now 4G mobile networks have expanded coverage to what were once remote parts of the world, meaning that the traveller carrying such a smartphone is always within reach of their employers and their more intimate social sphere. This has caused what were once separate spheres, the personal and the processional, to be in constant co-presence on the smartphone.

One striking comment from a subject in the PBS documentary *Digital Nation* was that when she went on her honeymoon, she returned two weeks later having no idea what had gone on in

[5] Bertman, 8.
[6] Turkle, 186.
[7] Enid Mante, "The Netherlands and the USA Compared," in *Perpetual Contact: Mobile Communication, Private Talk, Public Performance*, ed. James E. Katz and Mark Aakhus. (Cambridge: University Press, 2002), 118.

the world, be it in her immediate personal circle or within global current events. That type of disconnect no longer exists in the modern vacation[8], because not only do we travel through highly saturated media and news environments, but we also carry on our bodies devices that are constantly connected to the internet. We can always be reached, and we can always check back in with the world, through voice, Internet or applications.

The single largest component that makes the smartphone so intrusive on leisure time and vacation is its ability to sync with personal and professional email accounts. With push notifications that keep a running tally of emails piling up in an inbox; there is an immense amount of pressure felt by the user to reply in a timely manner. Email has been found to instill a sense of urgency even for non-urgent matters[9]. Mobile access to email has made it so not only are individuals "always on" as Turkle and other theorists have noted, but they are also always on the clock. A vacation in this technology environment and set of values means simply working from a picturesque place since there are very few locations in which you can truly be "off the grid."[10]

So what is a digital native to do? How can we resist the phenomenon of always being on and alleviate the stress of being in perpetual contact? Hopefully, the value of balance will promote harmony at the cost of efficiency. In *Wireless Forethought,* forecasters in the mobile phone industry speculated on several different scenarios of the future. One such scenario argued that the pushback against the values of efficiency, time-saving and commerce through the use of mobile phones began in the early 2000s and would give way by 2015 to a society that rejected those values in favor of personal relationships, social awareness and other post-materialistic principles.[11] In 2011, I am not optimistic for that being the case. The frustration is there as is the anxiety. Our perception is skewed by the speed at which our lives operate. Our personal and professional spheres have blended into one that can never be turned off, even if our frayed psyche cries out for a break. I don't foresee the generations who always grew up with these technologies ever recognizing fully that their lives are moving at a frenetic pace because they will never have known anything different. Devices with navigation, translation and Internet capabilities in their pockets will always supplement their travels. The multi-tasking, communicating and personal computing that can be done on their smartphone will fill their downtime in everyday life. They will carry with them and answer to a device that intrudes upon their attention and senses, requires response and connects them to a never ceasing stream of electronic data and communiqués; messages that make themselves known with every glance at the time.

[8] Douglas Rushkoff and Rachel Dretzin. *Digital Nation.* Directed by Rachel Dretzin. 2010. Frontline: PBS. TV

[9] Bertman, 8.
[10] Turkle, 191.

[11] Bo Karlson et al. Wireless Foresight: Scenarios of the Mobile World in 2015. (Chichester: John Wiley and Sons Limited, 2003), 56.

From “Always on” to “Always on the Clock”

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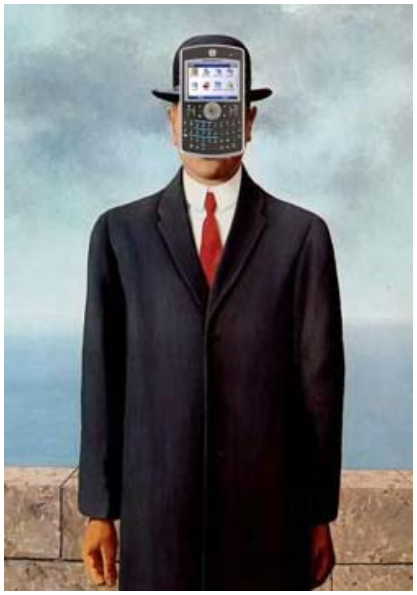
by Lauren Marriott

The moment we are currently in is the hyper-culture that Stephen Bertman first imagined 13 years ago and a device that has so many other technologies converged within it, constantly connected to the global network will continue to shape the ways in which its users and devotees live.

Smartphones, The Identity Device

by Saet Byeol Lee



What makes a smartphone smart? Nowadays, we hear the term "smartphone" more often than "cellular phone" or perhaps, "telephone." Smartphones are becoming mainstream part of the new technology. Whether you are a student at the university using it or a business man or woman taking it to the conference, smartphone is linked to your daily life during both personal and public times. The device is becoming ubiquitous for its computer-like features that allow the users to connect and share databases through social networks, applications, games, music, and much more. We can simply define it as a "mini portable computer" that can be handheld and carried around almost every part of the world. Its differentiation from a mobile phone- a wireless communication, SMS,[1] MMS[2] are only allowed- is what makes the smartphone "smart." But why can't it be the "genius-phone" or maybe the "brilliant-phone"? My concern is, we carry it not only to stay in touch with our phonebook members, but to also save personal resources such as passwords, messages, and other privacies. Is our identity really safe in this little instrument? Although the smartphones are becoming the hot issue around the global, they are still limited in their usefulness. This is actually a boon for their security because they have not been effectively secured to replace a desktop or laptop computer for a lot of high-risk activities.

There are multiple of ways that hackers can explore your information through your smartphones. And the risks can be highly dangerous when our privacy is revealed by anonymous. Despite the fact that we need to look after these risks, we, as smartphone owners, remain oblivious to security risks. We are blinded by the smartness of the phone that we ignore the safety of our personal information being stolen or revealed by others. There are two ways that the attacker can pose significant risk. Either a phone is stolen or lost. Both ways, they can access data if the phone has unprotected memory. In addition, smartphones can be shared with family members or loaned to friends from time to time. The data leakage can lead to serious troubles such as collecting passwords or credit card numbers. To prevent this risk, smartphones include a feature where users can enable passcodes or PIN number to lock the phone. Since this becomes annoying each time the user unlocks it, the simple protection

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[1] SMS – Short Message Service. (Text messages)

[2] MMS – Multimedia Message Service (Photo/picture messages)

Smartphones, The Identity Device

by Saet Byeol Lee

seems unnecessary for us. We tend to leave it unlocked. Other than this physical security risk, we also face a lack of security software. Smartphones, whether they're iPhones, Galaxies, Androids, or Blackberries, can be infected by malware delivered across the Internet connection, or from an infected PC when the phone is connected to computers over USB to synchronize or to upload data. It's even possible to infect the phone via a Bluetooth connection. Hackers can also enter your personal account by creating fake applications. These Hi-tech criminals design such thing to steal the information by copying standard parts from the software and developing as if the program is reliable and genuine. What do the hackers earn from these applications? Once they get enough information from the application you had downloaded, they make money from it just by simply using the data – dates of birth, address, national insurance number, bank account number, and so forth. We're like the young generation that does not know how to secure ourselves from these risks. As "more information is collected about us, and held in more hands and accessible to more people, than ever before," the Smartphone world not only brings us simple entertainment and better features, but puts us to another issue that may become harmful to our realities.[3]

It's pretty ironic that the main purpose of the smartphone usage is quite different from how we view it. The device offers both PC-like system and the combination of a camera phone and PDA[4]. Smartphones are born from cellular phones, a simple communication device, but nowadays, they have become one of the digital worlds for us. They make possible for us to enter the virtual community[5] where social network is possible for everyone through Facebook, Twitter, Cyworld applications. Does this mean that digital natives[6] will face the same problems on smartphones as they do on Internet? Whether you are in online or offline world, peers can look through your information so easily by simply finding your identity. Because you are updating personal information either to share publicly or privately, you are available to do so with the smartphones nowadays. I can sense that "another dominant feature of digital identities that [you] are insecure" by doing so on the device.[7] Meaning that just like all the smartphone users, you are carrying your identity everywhere now. Users forget the fact and ignore the possible damage that might cost. One of the dangers could be where "black markets in which hackers can buy and sell personal information."[8] As long as your smartphone is connected to any accessible applications or account, it's easy for a hacker to store as many information he/she could. Why should you care about it? As far as it goes, young people tend to face these problems online on their personal account without knowing that the issue wouldn't go away permanently although the time has gone for a long time. The wide range of people using the smartphones, no matter how young or old they are, the sources are unsecured and

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[3] Palfrey and Gasser, "Identities." *Born Digital*. 63.

[4] PDA: Personal digital assistant

[5] Virtual Community: Community of people sharing common interests, ideas, and feelings over the Internet and other collaborative networks

[6] Digital Natives: People who have grown up in the digital world using technology as a way to communicate, record, educate and understand

[7] Palfrey and Gasser, "Privacy" *Born Digital*. 31-32.

[8] Loo Alfredo, "Security Threats of Smart Phones and Bluetooth." (Lingnan University, Hong Kong, 2004), 2.

accessible for anyone to connect to and destroy one's personal life by attacking the identity. And it won't go away for very long time just like young generation on virtual community, even though you can move on and forget about it in your digital life.

How would better security on smartphones impact on the future and why does this matter to us? Smartphone is evolving and continuing to grow in large popularity worldwide because of its usefulness. But as their unique abilities open up to greater digital culture, we face the risks that penetrates us from ignoring the potential issues concerning with our daily lives. Better security means the better understanding of us using the smartphones. We know how to protect our identity but we don't do it because we misunderstand the way smartphones work. This matters to us because hackers are not interested in your phones but they *use* your personal information. Palfrey and Gasser stated that "those who do not seek to control or shape their digital identity, whether because they are too skilled to do so or because they are merely daunted by the likelihood of the rock rolling back down the mountain, may well face other problems in the future." You cannot always hide what you want to hide because they can find what you hide, you cannot forget everything and just move on because the future can always refer back to the time, and you cannot create another you just by renewing your identity because it not only exists in your device but also in both of your virtual community and the real community.

Smartphone is just another "smart" way to self-present who you are to the world. I find no differences of what the smartphone feature introduces to you than what Facebook or MySpace introduces to you. Although the small device may have different purpose behind it – to converse wireless with people – like regular telephones, I can tell for sure that the great risk comes all from the personal information that you have given to whatever features the smartphones has invited you to. Does this mean that smartphones give negative impact on both the social and personal societies by revealing one's identity? I believe that the technology cannot protect and promise for any security. Every choice is up to the user to have safe, controlled information on the right technology. With this said, both the social and personal societies depend on how well the user cares about the security. The ways to prevent the risks are simple. "Be vigilant and treat a smart phone as a computer. Almost all of the precautionary measure for computers can be applied to phones, Also, by inventing the time to update knowledge, which is to read the policy and be aware of the attacks that can be attempted by the hackers." [9] Just by doing this, you can avoid any consequences. I believe that security on smartphones is far different from those on the Facebook. You concentrate on one device searching for shopping, maps, weather, and schedule; users find themselves connecting to the social networks by the offered applications. Whereas in Facebook, people intend to use it for social connection by sharing comments, photos, applications and messages through online conversations. It's very interesting that although the Identity Dossier[10] of both technologies is created in different way, smartphones open up to greater risks on apps on that platform. The memory device for a usage for applications and software show the opposite security from Facebook, and other online profiles that users own.

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[9] Loo Alfredo, "Security Threats of Smart Phones and Bluetooth." (Lingnan University, Hong Kong, 2004), 3.

[10] Identity Dossier: Personal profiling of the user

Smartphones, The Identity Device

by Saet Byeol Lee

Less connection to smartphone doesn’t necessarily dissolve any of the previous problems that I have listed above. There are ways to prevent the risks. “It is the duty of phone users to protect themselves” and have a responsibility by thinking about the damages before having yourself in troubles. I don’t think that security on smartphones will really improve in the future. But I believe that future generation will better care for smartphone risks only if they understood its risks.

It's all About the Marketing:

Apps, Apps, and More Apps Google Android Market vs. iPhone App Store

by JoAnne Lee

There are over 100,000 apps that are available to smartphone users. Whether it is from translating a sentence from Spanish to English, using maps to navigate to your location, finding reviews of a restaurant, or updating your status on Twitter, mobile applications are useful depending on what users download. Although these mobile apps are made for the users' preferences, just like there are different netbooks like the MacBook or PC, there are different apps that are available for different smartphone users. In this essay I will be looking at the marketing strategies for smartphone apps, as well as looking into the iPhone App Store and the Google Android Market.

In the world of smartphones, unlike the world of computers, it is diverse. There are six types of smartphones: the iPhone, Blackberry, Windows, Symbian, Palm and the Android devices. With this sort of diversity, there are various apps that can be created specifically for these smartphone devices. However each smartphone runs on different platforms, hardware and software. In order for developers to successfully market out their apps they are going to have to replicate their efforts[1] This shows how fast the marketing of smartphones are quickly developing thus competition between smartphones is quickly rising.

Apps make multitasking very easy when we're on the move. To break it down, mobile applications or apps are "software designed to run on a smartphone or a mobile device"[2] basically making smartphones a mini computer on the move. With apps it is easier to seek information on the move, but how are apps formed? There are certain things that an app developer must consider when creating their apps. Mobile network providers such as Verizon and AT&T depend on these apps as a part of their marketing strategy to sell the smartphones they are trying to sell to their customers. Here are some of the considerations that app developers need to take into that is provided in this magazine article: figure out a marketing strategy for the app and how it serves as an extension, which smartphone would this app be most useful phone, and lastly how it can stand out against the thousands of apps that are available to download or buy.[3] Out in the world of marketing, especially when it comes to apps, it is important that app developers and smartphone providers think of a strategy to make for their apps to sale. If an app becomes successful, it would be beneficial to advertisers

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[1] "The Myths of Mobile Marketing." 2010. *Marketing.* February 10.

[2] Ting, Richard. "Want a Deeper Connection? Apps Are Where It's At." *Advertising Age* 79, no. 33 (2008): C-6-C-6.

[3] Sullivan, Elisabeth A. 2010. Marketing App-titude. *Marketing News* 44 (3)

and brands. In the apps store, there are different versions of the applications that are available. There is the full version, lite, and overall there are over 300,000 applications for all smartphone providers.

The very first mobile application on a smartphone was the release of the iPhone App Store. It was released in the summer of 2008, when Apple was releasing the second generation of iPhones. The operating system that the iPhone App Store uses is the iOS, the iPhone Operating System. This operating system is only used for a single hardware device, which is only available on the Mac OS 10.5+. This operating system is where apps are written specifically for the iPhone and the iPad. The App Store from Apple has the most applications out of all the smartphone apps in marketing, but there is always a competitor. In the following year, Google has released their first smartphone the Droid through Verizon. The Droid uses the Android Market, which operates on a Linux based portal from the Open Hand Alliance. The open model that the Android Market offers allows third-party app developers to submit and application and freely as developers only need to fill out a form and apply.[4] Both systems have their differences and overall are the top two competitors in the world of smartphones aside from the Palm and the Blackberry.

The iPhone iOS system in terms of submitting apps, is a long process. If developers want to put their apps out on the iPhone App Store, they need to get this approved by Apple. Once approved, it becomes branded as an iPhone application, thus making it only iPhone only. How the iPhone iOS usually works is developers must go through Apple to get their applications approved. These applications may be something in which Apple envision in what they put on their applications for their users "including tools like Interface Builder, a graphical editor for creating the user interface of an application."[5] This may be a positive aspect since there are apps that can be solely used for iPhone users, but the downfall is that it is difficult for third party factor to upload their apps, unless the phone is unlocked or in other words, jailbreaking it. The term jailbreak is unlocking the iPhone so that users are able to get more apps from the iPhone App Store from third party factors. An unlocked iPhone can also able users from different mobile networks either T-Mobile or Verizon to use it. Having the iPhone unlock can open users use and download apps that can be obtained outside of what the iPhone App Store limits. Once unlocked, there are variety of apps that are available to for iPhones that Apples prohibits such as video messaging, and syncing with other email accounts such as Gmail. Even though the iPhone is the leading app seller in terms of marketing, without unlocking the iPhone, there are apps that users are limited to. Even though Apple's solution is to deliver hardware and software. This isn't bad for application developers who want to write for the iPad or iPhone, but it does little for companies that want to build connected embedded devices."[6]

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[4] Perenson, Melissa J. 2008. Google Android Apps Compete With Apple, iPhone. *PC World* 26 (12):28

[5] Wong, Bill. 2010. GOOGLE'S ANDROID AND THE APPLE'S IOS WINNER IS? : Penton Media, Inc.: 36

[6] Wong, Bill. 2010. GOOGLE'S ANDROID AND THE APPLE'S IOS WINNER IS? : Penton Media, Inc.: 38

It’s all About the Marketing:

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by JoAnne Lee

In contrast, the Android Market seems to give smartphone users a wide variety of applications that are ready to be downloaded on to their phones.

The Android Market runs on a different operating system than the iPhone iOS: “whereas all the iPhone programs must go through Apple before they can be posted, Market will operate on a completely open model.” [7] With these open models, this enables the third-party put their apps out in the market for users to download and buy. According to the Co-founder of the Android Market, "it's called Market, not a store, so developers can reach consumers directly, with no middleman.”[8] There are no limitations or approvals developers must go through in order for their apps to be approved by the company. Thus this is easier for third-party factors to upload their applications onto the Android Market.

What sets the Android Market aside from the iPhone App Store are two things: it enables the user to multitask between apps and has widgets. Being able to multitask between apps is what the Android markets are hoping for. The use of multitasking “that means you can download multiple programs or music tracks at once, for example, or have the phone's instant messenger running in the background while you surf the Web”[9] while on the iPhone, “if you navigate away from the AOL Instant Messenger app, you're no longer logged in to the service; you must reopen AIM and log back in.” [10] The ease of multitasking on the Android devices allows the users to freely go back and forth between apps, making it easier to operate. The Android are the only smartphone devices that have widgets and this allows no loading time between apps.

Even though the Android Market may be lagging a bit behind the iPhone there are some applications that are only available. Since it the Android Market is just like a PC, this website lists the top six apps that is not available to iPhone are: OpenHome, Google Voice, NESoid, Google Finance, Google Listen, and the Gmail and Google Calender.[11] Most of these apps are only available in the Android Market because of their ability to multitask and have widgets, but also the syncing of accounts makes it possible. With the NESoid app surprised me the most since I would have never imagined to ever see old video games to be playable on the palm of your hands. This shows that there is clearly a difference between the application stores of iPhone and the Android devices.

Although the operating systems of the iPhone App Store and the Android Market are completely different, “the winner of any comparison between Android and iOS is essentially the user. Developers will have to choose based on their

[7] Perenson, Melissa J. 2008. Google Android Apps Compete With Apple, iPhone. *PC World* 26 (12):28

[8] Perenson, Melissa J. 2008. Google Android Apps Compete With Apple, iPhone. *PC World* 26 (12) 28.

[9] Perenson, Melissa J. 2008. Google Android Apps Compete With Apple, iPhone. *PC World* 26 (12):29

[10] Perenson, Melissa J. 2008. Google Android Apps Compete With Apple, iPhone. *PC World* 26 (12):29

[11] “6 Free Apps That Will Make You Drop Your iPhone,” *Mashable*, http://mashable.com/2010/02/28/android-apps-drop-iphone/

application, marketing, and a host of other issues unrelated to the architecture.”[12] In the world of marketing and technology, there are still thousands of apps developers are trying to put out on the market, as well as update and millions of apps are being downloaded each day by smartphone users. There are some smartphone app markets that are only available for specific smartphones such as the iPhone and Blackberry, while other smartphones operate in a more open operating system. Smartphones are emerging to be one of the most influential technologies in a culture where technology determines everything. By everything I mean how you receive information, keep in contact, and what kinds of apps you use. Technology is continuously developing and competition between providers will increase.

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[12] Wong, Bill. 2010. GOOGLE'S ANDROID AND THE APPLE'S IOS WINNER IS? : Penton Media, Inc. 40.

The Use of Social Networking in Non-Profit Fundraising

by Kami Sutton

Before the days of social networking and the internet, non-profit organizations held auctions, sent letters, and made phone calls among hundreds of other ways of raising money and awareness for their cause of choice. Today there are online auctions, emails, and Tweets that are able to achieve the same if not more. This change has occurred over at least the time that I have been involved in charity work and I continue to see it evolving. But how this change has occurred is something I would like to further look into. A little background on my interest in the way that non-profit organizations have changed the way they reach a goal, I think will help to introduce why I would like to further research this change.

I got into charity work back when I was seven due to my relationship with Seattle Children's Hospital as a life-long patient and I also had an interest in the sport of auto racing. At the time, in 1996, I had just found out that I would need a heart transplant and my mom was working at an insurance agency providing crash damage on a racecar that was being campaigned by a local high performance driving instructor and racecar driver, Don Kitch, Jr. Don was planning on running the Rolex 24 Hours at Daytona with three other local drivers and they were going to use this race as a means to raise money for the Uncompensated Care Fund at Seattle Children's. I was introduced through my mom's company to Team Seattle, which is our race team and since then we have raised over 4.3 million dollars that has been split between Uncompensated Care and the Kami Renee Sutton Cardiac Intensive Care Unit. But the way in which we have raised this money has transformed over the past fifteen years.

Just like many other organizations, our goal has always been to maximize the amount of money and awareness we raise each and every year. Although the economy has thrown some punches at our campaign, we have always found a new and improved way to continue raising money. Over the years we have started out with a simple informational webpage, www.teamseattle.com. Along with the webpage we used paper pledge forms that were passed around generously at many businesses and promotional events. We also posted an onslaught of full size posters all over the city in order to get the word out. The webpage evolved to include an online donation page years ago and today this is still our web address but now, our new page links our visitors to our three other networking sites that include, Facebook, YouTube, and Twitter. The look of the page has also evolved into a more professional appearing page from what we had years ago. The way that we use these sites have expanded just in the past two years since the inception of our Facebook and Twitter accounts.

Back in 2009 the team made a move to race at the 24 Hours of Le Mans in France for one year only. Taking our cause global

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was a point that Don Kitch Jr. wanted to make and with the merging of Team Seattle with Dempsey Racing which is owned by actor Patrick Dempsey, we needed a site that would better link our cause and team to our international fans, thus the Facebook page was born.

A year ago I had another project on this very subject but I was limited to only interviewing a person within the Technology industry and writing a short paper on my subject's responses. The person I talked to was James Colburn a Director of Product Marketing at Microsoft. Along with this job James worked at Kitch's Proformance Racing School as an instructor and this is where he was introduced to the Team Seattle campaign. When I asked James what the reasoning behind the choice to use Facebook and Twitter was, his main reason was simple. "Reach."[1] The ability to reach fans who were not local to the Seattle area and wanted to stay up to date with the latest news on the team's fundraising campaign and racing results. At the time of our first race after opening the accounts, James said we had 20 followers on Twitter and 150 Facebook fans. Six months later, our Twitter account was up to 300 followers and 1100 Facebook fans. Within only six months, we had seen a growth of almost 10 fold4. Currently, two years later, our Twitter account sits at 525 followers and we have 1491 fans on Facebook. The growth we have experienced is something that was one of our main goals for expanding our online presence in hopes of not only allowing our current fans to keep up with the team but to gain new fans and most importantly increase the amount of fundraising that was coming in for Seattle Children's Hospital.

The use of social networking as a whole has increased over the years and in the case of Facebook, several studies have occurred to determine the extent to which many organizations were using the site to inform their followers. According to a study, most organizations failed to utilize the technologies available within Facebook to their full potential outside of posting links to third party articles and posting photos. The data included in this study that took place at the North Carolina State University covered the amount of information disclosed to viewers by the 275 non-profit organizations that were surveyed. The one that interested me in this case was the number of organizations that posted photos and links to outside sources which is the type of data most frequently posted by Team Seattle on our Facebook along with real-time updates from the racetrack. In this data, 154 groups posted photos and 149 posted news links. Along with this information, the main piece of information posted was a URL to the main organization webpage which was posted by 224 groups.[2] When I discussed the reasons behind using Facebook versus only our webpage, James discussed the integration of media that can be more easily uploaded onto Facebook. We use our main webpage to allow visitors to make donations and learn more about our history and our mission. Our Facebook lets us

[1] James Colburn, Interview on Social Networking and Team Seattle. Took place in Spring 2010

[2] Richard D. Waters, et al. "Engaging stakeholders through social networking: How nonprofit organizations are using Facebook" *Public Relations Review* Vol. 35 (2009) 102-106

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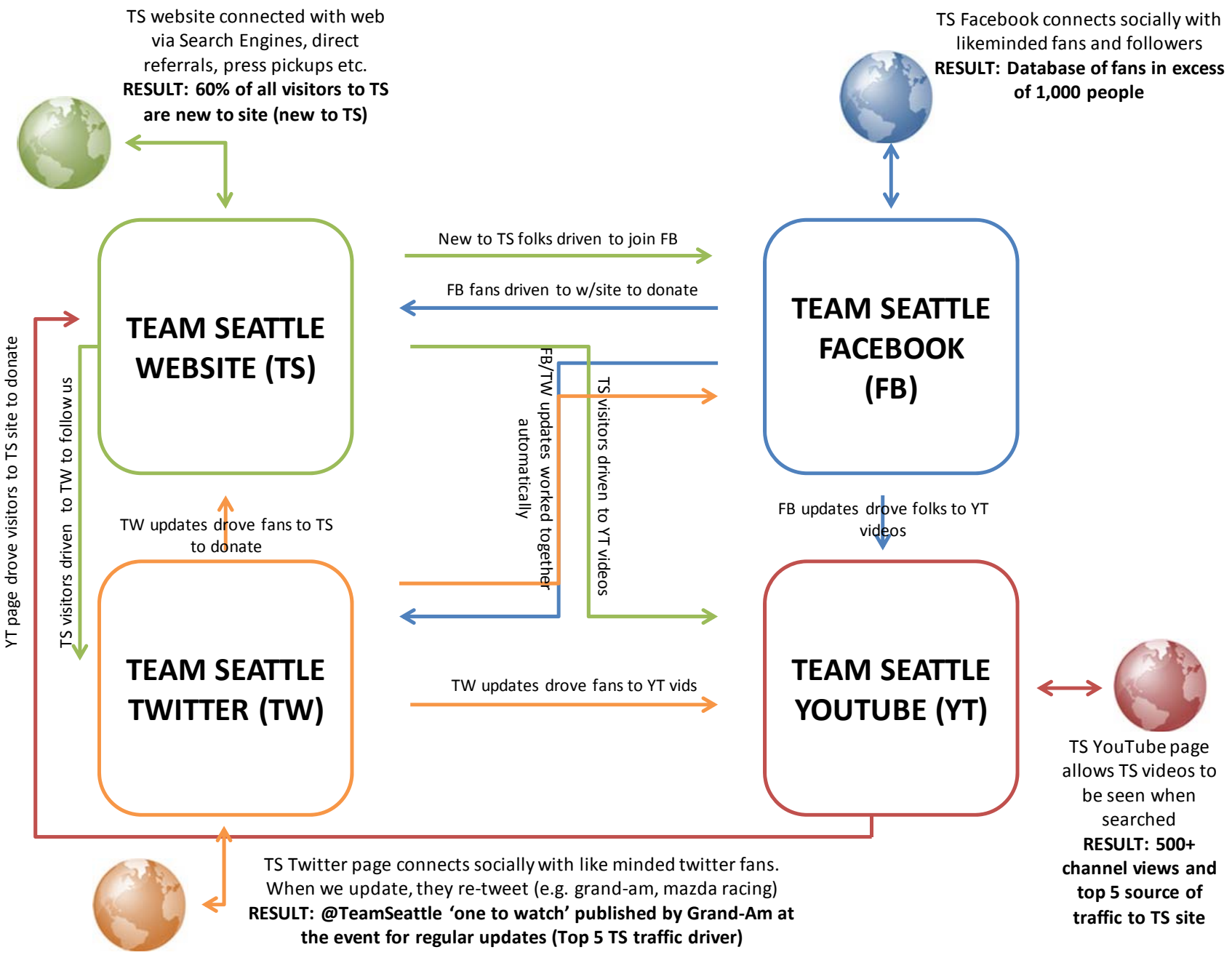
by Kami Sutton



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In the chart that James made for me, which I have included above shows the flow of what information can be found through which of our networking sites and how our visitors flow to the other sites. But as we have discussed in our interview we are taking advantage of persons with similar interests and leading them to our site through connections to Grand-American Road Racing and our team owner, actor Patrick Dempsey. Using these connections, we have gained fans from all over not only the nation but across the globe. I found this to be a prominent idea in a chapter from The Truth about Profiting from Social Networking" by Patrice-Ann Rutledge2. One quote that resonated with me and the ideas that James used in the expansion of our online presence is: "No matter what the cause—children's health, global warming, the arts, or endangered species—savvy fundraisers have discovered that connecting with likeminded individuals and business is a powerful, low-cost way to raise funds."[3] What the quote is referring to, this "ePhilanthrophy Revolution,"[4] the expansion of philanthropists making the move from an offline world to an online world. This move is something that is not a fad and it is a change that is constantly occurring throughout the world and to many non-profit organizations. We are going from a constant paper trail of donors and donations to a completely paperless, online, secure donation sites that allow people to give as much or as little as they would like. The idea that this could become standard practice with every non-profit organization is something that I look forward to see happen over the course of the next several years.

Just by looking at the success of our personal experience with the expansion of our online presence for Team Seattle, I think the online revolution of philanthropy is the future of all fundraising. We have had so many successes we have seen through our expansion including new fans coming together and interacting with the team on Facebook and Twitter by commenting on photos and statuses posted from the race track or Retweeting our results from our last race and Follow Friday suggestions to their followers. Which to many this may sound like a foreign language but to me it is what we are going to be hearing more often when it comes to fundraising lingo. The growth of our followers could be due to these Follow Friday suggestions when our current followers suggest to their followers that they choose to follow our team and maybe by learning more about our team these people will choose to make a donation. We have done contests on both our Twitter and Facebook pages for our fans and they get the chance to win special prizes by making donations to the team. These many different ways of marketing our team makes me more excited for what we can do in the future as technology continues to progress.

It is going to take an immense amount of strategic thinking on how these new marketing plans for social networking are going to be implemented but there are organizations out there paving the way for others. The groups that I am a part of including

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[3] Patrice- Ann Rutledge "The Truth about Social Networking for Social Causes" in *The Truth about Profiting from Social Networking* (Upper Saddle River, NJ: Pearson Education, Inc 2008) 119

[4] Ted Hart, et. Al. "Foreword: Reflections on the ePhilanthrophy Revolution" in *People to People Fundraising: Social Networking and Web 2.0 for Charities* (Hoboken, NJ: John Wiley & Sons, Inc 2007) pg. xi

The Use of Social Networking in Non-Profit Fundraising

by Kami Sutton

Team Seattle, Seattle Children's Hospital and the American Heart Association all three are hard at work creating a following online to raise money for their organizations and to raise awareness. Seattle Children's Hospital as a whole actually just hired a new employee that I was introduced to a couple of weeks ago who's whole job is to run the social networking sites for the hospital and try to spread the word about the work being done. These sites are giving patients and families places to come together and interact with each other to share their own stories of triumph and tragedy, just another way to raise awareness for the hospital. When new followers visit the site and find real stories of patients and families it gives them some sort of real life grasp on what happens at the hospital on a daily basis.

Each one of these examples of the changing landscape of the integration of social networking and non-profit organizations including the idea of "reach", increased fundraising and opportunities to fundraise online, and ways to interact with followers are all the future of fundraising as a whole. It may not seem like it but there is an entire industry that works solely to generate funds for these charitable organizations. The fact is that the industry of professional philanthropists and marketers know that in order to keep up with the current and future prospects of maximum fundraising and awareness, there is a need for organizations to move online. The future of fundraising like I have stressed throughout my study of non-profit organizations and social networking is online. If that is where the people are going, this is where we as philanthropists must go as well if we are to maintain and hopefully increase the amount of money coming in for the causes we support. One quote that I would like to end with comes from a longitudinal study at Dartmouth on Social Media and Charity and I thought it fit perfectly with not only what every charitable organization tries to do but especially what Team Seattle strives to do, "These top organizations have found a new and exciting way to win the hearts (and maybe the dollars) of potential donors."[5]

[5] Nora Ganim Barnes PhD, Eric Mattson "Still Setting the Pace in Social Media: The First Longitudinal study of Usage by the Largest US Charities" (PhD study, Dartmouth University, 2007) 9

Why Is Social Search A Threat To Google?

by Vance Roush

There is an apparent battle brewing between internet giants, Google and Facebook. On the surface it seems as though these are completely different companies with contrasting purposes. Google is a search engine and Facebook is a social network. The assertion that Facebook might be a threat to Google sparked my interest into exploring the root of this claim. My initial research revealed interesting perspectives, specifically, it zoned my focus onto how social searching might be the "next big thing" in search. The reason Facebook has been deemed a competitor to Google is because of its social networking capacities and recent developments in being able to index the web in a socially-focused way. While Facebook is not a search engine itself, the value of social data it collects within its user base makes it a potent force that will soon enrich how search is delivered[1]. My technical object paper explores social search in the context of the changing web, why social search is seen as a major threat to Google, and if it is a legitimate notion that social search is the "Google killer."

The Changing Web

Google was revolutionary due to the company's ability to innovate how to index the web for search purposes. Google has an algorithm that gives websites a "PageRank" based on the analysis of the links that refer to the website. Since webmasters create the links, PageRank is basically relying on positive votes by the webmaster community for their favorite sites[2]. Google has been the most popular tool to use for people to find what they are looking for on the web with currently over 65% of the search market[3].

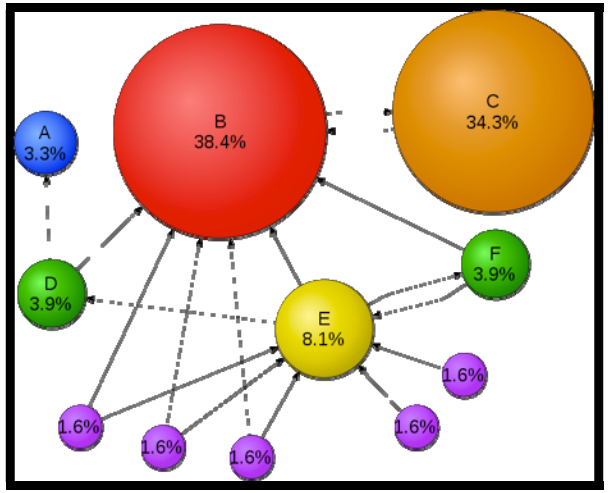

Figure 1 – PageRank evaluates sites based on how many other sites link to them

1 "How the Social Landscape Will Change Search." 360i Report (2010). Web. <http://www.slideshare.net/360i/360i-pov-socialsearchoct2010>.

2Alon Altman; Moshe Tennenholtz (2005). "Ranking Systems: The PageRank Axioms"(PDF). Proceedings of the 6th ACM conference on Electronic commerce (EC-05). Vancouver, BC. Retrieved 2008-02-05.

3 "Recent Search Engine Search Statistics for October-November 2009 by Nielsen Net Ratings « Dallas SEO & PPC Google Advertising Expert Mike Stewart." Dallas SEO & PPC Google Advertising Expert Mike Stewart. Nov. 2009. Web. 05 Mar. 2011.

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PageRank was created in a different time where the landscape of the web did not include such a strong social networking presence. A few years ago, when someone wanted to buy yoga pants, they simply "Googled it," looked at the results, and made a decision. Currently, many might still follow that same process, but a new option has been offered to users. Social networkers now have the ability to pose the question, "What yoga pants should I buy?" to their friend network with a relatively high probability of receiving a recommendation from one of their trusted friends. It is clear that the web is shifting to become increasingly social, and with platforms like Facebook, there is now a substitute for Google in terms of finding what you are looking for on the web. The explosive use of Facebook to find what you are looking for implies that there is room in the market for "social search."

Social Search

Social search is a type of search that takes into account an individual's social graph. A social graph is essentially a mapping of a user's relation with others.

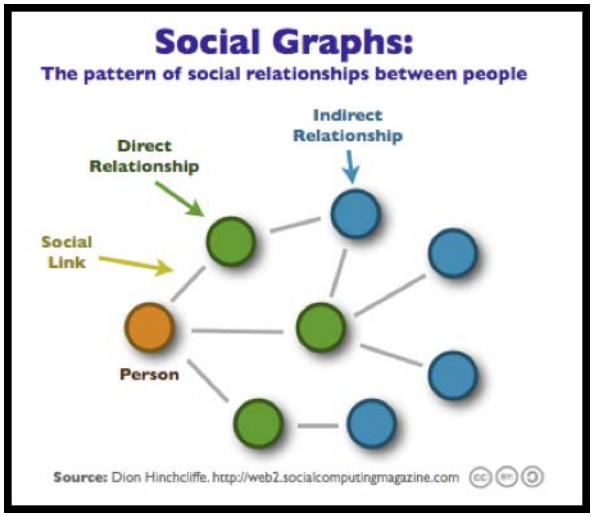

Figure 2 – Mapping social relationships

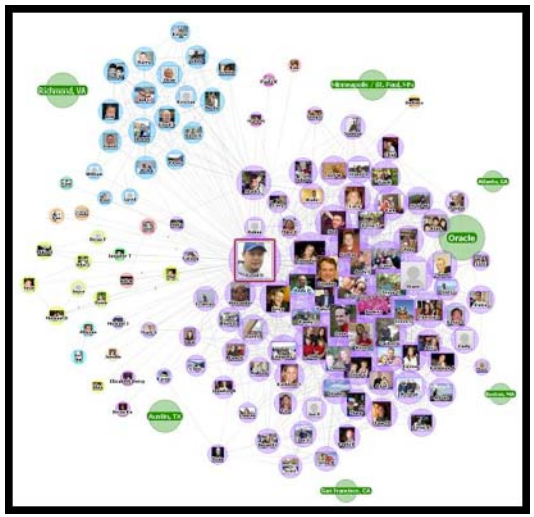

Figure 3 – How Facebook maps social relationships

Why Is Social Search A Threat To Google?

by Vance Roush

In social search, content created or touched by a user is given more visibility in the relevance rankings for returning results for search. While Google's PageRank might have been an innovative way of indexing the web ten years ago, social search has become the modern day innovation for indexing the web. Social search allows for a more balanced partnership between human intelligence with computer algorithms by organizing the web via human tagging, sharing links, and social bookmarking. This model is different from the established algorithm approach where relevance is determined solely by analyzing the link structure of the web page. Some benefits of social search include:

1. Increased relevance because each result has been selected by users
2. Web pages are considered to be relevant from the reader's perspective, rather than the web master
3. More current results because social networks are constantly getting feedback which enables it to display results in the context of changing information

The main drawback of social search is "The Long Tail." This is a concept that there are so many unique searches conducted that most searches are not performed that many times. A search engine that relies on users filling in all the searches would be at a disadvantage to one that used machines to crawl and index the entire web. Furthermore, social search engines have yet to demonstrate improved search results over algorithmic search engines. Meaning, in theory there are many benefits to social search, but no company has actually been able to put it in action effectively[4]. An example of a popular platform that is heading towards the social search model includes Facebook's Q&A which is a utility where you can post questions to and receive answers from the community. If Facebook was able to get a majority of their 600+ million users to use Facebook Q&A and combined it with social graph data, then the implication could be a pretty powerful social search engine made by Facebook. Search results would not be determined by Google robots; rather, a user would receive answers from his or her network! Is this a better way to search though?

Why Is Social Search Seen As A Threat To Google?

Social search itself has not captured a significant portion of the search market yet, but certain behaviors and signals suggest that users are starting to prefer Facebook's social model of finding information as opposed to Google's algorithm. A good example of this trend is seen by Facebook being Levi.com's 2nd best referrer. Facebook captured much higher growth in Levi referrals than Google did.

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4 What's the Big Deal With Social Search?, SearchEngineWatch, Aug 15, 2006

Why Is Social Search A Threat To Google?

by Vance Roush

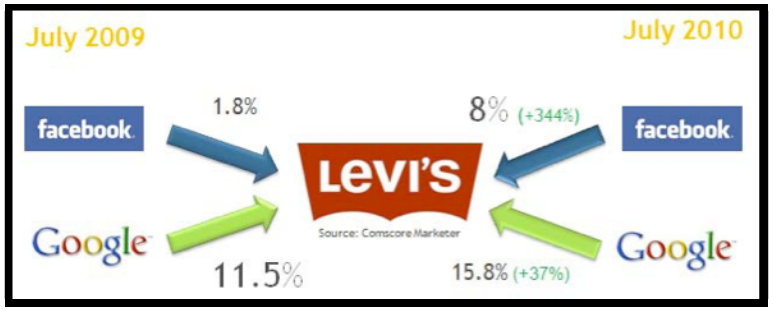

Figure 5 – Facebook becoming a new portal for discovery on the web

As users continue to discover things they are looking for through Facebook, such as popular brands like Levi's, the social networking giant will start to become the main gateway to the web for an increasing amount of internet users. Facebook will continue to provide more opportunities to offer its users what they are looking for with its newly implemented "Like" button. The ubiquity of the Like button on brands' websites will allow any Facebook user to favor any URL by "Liking" it. All endorsements are stored within Facebook's Open Graph. As more and more websites adopt the Like button, Facebook will be able to measure user action or endorsement of Web URLs in real-time. Social search will become more significant form of search as platforms such as Facebook continue to be increasingly savvy at indexing the web with a social focus. With all of the social data, Facebook will maintain an emerging relevancy signal that Google has yet to obtain.

Are The Claims That Social Search Is "Google Killer" Legitimate?

The most relevant developments in social search to date are what Facebook is doing with its social graph. So with all the media hype and conversation of social search being the future, how will social search efforts affect Google? Based on my research, experts say Google will not be affected that much in the near future.

A Facebook Open Graph Search would have a lot of utility in industries such as travel and tourism because if lots of people 'Like' a hotel's website, then it'll go to the top of the Facebook search. What you won't see though will be the more ordinary stuff such as health clinics. For certain types of searches, anything where the people's opinion matters, Facebook has an upper hand with their data. However, there are still plenty of queries for which popular opinion is not the best one and where an objective perspective will be the most appropriate. "I just don't see how Facebook and Bing are going to be a formidable opponent to Google," writes Marketing Pilgrim's Frank Reed. "The trouble lies in the fact that anything that is based on end users opinions is ripe for abuse and manipulation ... In order for search to be truly helpful in a broad stroke manner I believe that there needs to be as much objectivity in the results set as possible[5]." Reed's assertion is extremely relevant because it

5 Frank Reed. "With Facebook Open Graph Search, Is Facebook SEO Next?" Internet Marketing News | Marketing Pilgrim. June 2010. Web. 05 Mar. 2011. <http://www.marketingpilgrim.com/2010/06/with-facebook-open-graph-search-is-facebook-seo-next.html>.

Why Is Social Search A Threat To Google?

by Vance Roush

emphasizes that an individual's network is just a fraction of the entire web. A social graph takes into account what you and your friends have created or touched, but there is still a lot more factors outside of that scope that should be explored by a search engine. Essentially, Google has universal coverage with its search algorithm, and although Facebook is expecting to hit a billion users sometime soon, that's still only one-sixth of the world's population[6]. Therefore, for now, social search utilities and social data will be just a good supplement to be taken into account by search engines.

Does Google Have A 'Social Search' Component?

Although social search has not manifested as a formidable force yet, Google definitely recognizes the importance of the social component to enhance search. Google has repeatedly displayed efforts into moving into the social space including incorporating Twitter into their search algorithm and creating Google Buzz, Friend Connect, Search Wiki, Latitude, Voice, Social Circles and Wave. Unfortunately for Google, none of these attempts resonated with its audience on a large scale. It looks like Google will continue to make moves in efforts to gather social information though. "Google Me" is a project in the social space that Google will unveil in the next few months.

6Addy Dugdale. "Facebook Open Graph Search Brings the Fight to Google | Fast Company." FastCompany.com - Where Ideas and People Meet | Fast Company. June 2010. Web. 05 Mar. 2011. <http://www.fastcompany.com/1663832/facebook-open-graph-search-brings-the-fight-to-google>.

Google Me was announced to be a "social layer" added to existing Google products. A few experts suggest that Google Me is probably already bigger than Facebook.

Google versus Facebook Head-to-Head comparison in terms of system features

Google	Facebook
Activity Stream (coming soon)	News Feed
Gchat	Facebook Chat
Picasa Web Albums	Facebook photos
YouTube	Facebook videos
Blogger	Facebook notes
Profiles	Facebook pages
Email	Facebook messages
Google News	Facebook games
Google Search	New publications set up
AdWords and AdSense	Facebook pages
GoogleApps	Facebook Open Graph
Android Marketplace	Facebook ads
Chrome	Facebook applications
Google TV	
Google Calendar	
Google Reader	

On paper, Google could have an advantage in collecting social data, but it won't mean anything if they fail to find a way to allow for all their products to integrate in a meaningful way

where users can actually use it all together[7]. Google will also need to figure out a way to convince their users to share their information publicly like Facebook did.

Conclusion

While there is still uncertainty as to how social will ultimately endure in search, social and search are already on a collision course. The recent Bing-Facebook partnership is confirmation that the intrinsic value of social context that Facebook holds is imminently going to improve and expand what we view as the traditional search experience.

It is important to note that from observing how Facebook offers its service to Bing one can conclude that it is not trying to be a search engine, and according to Mark Zuckerberg the platform is not meant to become one. Facebook instead wants to provide social layers on top of search results. Conversely, Google is working on a social layer, Google Me, to be on top of its core business of search. Personally, it sounds to me like both giant players have completely different core competencies and can co-exist.

It seems that Google search will be superior to any search utility Facebook could create in the near future, but the scarier question for Google is if search becomes a thing of the past? Mike McCue, a former Netscape executive, recently launched tablet software company "Flipboard," which takes all your Facebook updates, your Twitter feeds, all the news sites you like and subscribe to, and publishes a constantly updated magazine of text, photos, and video. "There is no need to do a search," McCue says. Flipboard sums up the shift going on within the Internet, one that is arguably the biggest change to the web and the way we use it since Google came on the scene. Your network provides you with answers, rather than a robot[8]. In this world, currently Facebook has a huge upper hand in the new way people are starting to find information. It becomes more about personalized discovery instead of abstract search. That is why social search is such a threat to Google. Social search is not aiming to beat Google at its own game, but rather, it is trying to capitalize on a new game that is manifesting with our behavior shift from "search" to "discovery."

If this new model becomes the preference then it would mean that people would start to prefer getting all their information from one platform. This would imply that a relatively closed system encompassing one's network would be the superior option. It's a philosophy that contradicts Google's bet on completely open networks. Google believes social data is just a fractional component of what users want taken into account

7 Michael Copeland. "Google: The Search Party Is over - Fortune Tech." Fortune Tech: Technology Blogs, News and Analysis from Fortune Magazine. July 2010. Web. 05 Mar. 2011. <http://tech.fortune.cnn.com/2010/07/29/google-the-search-party-is-over/>.

8 Michael Copeland. "Google: The Search Party Is over - Fortune Tech." Fortune Tech: Technology Blogs, News and Analysis from Fortune Magazine. July 2010. Web. 05 Mar. 2011. <http://tech.fortune.cnn.com/2010/07/29/google-the-search-party-is-over/>.

when trying to find information. Google considers more than 500 million variables and 2 billion terms with its PageRank algorithm[9]. This sophistication allows Google to keep an "open systems" perspective and to organize the extensive nature of the world's information. Google versus Facebook. Search versus social search. Open systems versus closed network systems. Where will you place your bet?

9 Alon Altman; Moshe Tennenholtz (2005). "Ranking Systems: The PageRank Axioms"(PDF). Proceedings of the 6th ACM conference on Electronic commerce (EC-05). Vancouver, BC. Retrieved 2008-02-05.

The Biggest Small Town in the World

by Manita Holtrop

In a paper called "A comparison of privacy issues in collaborative workspaces and social networks", authors Pekárek and Pötzsch define social networks as "infrastructures, platforms and applications that enable users to communicate, collaborate and coordinate themselves via networks, to establish and maintain relationships and thus in some way map social aspects of real life onto an online environment."[1] Essentially, we are now using social networking platforms as an aid to creating community and social capital.

Author Josh Rose thinks this is overall a good thing. In his article "Why social Media is bringing back our grandparents' values", Rose suggests that online social connectivity is a

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[1] A comparison of privacy issues in collaborative workspaces and social networks. Pekárek, Martin; Pötzsch, Stefanie
Journal: Identity in the Information Society Vol. 2 Issue 1

positive tool that allows us to share more fully in others' lives and thereby build groups which are more close knit, much like we did in small towns hundreds of years ago.

Among the benefits Rose notes is that social networks have brought back the slideshow. He feels that the process of coming home and sharing travels with friends in this way is an important part of the travel experience and the friendship experience. Our grandparents did it, but our parents didn't. The online generation now shares their travels in the same way. Furthermore, families stay in touch with each other more through social networks, and Rose feels this adds to the process of family bonding. Being a regular and the familiarity that that breeds is also enhanced by social networking. For these reasons, Rose feels social networking is much like sitting in the town square of a small village. Talking and getting to know each other in this way is a healthy way for us to create culture, bond and dialogue the ideas of the day. He says the only difference between networking in the village square and networking online is that we are not face-to-face. But since our lives are much busier than they were, online networking allows us to connect with each other where time constraints would otherwise not allow for as much interaction.

Rose makes small town values seem warm and fuzzy, but living in a small town can be constraining. In a village your actions are public, or at least largely talked about in public. If you misbehave or lash out, your reputation can be marred for a long time and the damage is hard to undo. Remember too, that witch trials and lynch mobs come about in the small town mentality. So while there are positives like familiarity and

support in a small town, there are also negatives. Do these negatives translate to online social networking?

I think that while online social networking brings us some benefits like the one's Rose points out, there is a dark side to it and it is having a negative impact on how we perceive ourselves, on our process of self-realization, and on how we relate to others. This paper will explore some of the effects that social networking has on our personal and as a consequence, our communal psyches.

Let's start with the personal. Malcom Gladwell would call me a "connector." I have "a knack for making friends and acquaintances."[2] I live to build bridges and social capital[3] and Facebook could not be a more perfect tool for the job. At least once a day I run through my friend list, mentally remembering how I know each person. Facebook is the platform I use to catch up with that high school friend who married a German guy and moved to Shanghai or to see what my dad is working on in London. In return I contribute by sharing things I find interesting, recommending a good dentist or creating an event to which I invite people.

Facebook reminds me which friends to send birthday wishes to, it allows me to see my friend's vacation shots and keeps track

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[2] The Tipping point, by Malcom Gladwell, 2000

[3] The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites
Nicole B. Ellison, Charles Steinfield, Cliff Lampe
Article first published online: 23 AUG 2007, journal of computer mediated communication.

of events I've promised to go to. Clearly I find great utility for this platform. I would never have the time to do all this in real time, so it really does help me to keep up with my friendship circles. But the very public and digital nature of the medium causes me to temper what I say and also to behave differently than I would in real-time, face-to-face interactions. How does this change how I see myself and how does it change the work of building social capital?

Sherry Turkle describes Facebook as a "performance" of one's self, it allows you to amplify the parts of yourself that you think will make you seem more attractive and popular – "like being in a play. You make a character."[4] The wish to entertain and create a happy public persona leads us to publish only the happy or funny events of our lives. We don't want to build a reputation of being a sad or angry person or spark conversations that might make us look bad. This gives us a sense that since sad feelings or views that disagree with the status quo won't go over well on Facebook, it's more socially appropriate to hide the whole spectrum of sad or "negative" feelings. The result is that we all put up "performances" that are upbeat and sparkly, then we read all these joyful posts and assess that everyone else is happier than they really are, and happier than we are.

A Stanford study backs up this assertion: "Study 2 showed that people underestimated negative emotions and overestimated positive emotions even for well-known peers, and this effect was partially mediated by the degree to which those peers reported suppression of negative (vs. positive) emotions. Study

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[4] Alone together, Sherry Turkle, 2010

The Biggest Small Town in the World

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3 showed that lower estimations of the prevalence of negative emotional experiences predicted greater loneliness and rumination and lower life satisfaction and that higher estimations for positive emotional experiences predicted lower life satisfaction. Taken together, these studies suggest that people may think they are more alone in their emotional difficulties than they really are."[5]

If Facebook were a place or village, the proximity of others would allow us to see both the ups and downs that people go through, but since it is not, we can't. In other words, the negative effects of underestimating other people's negative emotions would be tempered by the proximity of people in a village setting, but they are not tempered in the lonely acts of social networking online. We are left feeling lonely and then beating ourselves up for even having sad feelings, and this is surely detrimental to our growth as fully realized human beings.

We share online to gain group approval and build social capital,[6] but I'm not sure that we can feel the gains in those areas as much as we feel the emotional anxiety about negative feedback or lack of feedback. Turkle describes this anxiety as "presentation anxiety" which results from feeling that one needs to create fun updates to keep people interested in you or keep up with the Joneses. Turkle feels that the "site's (Facebook's) element of constant performance makes people feel alienated from themselves". When we spend time face-to-face we can see how our thoughts and ideas are being received, online we can't and this is what feels so unnerving. So, the negative emotional effects of performance and presentation anxiety as Turkle describes them have negative effects on our psyches. I contend that the fear or saying the wrong thing also leads us to dampen or dull down our public social dialogue as a whole.

Maybe despite its promises of social connectivity, technology actually prevents true intimacy and makes us lonelier.[7] We feel alone, and reach out in an effort to feel togetherness, but the act of networking online can just help to underline that fact that we are sitting alone. Interestingly a Boston Globe article called "The power of lonely" shows there is research to suggest that "blocking off enough alone time is an important component of a well-functioning social life — that if we want to get the most out of the time we spend with people, we should make sure we're spending enough of it away from them."[8] But social networking at home alone on a computer is not interacting in a socially healthy sense and it's also not a way to get a healthy dose of alone time either.

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[5] "Misery Has More Company Than People Think," January issue of Personality and Social Psychology Bulletin, by Alex Jordan, Stanford Accessed via: The Anti-Social Network – Slate.com"By helping other people look happy, Facebook is making us sad". By Libby Copeland Posted Wednesday, Jan. 26, 2011

[6] The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites
Nicole B. Ellison, Charles Steinfield, Cliff Lampe
Article first published online: 23 AUG 2007, journal of computer mediated communication.

[7] Alone together, Sherry Turkle, 2010

[8] The power of lonely: What we do better without other people around, Leon Neyfakh, Boston Globe, March 6, 2011

The Biggest Small Town in the World

by Manita Holtrop

It's all fun and games to get caught up in the content swopping on social media, but as Marshall McLuhan suggests, we need to look at and question the nature of the medium and how it may be shaping us.[9] My research so far suggests that online networking gives us the illusory benefits of being able to do more, connect more and have more friendships, but in chasing these benefits online we experience very real anxiety, loneliness, lack of healthy alone time, lack of intimacy and we learn to repress negative feelings. My conclusion is that this is having a negative effect on personal and the communal psyches of users. One question for further study is how is online social networking going to change the quality of human friendships and culture in the long term?

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[9] The medium is the massage, by Marshall Mcluhan, 1967#

The Age of Social Media Marketing

How to Understand and Survive It

by Karissa Bodnar

Marketing is the process of gathering research, selling products/services to customers and promoting them through advertising to improve sales. A strategy is created within a business to underlie sales techniques, business development and business communication. There is an integrated process through which companies build strong relationships with customers and other businesses along with creating value for their customers and themselves. It is used to identify, satisfy, and keep the customer. For several years this has been the common understanding of marketing in the business place. It was not until less than a decade ago when this concept was turned upside down due to the introduction of social media marketing. In order to survive in this new model, it is important to understand the differences and pay attention to key trends and tips provided by experts who have learned through trial and error.

Social media marketing is a new addition to integrated marketing communications plans within organizations. Integrated marketing communications is a guideline businesses follow to link to their target markets for deeper understanding. While viral marketing was able to give the business world an increased perspective on their customer like never before, social media marketing introduced much more realistic and accurate information. The social media marketing platform is easily accessible to anyone with internet access, thus making it much easier for businesses to communicate with their customer. Social media is also relatively inexpensive for organizations to implement marketing campaigns.

Facebook and Twitter have been the most influential and successful outlets for social media marketing. This can strongly be attributed to the fact that both provide an equal playing field for businesses to compete. Social media has transformed the term “marketing” from selling to engaging. To modify the context of customer relationships from trying to sell to seeking to engage and connect with customers, companies need to use various means, including sites like Facebook and Twitter, to socially interact with people. The most well liked brands in social media tend to post less about their brand or services and more about things to aid in a true connection with their customers and get them to know the people behind the brand. Their goal is less about promoting their product and more about interaction and, as a result, through such engagement people feel more comfortable doing business with those companies.

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Utilizing either in a marketing plan are useful because there does not necessarily have to be a large budget to make one's Facebook page or Twitter feed flourish. People choose to be a "fan," "like," or "follow" a business for several reasons. They can do it for social status reasons, they want to support something they believe in, or simply because they like the information provided by doing so. Randi Zuckerberg who is the Marketing Director for Facebook states, "The great thing about Facebook is that the same concepts/tips/best practices apply to everyone. The reason businesses are so successful on Facebook is that the most valuable thing out there is a recommendation from a friend, whether it's a brand or a movie or a cause. I make the same suggestions about how to most effectively use Facebook to almost everyone I meet with."[1] In order to build a thriving social community around a business, it is important to follow a few things.

First, generate growth numbers quickly within the network. When trying to reach a broad audience, attaining as many active users in the network to reach a tipping point is the most important step. There are more possible people to share the content of the business being added to the page through doing so. The more people like, share, or comment on a page, the more it will show up on other people's news feed which provides exposure and most often results in a boom of fans.

A simple way to get started is to ask users to invite their friends to become fans of the page. It has to be done strategically and not too often or else people will get annoyed and ignore the business altogether. If you can get just 25 friends to invite 100 of their friends each and encourage those they ask to ask their friends, growth will inevitably occur. If there is a budget for it, use incentives for people to join. A restaurant can offer a 10% discount for "liking" the page or a movie rental service like Redbox has been known to give away a free movie rental for simply becoming a fan. This is a great way to get started an eventually an incentive will not be needed to get people to want to participate as the business will gain enough speed where people will want to be a part of it regardless of the benefit for themselves.

Beyond the network you are using, attract traffic to your business' social network page from email lists, blogs, or any other websites where you may have a digital presence. It is very easy to add links to connect people on one network to another. You can even write a specific blog about doing so on the webpage and ask people visiting to become fans of the business. The key is to use what you have, big or small to trigger growth until it grows by itself.

One strategy sparking debate between social media experts is to eventually move people out of Facebook and back to a network controlled by the company. The argument is users will become more constructive if they are at a place where there is

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[1] 21, January. "5 Masterminds Redefining Social Media Marketing." *Social Media News and Web Tips â Ï " Mashable â Ï " The Social Media Guide*. Web. 01 Mar. 2011. <http://mashable.com/2011/01/21/social-media-marketing-masterminds/>.

no external noise from Facebook or Twitter. For example, both Facebook and Twitter have several ads or other distractions ultimately detracting from the information businesses want to convey, so hosting an independent network once it is very established can be beneficial.

Keep the page fresh and interesting by consistently updating the page with new content. More material on the page will give fans or users more to interact with. Randi Zuckerberg provides this valuable tip, “My #1 tip to businesses who want to grow their Facebook Presence requires no additional work — it’s simply to include a photo with every post. A picture truly is worth a thousand words, and if you have a global brand, a photo needs no translation.”[2] Videos on a page also maintain an attentive audience because it can give them something to look forward to and make the page more interactive. They may like something they see and forward the link to a friend and the friend can in turn visit the fan page, then become a fan themselves and so on. By getting into the streams of individual people, the brand will begin to grow quickly if the content is worth reacting to.[3]

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[2] 21, January. "5 Masterminds Redefining Social Media Marketing." *Social Media News and Web Tips â‌ “ Mashable â‌ “ The Social Media Guide*. Web. 01 Mar. 2011. <http://mashable.com/2011/01/21/social-media-marketing-masterminds/>.

[3] Barabasi, A., "The Third Link: Six Degrees of Separation", from *Linked: The new science of networks*., Plume, 2003

Social media marketing is also changing the availability of companies to their consumers. In the past, if we had a very poor or good experience with a business, it could take weeks to tell all of our friends and relatives about it. Today, we can let everyone know in a matter of seconds via Facebook or Twitter. When each customer experience can be simply and widely broadcast, issues companies used to ignore become much more important. CEOs are starting to pick up on the trend by utilizing their own Twitter page and paying attention to what their customers are saying to them. Whereas it used to come in the form of an email or written letter, customer service can now be accessed via Twitter, Facebook, or feedback websites such as Get Satisfaction. This can create more trust between users and businesses and also gives the people at the top a true picture of what is happening in their company.[4] Large companies such as Comcast and Southwest Airlines are using Twitter to make sure their customers are satisfied. Bad experiences are sometimes broadcast quicker and just as easily as the good, it benefits companies to pay attention to individual relationships forged in social media.

As we are in this new era of social media, business are becoming increasingly transparent and more personal. Traditional advertising and public relations will still have a

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[4] Hobsbawm, By Andy. "Social Media Beachcombing: Survival of the Twittest? - BusinessWeek." *BusinessWeek - Business News, Stock Market & Financial Advice*. Web. 25 Feb. 2011. <http://www.businessweek.com/managing/content/may2009/ca2009058_879008.htm?chan=careers_special report -- social media 2009_special report -- social media 2009>.

The Age of Social Media Marketing

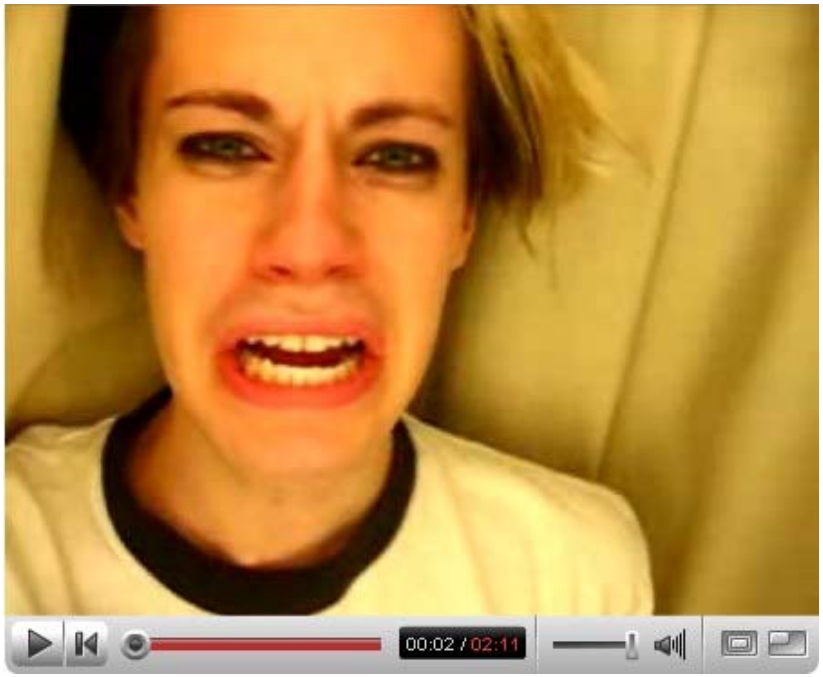
How to Understand and Survive It

by Karissa Bodnar

place in the world of business, but websites like Facebook and Twitter introduce and new type of communication simply inexistent before this time. Seemingly, it is more important for companies to follow through on the opportunity to create more direct and genuine connections with their clients rather than obtaining a large number of followers on social media outlets. Businesses who opt out of the new culture will continuously be at a disadvantage as their customers slowly build more personalized relationships with their competitors. We are now in the age of transparency, immediacy, open-communication and a business' success may have a lot less to do with advertising budgets and much more to do with their quality and efforts put forth in interacting with their customers. In order to survive this shift in business culture, we must first understand, and ultimately change the way we think about "business as usual."

YouTube's Affect on Youth

by Loren Toda



Streaming technology is an interesting subject. It is a technology that has only recently become available due to the advancement of bandwidth and more powerful computers. In this short time, streaming technology has reached a level that allows users to stream even high definition content effortlessly. At the same time, however, there are downsides to this new technology. Experts are saying that streaming technologies, especially YouTube, are damaging teens and kids in ways such as, stoicism and self-inflicted injuries, "continuous partial attention", and cyber bullying. Through this paper, I will synthesize my arguments for the points and offer possible solutions.

Two of the major effects that YouTube has on kids are stoicism and self-inflicted injuries. A study by the journal, Pediatrics, analyzed 100 videos on YouTube depicting self-injury and found that 80 percent were viewable by the general audience and 58 percent did not trigger warnings,[1] asking if the viewer was of a certain age. What this means, is that anyone could view these videos, including children. Some of the videos that depicted self-injury in-action were viewed over two million times.[2] Many of those videos were rated favorably so that they would be at the top of the search list. These videos depicting self-injury may encourage others on the threshold to try it, show how to hide injuries, or even show youth how to inflict self-injury. Considering that 14 to 21 percent of adolescents consistently inflict self-injury,[3] this is disturbing. The best course of action to prevent access to these videos by youth is to favorably rate videos that educate on the dangers of self-injury. The last step would be to redirect searches for self-injury or like keywords to resources for help.

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[1] Lewis, Stephen P., Heath, Nancy L., St. Denis, Jill M., and Noble, Rick. "The Scope of Nonsuicidal Self-Injury on YouTube." *Pediatrics*, 2011: Pg. e552 – e554

[2] Lewis, Stephen P., Heath, Nancy L., St. Denis, Jill M., and Noble, Rick. "The Scope of Nonsuicidal Self-Injury on YouTube." *Pediatrics*, 2011: Pg. e554.

[3] Lewis, Stephen P., Heath, Nancy L., St. Denis, Jill M., and Noble, Rick. "The Scope of Nonsuicidal Self-Injury on YouTube." *Pediatrics*, 2011: Pg. e553.

YouTube's Affect on Youth

by Loren Toda

"Continuous partial attention" is defined as paying only partial attention to everything around you.[4] Teens and kids today are developing continuous partial attention from things like Facebook, YouTube, TV, texting, talking, and the internet. This is because "constant distraction affects not only how well kids learn, but also how their brains absorb new information."[5] We are likely all guilty of a little multitasking with work, school, and life, but is there any reason why kids should be multitasking? In addition, our brains are fully developed and our critical thinking skills are already established, as opposed to a child's brain that is still developing. If they begin multitasking at a young age, they will only develop repetitive thinking skills instead of critical thinking skills that will be needed later in life. Unfortunately, there is no clear solution to this problem. Just telling kids that they can't multitask won't solve anything and likely cause resistance. Some recommendations that I created are to reduce their use of electronics, allow them to be kids, and spend more time as a family.

"Kids between the age of 8 and 18 spend almost eight hours a day using social and electronic media,"[6] meaning that if their use of electronics was reduced, they wouldn't have to split their time between all of the different electronic gadgets. Also, allowing kids to get outside and play allows them to develop social skills that are more meaningful than a friend request on YouTube or Facebook. Lastly, spending more time as a family automatically limits the time the kids spend on the various gadgets and it strengthens family bonds.

The last issue is also the biggest and the most complicated. Unclear guidelines, anonymity, laws, and boundaries make cyber bullying difficult to prevent or stop. Anonymity makes cyber bullying especially difficult to prosecute because there is not a clear culprit and sometimes there is more than one party perpetrating. That aside, I have split this subject into two sections to make it easier to analyze. The first section is offenses against school teachers and staff, while the second section deals with offenses against students. In all cases, students were the instigators of these offenses.

Even "public school administrators and teachers have become targets of online parodies, imposter profiles on social networking sites, and insulting videos on YouTube."[7] There

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[4] The Tesh Media Group. *Kids Are Developing "Continuous Partial Attention"*. 2010. http://www.tesh.com/ittrium/visit/A1x97x1y1xa5x1x76y1x2407x1x9by1x240cx1y5x1fbafx5x1 (accessed March 3, 2011).

[5] The Tesh Media Group. *Kids Are Developing "Continuous Partial Attention"*. 2010. http://www.tesh.com/ittrium/visit/A1x97x1y1xa5x1x76y1x2407x1x9by1x240cx1y5x1fbafx5x1 (accessed March 3, 2011).

[6] The Tesh Media Group. *Kids Are Developing "Continuous Partial Attention"*. 2010. http://www.tesh.com/ittrium/visit/A1x97x1y1xa5x1x76y1x2407x1x9by1x240cx1y5x1fbafx5x1 (accessed March 3, 2011).

[7] Conn, Kathleen. "Cyberbullying and Other Student Technology Misuses in K-12 American Schools: The Legal Landmines."

have been multiple cases where teachers have disciplined students for posting offensive videos on YouTube. A case in Washington involved a male student being suspended for "forty days for secretly videotaping his high school teacher, Ms. M., in her classroom and posting an offensive and insulting audiovisual footage of her on YouTube."[8] The decision was upheld in court and the student was suspended because he violated the school district's policy on sexual harassment and electronic devices in class. In other cases, the laws are too vague towards cyber bullying to be enforced or used appropriately. For example, if a student posts an offensive video about another student is the school allowed to discipline the responsible student? Whose jurisdiction does that fall under? Should the police handle it? Typically, teachers have not been given the jurisdiction because the offense occurred off campus. New laws coming into effect though are changing that. These new laws allow teachers to discipline students if the offense affects the teaching environment in a negative way or poses a threat to the health or safety of others. I believe that the new laws are a good starting point, but they only apply in the states that enact them, while other states have little or no enforcement of cyber bullying. A federal law that covers all the states would be the best case scenario.

In Cyberbullying and Other Student Technology Misuses, the author says this about cyber bullying:

More devastating to children and teenagers because it is "on" 24/7, anonymous, insidiously vicious, and is often committed by perpetrators who are simply "bored" or who react in anger to a "friend's" rejection by publishing private communications about the former friend's innermost thoughts and aspirations.[9]

The most recent big, headline case was of a fellow college student, Tyler Clementi. In this case, streaming technology was used to stream video of him with another male, engaging in a "sexual encounter". Shortly after finding out about the video, Tyler posted a short goodbye message on Facebook and

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EBSCOhost. September 1, 2010. http://web.ebscohost.com.offcampus.lib.washington.edu/ehost/pdfviewer/pdfviewer?hid=111&sid=bafb1b56-ca91-405d-8490-bc1394ab20e9%40sessionmgr114&vid=2 (accessed March 3, 2011). Pg. 89.

[8] Conn, Kathleen. "Cyberbullying and Other Student Technology Misuses in K-12 American Schools: The Legal Landmines." *EBSCOhost.* September 1, 2010. http://web.ebscohost.com.offcampus.lib.washington.edu/ehost/pdfviewer/pdfviewer?hid=111&sid=bafb1b56-ca91-405d-8490-bc1394ab20e9%40sessionmgr114&vid=2 (accessed March 3, 2011). Pg. 96.

[9] Conn, Kathleen. "Cyberbullying and Other Student Technology Misuses in K-12 American Schools: The Legal Landmines." *EBSCOhost.* September 1, 2010. http://web.ebscohost.com.offcampus.lib.washington.edu/ehost/pdfviewer/pdfviewer?hid=111&sid=bafb1b56-ca91-405d-8490-bc1394ab20e9%40sessionmgr114&vid=2 (accessed March 3, 2011). Pg. 99.

jumped off of the George Washington Bridge.[10] Anyone could be the target of cyber bullying, but people with different sexual orientations are a common target. It is unfortunate that something like this happened just because of the poor decisions of others, but it is often cases like this that make us step back and reevaluate our current laws and guidelines.

The best course of action for preventing and stopping cyber bullying is through awareness programs and legislation. Students have to know what to do and who to turn to when they become a victim of cyber bullying. If they are unsure of what to do, they may keep it to themselves or attempt to deal with it themselves. This can lead to violence or ultimately a shooting if the emotions are bottled up too long. With increased legislation, police, teachers, and parents will know what to do, who has jurisdiction, what they are capable of doing, and how to deal with cases of cyber bullying.

In conclusion, stoicism and self-injury, continuous partial attention, and cyber bullying are all serious issues that affect youths when using streaming technologies. We may not be able to completely erase the risk, but we can reduce the number of cases by doing even simple things like creating awareness or reducing screen time for kids. Other situations will require more harsh punishments and measures to prevent repeat occurrences. Thank you for reading.

[10] Friedman, Emily. *Victim of Secret Dorm Sex Tape Posts Facebook Goodbye, Jumps to His Death.* September 29, 2010. http://abcnews.go.com/US/victim-secret-dorm-sex-tape-commits-suicide/story?id=11758716 (accessed March 3, 2011).

YouTube as a Participatory Community: Developing Interactions and Shaping Identity

by Tiffany Oh

As of March 2010, 24 hours of video are uploaded per minute on YouTube, according to the site's timeline. The amount of viewership is just as extensive; "in April 2009 more than 152 million Americans viewed online videos 16.8 billion times, including 107 million who watched 6.8 billion YouTube videos in one month."[1] By now, the statistics are extremely out of date, but they demonstrate the increasing growth and influence of participation on YouTube through producing and consuming. The YouTube community makes it easy to switch between the two roles of producing and consuming, which allows all users to engage in activities such as uploading, commenting on, rating, flagging, subscribing to, and sharing videos. With various ways to interact through the uploaded videos, YouTube creates a place for users to build social interactions and shape self-identity. However, YouTube participation varies in its effects on users, ranging from developing fame status to changing identity, both of which have positive and negative consequences.

Before uploading a video onto YouTube, a user has to produce a video and determine what kind of video to produce. The main categories of videos which don't intersect include personal documentary (dancing, singing, video blogging, appearing in front of the camera doing everyday actions or unusual actions), non-personal documentary (scenery, weather, wildlife, items, technology), and public performance (concerts, sports competitions, street performers). Each category serves similar purposes for each individual and the YouTube community as a whole, but personal documentary videos are the most influential in generating community.

Personal documentary videos serve as ways for users to create "a personal visual history, as well as validation of an experience, one's social self and one's personal relationships."[2]

[1] Michael Strangelove, *Watching YouTube: Extraordinary Videos by Ordinary People* (Toronto: University of Toronto Press, 2010), 11.

[2] David Buckingham and Rebekah Willett, *Video Cultures: Media Technology and Everyday Creativity* (New York: Palgrave Macmillan, 2009), 223.

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Once this validation has been achieved from uploading videos on YouTube, users move on to seek recognition among other YouTube users with a desire for attention. Uploading videos on YouTube also helps users define their own identities and display them for public viewing. Thus, a popular form of personal documentary videos is video blogging, where users often post videos to invite feedback through critique, debate, and discussion, generating social interaction among users. Video bloggers also promote social interaction because they "enable an interaction that gives viewers a feeling of being connected not to a video, but a person who shares mutual beliefs or interests."[3]

An example of video blogging is seen with the YouTube channel of lonelygirl15. Lonelygirl15 had a highly subscribed channel with hundreds of thousands of viewers watching "self-made YouTube videos chronicling the life of an angst-ridden and lonely teenage girl."[4] After some noticed the suspiciously high-quality of the videos, which also seemed to be scripted, the YouTube community began "raising questions about the girl's true identity"[5] and doubting the authenticity. The creators later revealed that the videos were an experiment and that they hoped to turn the scripted clips into a movie. Of course, false identities are widely seen in YouTube videos, but this case is different than others because users were deceived into thinking the teenage girl was sharing actual experiences through her video blogs, when in fact, they were all made-up, just like her identity.

In contrast to the hidden false identity of lonelygirl15, Lucas Cruikshank, a teenager from Nebraska created a character named Fred Figglehorn, who is a six-year-old with anger management issues. One can say Fred is Lucas's other identity, as he portrays his invented character in many videos. Although Fred is a fictional character, Lucas's FRED channel has become highly successful in viewership and subscriptions, which shows that this false identity doesn't detract anyone from watching more of his video clips. YouTube culture accepts the false identity of both lonelygirl15 and Fred because videos, no matter the intent and content of the visual representation, have become a central part in developing social interaction, and users will give any appealing video attention.

Besides video blogging, other common personal documentary videos involve family members and friends, documenting the social relations that take place and also affirming one's identity and standing among family and friends. Posting these videos on YouTube allows users to display their self-perceived interactions and identities to public viewers, who are most likely strangers. Videos of "children's 'cute' activities present happy family interactions, rather than times when children are misbehaving or parents are at the end of their tether."[6] The

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[3] Pelle Snickars and Patrick Vonderau, *The YouTube Reader* (Stockholm: National Library of Sweden, 2009), 83.

[4] Andrew Keen, *The Cult of the Amateur: How Today's Internet Is Killing Our Culture* (New York: Doubleday, 2007), 78.

[5] Keen, 78.

[6] David Buckingham and Rebekah Willett, *Video Cultures: Media Technology and Everyday Creativity* (New York: Palgrave Macmillan, 2009), 224.

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most viewed video displaying family interactions is "Charlie bit my finger- again," which involves Charlie, a baby, biting his older brother's (Harry) finger, while Harry's painful frown eventually turns into a smile and laughter. This happy memory, along with others, has led to multiple resulting parodies, which shows that any YouTube video is "subject to appropriation, remixing, and manipulation."[7] The identities of Charlie and Harry have been completely altered in many of the parodies, but no one knows for sure if the original video and parodies will be critical in shaping their future identities and interactions with others because they aren't old enough to find out.

Many YouTube users have been attracted to YouTube's function of sharing their daily lives and gaining recognition through uploading videos on the site. The desire for attention has produced videos "transferring private family affairs into the public realm and in doing so are transforming a passing moment into a permanent and widespread public memory."[8] A YouTube video labeled "Greatest freak out ever," with many additional follow up occurrences, clearly represents a private family relationship that has been put on public display and will be extremely difficult to remove from public because it has already begun to shape the identity of one of the family members. The younger brother of a teenage boy with anger management issues regularly hides his camera, while recording his brother's freak-outs over issues that would be brushed away in an instant if someone else experienced them. Why does he post these videos of his brother? In an interview, the younger brother states that he felt his family relationship was strange, so he wanted to see what others had to say about it and if anyone else faced similar situations. In a way, young people are increasingly videotaping siblings and parents to increase their self-esteem through the feedback from the social interactions that the YouTube community brings. Little do they realize that the uploaded videos will redefine their sibling's identity, which will probably never be in the hands of their sibling again. Once a video is posted and deleted, it is never completely erased from memory, as other users will find ways to bring back the video online.

One such case of someone losing control of their own identities is the Star Wars Kid, Ghyslain Raza. Raza, labeled as a fat kid, videotaped himself pretending to be a Star Wars character, swinging an imaginary light saber, but his classmates managed to get a hold of the video and posted it online. He didn't become a YouTube star by choice, "prompting Raza to file a lawsuit for harassment and distribution without consent."[9] As a result of the video posted of him online and the constant unwanted attention he caught in public, Raza was diagnosed with depression and dropped out of school to start private tutoring. Even today, the settlement case doesn't mean much because YouTube users have brought back the Star Wars Kid video, reminding us that Raza "will carry the humiliation of

[7] Michael Strangelove, *Watching YouTube* (Toronto: University of Toronto Press, 2010), 59.
[8] Strangelove, 54.
[9] Kelli S. Burns, *Celeb 2.0: How Social Media Focus Our Fascination With Popular Culture* (Santa Barbara: ABC-CLIO, 2009), 65.

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that two-minute moment with him for the rest of his life."[10] Though one may think YouTube is a great method of self-expression, that self-expression can be "altered and damaged by the YouTube community" and can "lead to the destruction of self and identity,"[11] a consequence which users are trying to avoid in the first place.

Not only is YouTube a place for one to "Broadcast Yourself" and upload videos seeking social interaction and representing one's identity, it also functions as a way to share and watch videos with others for entertainment and social interaction. By making it easy to embed links to YouTube videos on social networking sites and e-mail links to family and friends, YouTube "allows users to move seamlessly between traditional mass communication activity of watching mediated content, and interpersonal or social connection activity of sharing it with others."[12] The motives for sharing and watching with others are clear; users seek social interaction and co-viewing, driven by social components, such as inclusion and affection. Users can achieve these social components by viewing YouTube videos with friends and family or even watching them at separate times with the intent of further discussion. Most oftentimes, viral videos have become popular because they were distributed widely through content sharing, either online of by word of mouth. Video content encourages discussion among friends and family, as they are brought together over something they experienced in the similar method of a YouTube video. The ability to share and watch YouTube videos with others is what enhances our social circles and social lives, since we develop feelings of connectedness and closeness from shared experiences.

YouTube culture thrives on the commenting and link embedding functions. Any attempt to prevent commenting or link embedding is met with outcry, which became clear with a YouTube channel for Oprah. Oprah launched a YouTube channel in early November 2007, leading to protest in the YouTube community, as they saw her as an "incursion of such a major corporate media player into YouTube's attention economy.[13] "Oprah was importing the convergence of celebrity and control associated with 'big media' into the social media space (by disallowing external embedding of videos and moderating comments on videos in her channel) and therefore ignoring the cultural social norms that have developed over the life of the network."[14] One would think Oprah would be highly received because of the extent of her world-wide cultural influence and media power, but this moment demonstrated that even Oprah, a well-known corporate figure, is not as influential

[10] Hal Niedzviecki, *The Peep Daries: How We're Learning to Love Watching Ourselves and Our Neighbors* (San Francisco: City Lights Books, 2009), 135.
[11] Michael Strangelove, *Watching YouTube: Extraordinary Videos by Ordinary People* (Toronto: University of Toronto Press, 2010), 187.
[12] Paul Haridakis and Gary Hanson, "Social Interaction and Co-Viewing With YouTube: Blending Mass Communication Reception and Social Connection," *Journal of Broadcasting & Electronic Media*, no. 53 (2009)

[13] Pelle Snickars and Patrick Vonderau, *The YouTube Reader* (Stockholm: National Library of Sweden, 2009), 101.
[14] Snickars and Vonderau, 101.

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as the YouTube community. The removal of Oprah's corporate presence through her channel represented a sentiment that YouTube is meant as a place for social interaction with highly important functions of embedding links and making comments, both of which she hindered.

For almost five years, YouTube has developed into an influential social medium, changing people's lives in ways nothing else had done before. Because it is mainly based on user-generated content, YouTube is a place built on participation from its community; this participation is critical in developing users' interactions and identities, as demonstrated in the previous examples of YouTube videos. YouTube is also a great method for maintaining social relationships with friends and family, while users find meaning in these interactions. As the number of uploaded videos grows, so will the amount of users contributing to the YouTube community, thus shaping more identities of those who have lost control of their own. The consequence of multiple identities being in the hands of others and its effect on our future interactions are still unknown, but we do know YouTube has become highly influential in setting the direction of our future generations.

The Merger of Education and Streaming Technology

by Nylkhalid Jungmayer

Imaae: Reniith Krishnan / FreeDiaitalPhotos.net

Streaming technology has advanced dramatically in the past decade. There have been many uses to this technology such as watching television shows on demand to broadcasting classroom lectures through the internet to students who are not able to attend class. Wiillam Garrison wrote the article, *Video Streaming into the Mainstream*, where he discusses the benefits of streaming technology with regards to education. Streaming technology can help in extending the learning experiences of the students outside of classroom where there are fewer constraints. Garrison argues that the medium is simple, flexible, and interactive, and using it to help students learn would be an asset.[1]

[1] William Garrison, "Video Streaming into the Mainstream," Journal of Audiovisual Media in Medicine 24 (2001): 174-178, accessed February 27, 2011, doi: 10.1080/0140110120094949.

Simplicity is a term used in Garrison's article regarding streaming media. He argues that the concept is simple enough that people should not be weary of the technology, pointing out that a user must simply just point to a hyperlink on the computer and click with the mouse and instantly the computer brings forth images. Garrison claims that software that has been pre-installed on today's computers is capable of bringing forth the streamed media, such as Windows Media Player, Quicktime, and Real Video.[2]

Flexibility is another term Garrison uses to describe streaming media. He claims that streaming media, or video-on-demand, can be called upon by many users at the same time with different intentions. The media does not have to be transmitted to a single point where all the users experience it at the exact same time. Users can watch it anytime, whenever they feel like it.

There is a form of interactivity within the medium because the user must click on links in order to get results. The streaming media does not load on the computer screen without an input from the user. User input is fundamental to the foundation of the internet. Without a user telling programs what to do, the programs would just sit in limbo.

By being simple, flexible, and interactive, many students agreed that streaming lectures could be more effective than live ones. The streaming lectures were simple enough for them to open on current computer software and allowed the students to play and pause as they pleased. Aside from the pause and play

[2] Garrison, "Video Streaming," 174.

feature, students were invited to revisit the material when they found it necessary. Streaming lectures can allow students to review class lectures to supplement their knowledge instead of having to rely so heavily on taking comprehensive notes during a live presentation.

Garrison proposes that streaming media brings a new layer to once bland websites.[3] Websites that incorporate streaming media allow users to experience the stories on the page more than just simple text. However, sometimes streaming media on webpages actually take away from the knowledge in text.

As technologies have become more advanced, many argue that the people's attention spans have decreased. Instead of reading books, students are looking toward chapter summaries. In some cases, many bestselling books are turned into blockbuster movies. Streaming media has encouraged this way of thinking by allowing students to instantly find the video online and watch it. By watching the novel, students are missing the information hidden within the actual book. Their imagination is hindered because the streaming video gives a picture of what the characters and setting look like.

YouTube has helped perpetuate the instant gratification streaming media gives students. Instead of students picking up a book to learn something new, a student can just type in the information they are looking for in the YouTube search field. The output the student receives is a video showing how to do something. For example, if a student wanted to learn how to play the guitar, he or she would just need to type in the search field of YouTube "how to play the guitar" and he or she will get numerous search results of videos about learning how to play the guitar.

Streaming media is not all bad. There are some benefits. For example, streaming media benefits those who learn better with visual instructions. Referring back to the guitar example, a person who reads a guitar method book might not understand how to play a particular cord, but when watching the YouTube video, he or she might then know how to do the proper finger position.

Students learning solely through streaming media can take away from the skills needed to find meaning in a large amount of information. Part of growing up in an information age is that there is a lot of information and some of it is not credible.

In combining the traditional model of education with streaming technology, students will have the most resources available to them. When both the traditional and modern work together, the advancement of human knowledge can occur. Garrison provides an example of the University of Portsmouth funding the Distributed National Electronic Resources (DNER). This project helps students studying life science by giving them high quality video streaming on the subject matter. Portsmouth envisioned the streaming videos as a tool to help the students to better understand life science and succeed in their courses. [4]

[3] Garrison, "Video Streaming," 175.

[4] Garrison, "Video Streaming," 177.

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Video streaming can also be helpful to students who need the extra help. Some video streaming media is readily available to those who need it. Multiple universities and community colleges have incorporated distance learning to their curriculum.[5] Distance learning allows students to take classes on the internet through various online servers. One popular server is Blackboard, owned by Blackboard Incorporated.[6] Blackboard has revolutionized the concept of the classroom. The website has many resourceful tools that professors and instructors can use to enhance their courses. The success of Blackboard could be attributed to the simple user interface. A user-friendly interface may just be what veteran professors need to break through the technological barrier.

However, at the end of the day, streaming media incorporated in Blackboard is still technology. That is to say that there would be cases when power outages occur or the entire computer system malfunctions. Education systems that rely heavily on technology will then be crippled. Being a networked information age has its benefits, but also its draw backs. Streaming media and other forms of technology are still bound by the notion of power. Power is needed for technology to function. If the rate of technology continues to grow exponentially, scientists need to find a way for technology to become less bound to the outlet. Maybe a form of power that can be focused upon is solar technology. Solar farms have gotten to the point where power can be taken from the sun efficiently enough to compete with other forms of power, such as those that come from natural gas.[7] The drawback to solar power comes when they are installed in areas that do not have adequate sunlight.

Another problem that streaming technology has to overcome in order to become incorporated into the education system is convincing instructors to actually use the technology. Sometimes people are hesitant to use technology because they view it as difficult, incomprehensible, and even more time-consuming. However, for those who do accept new technologies, their attitudes are shaped by underlying reasons for adopting the technology. Many teachers acknowledge that by incorporating technologies, such as streaming media, with their current curriculum will help students in the future.[8] Putting the instructor's personal beliefs aside and thinking about educational values within the uses of streaming technology to the students is the foundation of an educational system. Even though some streaming media can be difficult to use, the benefits of such technology is enormous. Teachers acknowledge that a lack of a structural classroom environment

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[5] Lawrence Y. Deng, Huan-Chao Keh, and Yi-Jen Liu, "Ontology-Based Multimedia Authoring Tool for Adaptive E-Learning," *International Journal of Distance Education Technologies* 8 (2010): 42-65, accessed February 28, 2011, doi: 10.4018/JDET.2010100104.

[6] "Skidmore Moves to Blackboard Learn, Release 9.1," *PRNewswire* (2011) accessed on March 1, 2011 from http://www.prnewswire.com/news-releases/skidmore-moves-to-blackboard-learn-release-91-117146468.html.

[7] "True potential of solar power units," *Beverley Guardian (*2011) accessed on March 4, 2011 from http://www.beverleyguardian.co.uk/community/true_potential_of_solar_power_units_1_3144817.

[8] William Sugar, Frank Crawley, Bethann Fine, "Examining Teachers' Decisions To Adopt New Technology," *Educational Technology and Society* 7 (2004):201-213, accessed March 1, 2011.

can deter students' interest. Using Blackboard and other host websites can extend the classroom to the students' domain. In addition, using streaming media in the traditional classroom can increase student interest in the subject matter. For example, teachers can find a video on YouTube about how cells divide during class time when the resources are lacking to do the proper experiment firsthand.

The notion of space is also affected by streaming media. Teachers and students can witness events that normally could not be seen from the distance of the human eye. For example, protests that have recently sprung up in the Middle East can be watched by many political science students who want to study the effects of the protests.[9] This brings back the notion of flexibility as a characteristic of streaming technology. The notion of videos being flexible can allow information to be disseminated to those who are interested.

Although there are some drawbacks to streaming technologies, Garrison believes that, "the combination of 'rich' media with highly interactive websites is the future of the Internet."[10] It is ironic that to help a society with shorter attention spans, the internet has to become flashier with many facets of information presenting itself to the user. With regards to education, streaming media may have a place in the field. Streaming media should by no means be a substitution to the "live" form of education, but an enhancement. Videos and interactive media should parallel students' experiences in the classroom. Streaming media can help broaden the subject matter from the constraints of their local environment because it is simple, flexible, and interactive. The usability of the technology is not the problem to overcome; it is trying to persuade those in the educational system to adopt another resource to help instill knowledge in students. But if streaming media does get woven into society's educational system, how can the technology become more autonomous in a way that it is no longer bounded by the electricity needed to run it. There needs to be a good balance between streaming media and traditional educational resources for the occasions that streaming technology becomes unusable.

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[9] Joel Greenbery, "Palestinian protests more muted compared with unrest elsewhere in the Middle East," *The Washington Post* (2011) accessed March 4, 2011 from http://www.washingtonpost.com/wp-dyn/content/article/2011/03/04/AR2011030406200.html.

[10] Garrison, "Video Streaming," 177.

Youtube: How Streaming Video has changed the Political Landscape

by Brittany Birkett

"Charlie bit my finger." "David after the dentist." "Surprise kitty." Six years ago, no one would be able to find anything in common between these three fragmented phrases. Today, most computer savvy individuals would most likely recognize these as titles of popular Youtube videos. Youtube has undoubtedly revolutionized the way in which we share and view streaming video, but it has also impacted other areas of our society. The realm of politics is a slow changing process that does not usually conform to new trends or fads. However, with the rise of the internet, politicians have begun to use online platforms to further their candidacy and increase awareness about issues. One platform in particular, Youtube, has had some remarkable effects on American politics. It will be argued that Youtube encourages more participation in political affairs by the general public. Additionally, Youtube has harnessed the ability to shift the locus of control and affect election outcomes and has also changed the ways in which the public views political candidates.

Before delving into the political implications of Youtube, it is first important to understand a brief history of the technology and the company itself. Founded in February 2005, the phenomenon known as Youtube was created by two college graduates: Chad Hurley and Steve Chen. Even with the rise in popularity of photo and file sharing technologies, there was no place for individuals to upload and share streaming video. Youtube was created to close this gap. By 2006, Google acquired a rapidly growing Youtube, and the site was acquiring over 100 million views per day. As the years passed, partnerships were made and Youtube became international. In January 2009, the US Congress and Presidential channels were integrated into the website.[1] In February 2010, they launched a Global Live stream of President Obama's Youtube Interview. Today, 24 hours of video are uploaded every minute and the site receives over 2 billion views per day. It is the third most visited site on the internet localized in 23 countries and across 24 different languages.[2] Because Youtube has made such an enormous impact in our society and culture, it is no wonder that its reach has extended into the realm of politics.

The first effect Youtube has had on the political landscape involves not the candidates themselves, but instead the general

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[1] Undefined. (2010). *A Brief History of Youtube*. In Youtube. Retrieved March 1, 2011 from www.Youtube.com

[2] Undefined. (2010). *Timeline*. In Youtube. Retrieved March 2, 2011 from www.Youtube.com

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public. The accessibility and ease of use Youtube makes political participation and interaction much easier for a wider range of people. Katherine Seeyle of the New York Times describes the politics of the past, "A guy in a suit asks mostly predictable questions of other suits. The voter is a fixture in the audience, motionless until he or she gets to address the candidate, briefly and respectfully. Everything is choreographed."[3] However, because of Youtube, the 2008 CNN Presidential Debates looked much different. Voters were encouraged to upload creative videos to the website, and the candidates would answer them during the debate. The creativity of the questions was emphasized, and that type of originality and inventiveness was something foreign to the political arena until that particular moment.

The results of the Youtube Presidential Debate on participation from the general public are undoubtedly notable. Michael Bassik, a Democratic consultant with MSHC Patners noted that YouTube offers an "exponentially greater opportunity to reach a young, active, passionate audience," and this audience is much larger than what is normally reached via nighttime news stations and televised debates.[4] A study conducted by Ricke on the 8,000 Youtube video submissions for the debate confirms Bassick's assertion. According to Ricke results, "traditionally politically underrepresented or disengaged populations were present in a significant number of submissions and… the submissions were political substantive."[5] Clearly, the Youtube debates were able to engage a completely new demographic of individuals. It is amazing to find that the videos were not only from a new group of voters, but the videos were also politically relevant and substantial. One would imagine that with the influx of videos, there would be a large quantity of nonsensical uploads. However, this was not the case. It can be concluded that this new form of political involvement encouraged not only participation, but informed and intelligent participation.

Another study conducted by Kirk and Schill also found similar results. They termed the new interactive phenomenon a "Digital Agora," and noted that this particular type of voter engagement increased "citizen efficacy." In other words, the opportunity to upload a video and possibly see it aired on television gave the voters what they wanted. They were able to actively, rather than passively, engage in national political dialogue. Kirk and Schill put it extremely well when they emphasizes the fact that, "the power of the Internet is in its ability not to transform the political system but to allow individuals to engage and participate."[6] The Youtube debates were able to do just that, and it will be interesting to see whether the same level of participation will be seen in the 2012 elections. A study by Towner concluded that individuals

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[3] Seeyle, K. (2007, June 14). Youtube Passes Debate to a New Generation. *New York Times*. Retrieved from www.NYTimes.com

[4] Seeyle, K.

[5] Ricke, L. (2010). A New Opportunity for Democratic Engagement: The CNN-YouTube Presidential Candidate Debates. *Journal of Information Technology & Politics*, 7(2/3), 202-215.

[6] Kirk, R., & Schill, D. (2011). A Digital Agora: Citizen Participation in the 2008 Presidential Debates. *American Behavioral Scientist*, 55(3), 325-347.

Youtube: How Streaming Video has changed the Political Landscape

by Brittany Birkett

participating in Youtube's YouChoose '08 or the CNN debates were much more likely to vote on Election Day, so it would most likely be beneficial to continue such programs into the future.[7] Overall, it is evident that Youtube was able to leave a large mark on the 2008 Presidential Elections. As a case study, Youtube clearly reveals its power to influence the overarching political landscape, and increased participation from the general public is just ones of its many abilities.

In addition to amplified engagement from a new demographic of voters, Youtube has also harnessed the ability to shift the locus of control and affect election outcomes. In the past, participation in politics was relatively passive. Candidates' mistakes and blunders could be easily edited out of their campaign's advertisements and commercials. When a faux pas was committed before a live audience, the news would reach the most politically savvy of voters, but would probably never reach the disengaged, "maybe" voters. With the opportunity to stream video on Youtube, however, short clips can be uploaded via cell phone or camera in a matter of seconds. Additionally, the platform is the third most visited website in the world, so it is easily accessible by millions of users – informed voters or not. Over time, power seems to have shifted into the hands of bloggers and even musicians. One example of this phenomenon in particular revolved around Senator George Allen from Virginia, "the Republican who lost his bid for re-election… after an amateur video circulated all over the Web and broke through to the mainstream media showing him using the word "macaca" to describe a Democratic campaign worker of Indian descent."[8] This amateur video was spread primarily via Youtube, and its political power was enough to even prevent a candidate from winning a bid for re-election. While his mistake was regrettable, without Youtube, it is unlikely that such an error would have made it into mainstream media.

Another shocking example of how Youtube has shifted control and affected election outcomes was the 2008 release of will.i.am's music video "Yes We Can." It is first important to note here that the Obama campaign had no involvement in the writing of the song or creation of the music video. It was intended to promote the Obama campaign, but by an independent musical artist. The election's team had little to no control over whether or whether not the music video went viral. Wellsten did an intriguing study on the evolution of the video's popularity. According to Wallsten, "the video was an instant hit – drawing over 150,000 views on February 2" and grew momentum at a startling pace from there.[9] On the third day, it drew 600,000 views. During its first month, it was viewed over 5.4 million times. Thousands of bloggers linked to the video in the first few days, and it was clear that the video was going viral. While the Obama campaign team had no control of this video explosion, they did choose to use it to

[7] Towner, T. L., & Dulio, D. A. (2011). The Web 2.0 Election: Does the Online Medium Matter?. *Journal of Political Marketing*, 10(1/2), 165-188.

[8] Seeyle, K.

[9] Wallsten, K. (2010). "Yes We Can": How Online Viewership, Blog Discussion, Campaign Statements, and Mainstream Media Coverage Produced a Viral Video Phenomenon. *Journal of Information Technology & Politics*, 7(2/3), 163-181.

their advantage. Two posts on Obama's campaign blog linked to the music video on February 2nd, and by the 4th, it was picked up by the mainstream media. From this example, it is clear that the control was not with the Obama campaign team. The video spiraled out of control with the help of will.i.am, thousands of bloggers, and Youtube enthusiasts. While the Obama campaign did benefit from the video, his opposition certainly did not. Both the George Allen and the "Yes We Can" examples unmistakably indicate the manner in which streaming video can shift the locus of power away from traditional models and alter election outcomes.

Lastly, just as Youtube has the power to affect elections and the balance of power, it also changes the ways in which the general public views political candidates. In her New York Times article, Seelye observes that, "the video format opens the door for originality and spontaneity — elements usually foreign to the controlled environment of presidential image-making. Because visual images can be more powerful than words, the videos have the potential to elicit emotional responses from the candidates and frame the election in new ways."[10] In the past, candidates in the political sphere were able to carefully control how and when they were viewed by the general public. However, the emergence of Youtube in our society changed much about how the voters view candidates. Like Seelye mentions, the Youtube videos of the 2008 CNN elections provided an opportunity for individuals to see an emotional response from candidates. Emotion and presidential candidate are two words that would unlikely be put together in the same phrase in any other circumstance.
As Marshall McLuhan asserts in his book Understanding Media, "The medium is the message."[11] In other words, the manner in which the message is being delivered is more important than the content of the message itself. A study conducted by Church on the YouChoose feature provided by YouTube for the 2008 Presidential Elections addressed this assertion. Church analyzed the both the introduction and farewell Youtube video clips of 16 presidential candidates.

Results from his analysis showed that the "YouChoose videos favor the candidate's character over political experience."[12] In this sense, the videos being created were catered more towards the overall appearance and personality of the candidate rather than their actual political views and opinions. This could mark a distinct shift in the types of presidents being elected. Because every single candidate must compete at the same level of the others, creating short YouTube video clips and anecdotes are vital in maintaining public visibility. Voters are beginning to perceive candidates in a more personal rather than exclusively political manner since they seem to be speaking directly to the viewer. Therefore, these types of streaming video have had the power to change the ways in which the public view political candidates.

[10] Seeyle, K.

[11] McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. Canada: McGraw-Hill.

[12] Church, S. H. (2010). YouTube Politics: YouChoose and Leadership Rhetoric During the 2008 Election. *Journal of Information Technology & Politics*, 7(2/3), 124-142.

Youtube: How Streaming Video has changed the Political Landscape

by Brittany Birkett

While Youtube is most definitely not the only website tailored towards uploading and sharing streaming video, it is certainly the largest and undoubtedly the forerunner in transforming the political landscape. Engaging more voters, affecting the balance of power and election outcomes as well as changing the way voters view political candidates are just three of the ways Youtube is affecting politics in American society. The political culture is moving away from a passive involvement to a more dynamic, interactive and participatory approach to politics. As streaming video technology like Youtube is still relatively new, it is yet to be seen how it will continue to shape US politics. However, it safe to say that it will.

Motivation-Triggered Collaboration Prevailing in the Face of Institutional Copyright & Profit

by Chunda Zeng

Streaming technologies are rapidly changing the society. Since the streaming media became prevalent worldwide, many people gained fame by uploading their self-recorded videos, hundreds of movies had unprecedented declines in their gross on the Boxoffice, and some politicians harnessed the power of this technology to achieve their election goals. However, one influence of this newly developed media, a more important one, has often been overlooked in the discussion of its social and cultural impacts. Although this is not widely mentioned by those who study the streaming technology, it is plausible to assume that streaming itself is only a medium, but people who use streaming in their everyday life are the ones causing the changes. This cannot be done by an individual or a small group of people. In order for it to impact the majority in the society, a massive number of people are required for the participation in this collective action. Some scholars who study the impact of streaming technology often believe that online streaming is the cause for lowering the profits of the entertainment industry and attenuating the ethical senses of the viewers, but the scopes of the arguments often appeared quite narrow. This paper does not offer extensive analyses on streaming technology. Instead, I incorporate the theory of collaborative action developed by social media scholar, Clay Shirky, into my argument on how the advances in streaming technology are benefitting the society as a whole while hurting some retail industries and causing few short-term social issues. I focus my argument on how streaming media is a form of amateurized group actions similar to blog and social network, except the simplicity is always attached to the participation in this media.

Streaming: another form of piracy?

Before the technology's enablement of video streaming on the internet, the price tags for the movie and music fans were never free, and due to the high cost of certain products, people who could not afford the original ones either bought or pirated the materials at a price that they were willing to pay. Although this kind of piracy helped the consumers save money and keep a physical copy of the albums and movies they liked, it not only threatened the retail industries, but also increased the cost of protecting these copyrighted materials and enforcing the law on piracy. In some developing countries, the pirated CDs were burned or sent to the landfill, which also made anti-piracy environmentally hazardous.

Now, this battle between law enforcement and immoral consumers does not appear to be ending, but it is getting less intense and less costly. Online video streaming has not stopped

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physical piracy, and many people argue that this new technology has invented a new form of piracy. But one undeniable fact is it has been reducing the amount of physical piracy due to a lowered demand. In addition, the cost of protecting the copyrighted products has become lower. When the movie fans hear about a new movie, their choice is no longer limited in going to a theater or waiting for the release DVD. Instead, they can visit the streaming sites to check the trailers before the release of the film in theater. Before the DVD release, there will be illegally pirated versions available for streaming online, and once the film is officially released, they can stream it on Netflix for a price comparable or lower to what they used to pay for pirated DVD. Since its launch in 2005, YouTube has constantly modified its services, and the streaming of the copyrighted songs and full-length films both became available a few years later to fulfill the increasing demands from its users. Although copyrighted materials are often posted, they shortly get removed, which shows that the cost to fight this so-called piracy is much lower compared to sending polices out to confiscate the illegally copied CDs.

Piracy has always been a problem in developing countries. In China, watching a foreign movie in theater can cost a general worker's two-day earnings. One of the most popular streaming websites called Tudou started shortly after the launch of YouTube. However, unlike YouTube, Tudou allowed the subscribers to post the full-length movies, copyrighted albums, and sometimes even the politically sensitive materials that were previously banned by the Chinese government. Most of the people who posted these videos were not professional journalists, but teenagers born during the 80s and 90s. Before the availability of online streaming, China has been notorious for ubiquitous physical piracy, the phenomenon on Tudou back then seemed to be a perfect example for arguing that streaming just transferred piracy from the physical to the internet.

However, many barricades were soon placed on the so-called internet piracy. "In November 2010, the State Administration of Radio, Film and Television (SARFT) announced a ban on any forms of trading and supplying unauthorized foreign TV series."[1] The sensitive materials were removed and the IP addresses of (internet protocol) the people who uploaded those videos were blacklisted which prevented them from any future attempts. Many foreign and domestic entertainment companies also filed lawsuits at Tudou. As of today, the Blockbuster movies were no longer permitted to be streamed on the site before the DVD release and many foreign movies and dramas were only made available to be streamed for people in China. Additional regulations issued by Tudou include checking the content of all uploaded materials before allowing them to be streamed. Some materials that bypassed the checking system were often flagged by the users and removed within 24 hours. The counteraction and on this so-called internet piracy taken by YouTube is similar and obtained the comparable results.

[1] Reshuffling China's Online Video-Sharing Industry Amid Copyright Protection. Xinhua News.

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Due to all these changes in the streaming that took place in the last few years, could the disappearance of internet piracy restore the large-scale physical piracy in the future? At this moment, there is no straightforward answer to this question. But before seeking an answer to this question, it might be wiser ask ourself if this internet piracy is going to disappear completely or whether the uploading of the copyrighted materials should be considered a form of piracy. While streaming technology has affected the profitability of the entertainment industry to some extent, the question we might want to ask is how long is this debilitating effect going to last and can it possibly become beneficial to the industry some day. My answer is that this technology is already bringing some values to the production companies. One evidence is the movie trailers on YouTube, we see more comments like, "it looks good. I can't wait to watch it in theater" rather than "where can I watch it online." As for the albums, there is now a direct link to iTunes or Amazon that allows the music lovers to purchase their favorite songs at a much lower cost. While each song is sold at a much cheaper price compared to the CD version, the long-tail effect (greater profit at a holistic scale) could potentially become greater because more people are likely to purchase these materials when the price tag is lower.

Another Type of Social Network:

The popularity of streaming media is attributed to its underlying cooperative actions. Although the main activities on the streaming site participants are uploading and watching videos, those minor ones like rating, commenting, replying to others' comments, and sharing the videos on their personal Facebook pages, all resembled the underlying features in the social networking sites. In order to further discuss the positive social and cultural impacts of streaming media, it might be helpful to examine some human factors activate these features.

Motivation and Mass Amateurization:

Several years ago, before the invention of camera phones and availability of streaming sites, I watched the scene of a house on fire broadcasted on TV, but recorded by a college student studying journalism who happened to be walking on the street with his video camcorder. I thought to myself that there must be thousands of these newsworthy scenes like this ended up unrecorded and hoped there would one day everyone can record and publish. The earthquake in Japan that happened on March.11.2011 once again showed the blurring boundary between the professional and amateur. With the advancements in cameras, everyone with a phone or a simple digital camera can record the scenes, and video streaming site is the platform for them to publish.

Streaming media has enabled an action that Shirky refers as the de-professionalization of publishing.[2] In this case, we must prove that everyone who uploads their videos for streaming

[2] Shirky, C. (2008, February). Here Comes Everybody. Allen Lane.

must have a desire for publishing. Indeed, some participants want to show their special talents, some people are looking for people who share similar opinions, and some people simply want to help others. No matter what their purposes are, streaming media has provided numerous opportunities for them achieve their goals. In the previous sections, I have argued that streaming media only temporarily undermined the profitability of the entertainment industry while providing benefits to the mass. Despite the fact that streaming media has received negative feedbacks on some of its effects, the advantages it has provided for the society are essential. For example, the open course project launched by MIT and Yale have provided a classroom experience at the world's most prestigious universities at a zero cost for the viewers. Does that mean that these schools' education is losing its values like those copyrighted materials that are pirated on the internet? This goes back to the question of what the difference between the stealing a CD from a shelf and illegal downloading is. This open course project does not lessen the values of the curricula for the students at MIT and Yale because they are the only ones who have access to the professors and other resources on campus. Therefore, the people who view the videos online only add to the number of audience for the lectures. The positive outcomes of this experiment are obvious. "Streaming media is replacing the conventional classroom one-size-fits-all lectures and provided an interactive learning experience for the learners."[3] Although this open course project does not exemplify amateur publishing, it is apparent that the opportunity for posting tutorial videos online is not entitled to the accredited universities. If you have searched for a video tutorial online, you most likely will find hundreds of videos posted by amateurs.

One thing still seem puzzling is why these people spend their time recording and uploading the videos if there are no monetary returns. In his new book, Shirky states that people nowadays have cognitive surplus which motivates them to participate in the online activities.[4] This motivation comes from a variety of inherent human characteristics such as the desire to show off their talents, contribute their works, speak up their thoughts, or simply want to meet more people. Although streaming media does not offer the communicative features people find on social networking sites and online gaming, but every trivial technology attached to the online streaming adds the potential interactions to the uploaders and viewers. While tagging might only appear to be a phrase or word summary of the video contents, its main function is to facilitate the searching for the viewers, and for some viewers, this gives them sense that they possess a special kind of ownership for the videos. The interactive feature of commenting is more obvious. It provides a platform for the viewers to show their opinions regarding the video contents. The satisfaction is given in several possible ways: when others vote up their comments, give positive feedbacks to their comments, or simply feel

[3] Salman K. Let's use video to reinvent education.

[4] Shirky, C. (2010, June). Cognitive Surplus: Creativity and Generosity in a Connected Age. Penguin Press.

rewarded for the freedom of speech. The liking and disliking feature, on the other hand, allows the lazy viewers to show whether they are satisfied with the video. Although the ratings are made anonymous on most of the streaming sites, the anonymity does not mean these raters will never get a rewarding sense because it is also a group effort and viewers are most likely gratified when seeing the their choice outnumbers the other group.

All the examples I illustrated in this paper show that streaming media is another inevitable technology that enables people with cognitive surplus to accomplish their personal goals in a collaborative way. Despite the efforts of the companies in stopping this media from hurting their revenues, the mass participants have proved this technology will not be stopped for the profitability of the retail industries. This is the digital era, not the entertainment era. The companies that previously fought with the technology should look for more ways to incorporate streaming media to improve their businesses. Streaming media has not only reduced the amount of physical piracy, but also has blurred the social and cultural differences among the nations. Comparing China to US, a country with rampant piracy and a country where bootlegging law is well enforced, the outcome of streaming has come out to be similar. In the world today, the most efficient way to increase the social production is to bring more individuals that are willing to commit their hours to work for free, and the social benefits are being maximized when these individuals are equipped with these underlying collaborative technologies in the streaming media

Touch Screen and Our Society

by Yunji Zhang

Take a look at our world from the top; we can see lots of technology developing toward touch screen under technological momentum. When one mentions touch screen technology I think of well developed countries, such as America, Japan, etc., as well as some specific brands like Apple, Samsung. I thought the term “touch screen” did not have any particular meaning, but due to society’s evolution, “touch screen” is almost the key word for high technology products such as iPod, iPad, smartphones, and so on. However, I think touch screen technology apparently affects the society in some ways.

The touch screen is arguably the easiest PC interface to use. It is therefore no surprise that it is the interface of choice for a wide range of applications. Below are some examples of how touch screen technology is being used in society today and how it influences the society.

The first one is public information displays. Information kiosks, trade show displays and tourism displays are used by lots of people who have very little, or even no, computing experience. For example, people of an older generation, who maybe have had no real experience with computers, can quickly work out how to use them and find the information they need easily. “The patients are able to retrieve and enter information interactively via a touch screen panel PC connected to the Hospital Intranet. The Interface is designed for patients with little or no computer experience (i.e. people with a low computer literacy or patients with visual impairment and/or restricted motoric ability).” (Holzinger) User-friendly touch screen interfaces are less intimidating than other types of input devices, which means that people are not put off using them and the information you want to give is more easily accessible to the people that you want to receive it. With this chance for the people who don’t have computing experience, there would be more audience joining our society in terms of communication through touch screen technology.

Second, it is retail systems in business. In certain environments time is an important factor in determining the efficiency and effectiveness of transactions. A touch screen system can reduce the time needed to input data and can also increase the ability of software in terms of visual communication of options. Therefore touch screen technology plays an important role in such areas as cash registers, seat and reservation systems and order entry stations by simplifying and speeding up the data entry process. I totally have this experience because I worked

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in a restaurant before. There were two computers for cash registration; one was computer with keyboard, and the other one was touch screen computer. I found that I needed to figure out and remember which button should be hit in order to find the menu or place an order with the keyboard computer, but it was easy for me to do it with touch screen because I could just point at the menu and choose orders on screen, and I didn't need to care about using a mouse. This reflects that touch screen technology is about all efficiency in this case, and it is also a trend to lead producers or labors more productive.

The third one is customer self-service and assistive technology. It is a fact that nobody likes waiting in line or queuing for things, and it is a problem that can be overcome by using touch screens. Self-service touch screen terminals are being used to improve customer service at stores, restaurants and transportation hubs. ATMs and airline e-ticket terminals are other examples of self-service stations that often use touch screen technology. Also, Jack-In-The-Box is an example of food ordering self-service. Customers can complete transactions themselves; saving them time and allowing them to get on with their day. Touch screen could be assistive technology. For some people, using a keyboard or mouse can be a challenging task. The touch screen input system makes it easier for these people to use computers in everyday life by incorporating on screen keyboards and other assistive technology in data input processes. This technology can increase the availability of computer resources to these people, making their lives a little bit easier. This improves the rhythm of life and life quality in our society.

The fourth is computer training. Within a training environment, a data input system that is both user-friendly and interactive is a great advantage to the trainer and trainee alike. Touch screen technology can be incorporated into both educational tools for the trainer and learning tools for the trainee. Making use of this technology can decrease the amount of training needed and as a consequence, reduce the costs involved.

The fifth one is Industrial and Manufacturing. Within the last few years, the integration of touch screen systems into industrial parts and product manufacturing has increased dramatically. Because of the ease of use, the speed of data input and the simplified visual communication of options, touch screen technology offers an unparalleled alternative to older data input systems. Meanwhile, the market in touch screen is popular so that it makes smart phone or tablet personal computer competitive because of the rise of touch screen technology within the products; such as iPhone or iPod, in the late of 2010, Samsung cooperation released a four-inches screen smart phone which name is called GALAXY S and a seven-inches screen tablet smart phone, its named GALAXY Tab. There is no doubt that "war of smart phone" would rise. To response Samsung, iPad was released. The competition of companies in market would accelerate the technological development and influence the economy in society.

Nevertheless, the appearance of touch screen technology leads the decline of keyboards, such as phone keyboard and computer keyboard. People who are inexperienced or uncomfortable with computers, have physical or cognitive disabilities, or have limited literacy and language skills can all use touch screen technologies. I have experienced the

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generations of touch screen technology. Introducing the first generation of touch screen on smart phone or electronic dictionaries, they limited touch pens for pointing and writing on the screen. I found that it was not very convenient because we had to use the pointed-pen to control everything on the screen. However, the new generation of touch screen has released that kind of inconvenience because we can use fingers instead of the touch pens, and it is more efficient to use and make commands. Basically, the old one needs to be used two hands, and the new one can be only used one hand to manipulate. It is convenient for users because a touch-screen has no keyboard or mouse, and it's easy for most people to use. That makes it simpler for people of all ages or abilities to learn at their own pace without feeling pressured or overwhelmed by information.

Touch screen technology does matter use of language and society. For example, my parents are Chinese; they can only speak, read, and write Chinese with Cantonese, but they don't know how to type Chinese characters with Pinyin since Pinyin is a way to by typed into Chinese. However, with the touch screen technology, they can use the handwriting recognition device to write Chinese characters instead of typing Pinyin on phone keyboard or computer keyboard. This is a use that gives us a reflection that touch screen technology can help people who have different language abilities or limited literacy. Not only handwriting recognition device, but also multi-language capability can be chosen. Touch screen technology increases globalization and regional language requirements, and it influences the communication among people because the use of languages is wider and people can communicate each other with different choices and cultures.

However, keyboard becomes a built in function; that means people now spend less time to literally type to each other. At the same time, touch screen technology normally functions with "systematic or predictable auto spelling" when using keyboard; when you type one word, the rest of them automatically pop up. This speeds up human communication. This somehow makes us spend less time to literally type or communicate with each other. The computer medicated communication (CMC) normally consists with multiple devices, such as wireless router, the instant messaging software, and most significantly the keyboard that enables us to input what's in our thoughts. On the other hand, the original phone limits some channels for people to get information in some ways; not like the touch screen phone, people can use smart phone on the bus, street, anywhere to read news or entertain through internet; and compared with the original phone, the most convenient part for touch screen technology on smart phone is that people can zoom in or out by using two fingers when they surf images from internet.

Now, all these devices have been compressed into one single technology, and that's the touch screen technology. One touch can lead us to everything, and it is the trend and keeps growing. A "real" conversation should typically insist of 45 minutes of talking, but with the speedy technology people's "real" conversation are shortened. In the world at this point our communication become a "routine" because everything is so convenient, everyone no longer has to call one another.

Touch screen technology is an important channel in mass media. It makes our speed faster, more efficient, and less time

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consuming, but the content and quality of our communication is going to drop.

In spite of touch screen computing devices becoming more common, but this technology is largely inaccessible to people with visual impairments at this point. “With the popularity of touch screens, once simple products such as televisions and stereos have become difficult for blind people to use as they often require navigation of multiple menus that need to be seen to be used effectively” (Carew). On the other hand, “we have explored how touchscreen based technology can be made more accessible for those with visual impairments. Both approaches have shown promise and issues.” (McGookin) In my opinion, I believe there would be a device that could be used by visually impaired users in the future, through evaluation of both the gesture and control panel based touchscreen MP3 players.

Touch Screen Technology Influences on Gaming

by Hao Hau

What is happening to the old style of video gaming with the physical button controllers? With the availability of touch screen technology we can expect that soon in the near future we will be eliminating controllers with buttons. We can expect a major to the gaming system and the way users have been playing games for years. The gaming experience will be different because of the touch screen technology.

As we can see, on smart phones now a days there are various game applications. I have seen some games that utilize touch screen technology to enhance the gaming experience for users. For instance, the game named Street Fighter which allows the user to tap directly onto the screen of the phone to activate their action demands. There are many more games out there that utilize touch screen technology to improve and change the gaming experience for users. There is a website called TouchArcade which contains information and updates about all the games for iPhone. One of the new games that is coming out for iPhone users is SuperMono. This is a car racing game, basically allow users to use touch screen technology to interact with the car. For instance, users can zoom in to have a closer look at the vehicle. 1“You can swipe around to change the view of the car or turn on and off the various effects, and it’s actually pretty cool.” Much of the games today for smart phones are employing the touch screen technology to increase the level of entertainment for user. This is happening by allowing users to have the capabilities to directly interact with the objects within the game. For example, the game “Slice it” for iPhone is quite addicting. Personally, I really enjoy it because I get to literally cut up the items falling down the screen by placing and moving my fingers, imitate a knife like object, on the screen. “Thanks to as simple a concept as technology that registers pressure placement on a screen, fully-formed games with impressive-for-its-parameters processing with real control inputs can be created, rather than forced schemes crammed into an array of numbered buttons whose primary purpose is comparative light years from game design.”

Touch screen technology has clearly made a huge impact on cell phone gaming experience. Before, gaming on cell phones was happening with interaction with the phone’s keypad, usually the using some of the nine numbers to control the game. Also, the resolution was not that great, games have relatively simple functions and everything happening was compacted onto a mini size screen. 2“Obviously, the iPhone and other touch devices that have followed have completely

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by Hao Hau

changed the landscape of cellular game design." Gaming design and experience on cell phones are going through a significant change because of the new and improved touch screen technology.

Besides what we have seen concerning the change in cell phone gaming, imagine how the future of home system gaming experience will be like the near future. Today, we have motion-detecting games for home gaming entertainment such as the Kinect for the Xbox 360. This has eliminated the traditional controllers for gaming. Similarly, with the touch screen technology soon we will be able to see its impact in the gaming world. We can expect a change in the way users play games in the near future because the traditional ways of interacting and navigating through a game using a controller will change. From a video, http://www.youtube.com/watch?v=4kS2-TwNWXc, demonstrating the guitar hero touch screen version of the game, I see that users can be playing games by directly touching the screen with their own fingers for navigation purpose. Users will be able to interact with the game without any additional device (i.e. like a controller). Using their own fingers as controllers to interacting with the game will be a different experience in front of the television. Users are allowed to physically and directly interact with what is happening on the screen. Basically, allowing users to have a hands free experience while playing games because there are no more controllers to be used.

In the near future, I am expecting game systems to change dramatically because of touch screen technology. I hope to see that there will be less wiring to deal with in terms of setting up a gaming system. The electronic controllers will be eliminated due to touch screen ability. The television will be the object that users interact with to play the game. Indeed, that means that soon television will have to have the touch screen capability for playing games. This is another evolution in entertainment which will not be discussed in this paper.

Having users interacting directly with the television, for example, require users to be at a close distant and can tiring for your vision after a while. So an invention that I can foresee happening in the future is a gaming system involving two screens. One is for visualization purposes like a television. Another screen is a small, flat and light weighted screen, touch pad, (i.e. something that looks like the current iPad or double its size) for the users to interact with and see the result of their interaction to the device on their television. This will not require users to have a touch screen television in order to play a touch screen game. All users will need is the system and touch pad to interact with different kinds of games. Also, this way the users do not have to be so close to the television.

The way I foresee this gaming system working is that the smaller touch screen is for users to use to interact with the game through utilizing their fingers. Basically, the small touch pad is where the interaction will be done and users can keep their eyes on the television to see the detection of their touch on the small touch pad which lies on their lap. In other words, there will be some kind of sensors and identification on the television to allow users to know where their fingers are located at once they place them on the touch screen. This is very similar to typing on a keyboard. You do not have to look at the keyboard to know where your fingers are located at. All you need to do is look at the screen, in this case it would be the

Touch Screen Technology Influences on Gaming

by Hao Hau

television, and move your fingers around on the touch pad and will be able to see the interaction on the screen, the television, in front of them. This allows the users to be as far away from the television screen as they feel comfortable. Users will have the most amazing gaming experience ever once this type of touch screen gaming is available for the home gaming entertainment package. The home entertainment gaming system will go through a dramatic change and so do gaming machines in public locations such as arcade and casinos.

Touch screen technology will allow gaming machines to contain multiple different types of games unlike the traditional gaming machines with fixed buttons. This is because with touch screen users' inputs are detected by pressure on the screen and not through some push buttons set on the machine. With a fixed location and number of electronic push buttons, the numbers of games are limited in a gaming machine because the games must be suitable and functional to those push buttons. That is, the functionality of each game can be very different. 3"In order to permit a machine to operate more than one game, touch screens are used so that game controls that are specific to each game can be displayed. Since video games can differ substantially in their mode of operation from game to game, it is generally not possible to use the same set of electromechanical control buttons to control different games such as poker, slot machines or keno. Therefore touch screens have been used to display game controls so that a variety of games can be played on the same video lottery terminal." In other words, the different controls on each game are displayed on the touch screen allowing users to use their fingers to touch the buttons on the screen to interact with the game. As the controls for each game change, the display of the control will also be different on the touch screen. Allowing the game interface and operations to change for different games is the reason why various games with different mode of operation are compatible on the same gaming machine due to touch screen technology. This is similar to the games we see on smart phones today. Within one smart phone, an iPhone for example, we have many different games with different mode of operations. Some are simple structured games and some have complex operation controls. All games are able to function within the iPhone because of the awesome touch screen technology.

Another significant location that users enjoy playing games is on their laptops. With this touch screen technology, the laptops out there today can be reduced in size because the touch screen keyboard can be retrieved directly on the monitor and after one is done with typing they can simply hide the keyboard by some sort of minimization. So there will be no more physical keyboard. There will be no more need for a flip open laptop. Users will be seeing a single piece laptop which is activated by one's touches. The weight will be much lighter due to the elimination of the physical keyboard display.

Regarding gaming on laptops, it would be crazy to imagine touch screen World of Warcraft. Touch screen technology will be able to bring this type of gaming experience to the next level. Users can lead their troops, give commands and interact with their characters by directly tapping on the screen. This technology will make the World of Warcraft's fan go insane because of the interaction capabilities. Gamers will no longer be clicking on the characters with a little pointer represented by

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the mouse pad. Instead, they can control the game environment with their own fingers.

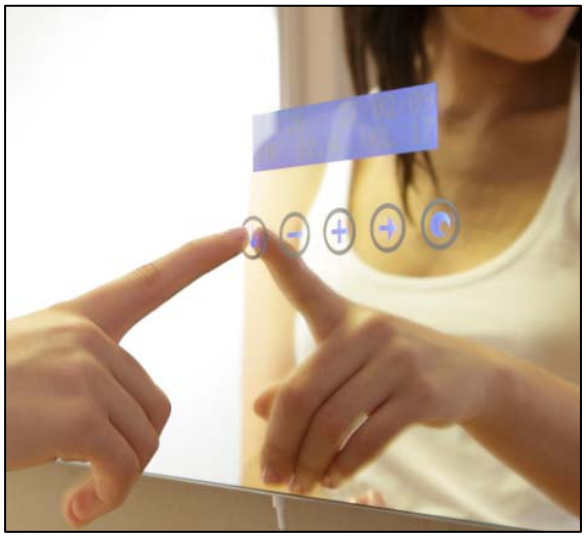
I can see this change being made to laptops because of touch-screen-like-laptop, the iPad, is currently out in the market. The iPad allows users to interact with everything on the screen with simple touches to the screen with their own fingers. As you can see, the touch screen technology will make significant impacts regarding gaming on laptop in the near future. Laptops will be remodel in a way that will enhance entertainment for users who spent much of their gaming time on laptops.

Therefore, we can be confident that the world of computing and gaming entertainment will be changed greatly by implement the ability of touch screen technology. The human hands will be a major part for navigating in the technical world. Also, users will be able to interact with the game that they are playing much more closely because of the direct interaction without involving the interference of a controller. Great change will be made to the gaming industry in the near future.

The Power of Touch

Understanding the Tactile Experience of the Interface

by Martha Chan



Touch is a powerful sense that utilizes pressure, sensory receptors and position. Technology incorporating this tactile system changes our interactions with the user interface. This paper will explore the power of touch and how touch screen technology enhances or limits our physical interactions with the user interface. Touch is not a passive sense; touch (somesthesis) allows for the human body to interact with the virtual environment. Before touch screen technology, our interactions with the virtual environment had been through solid buttons, a mouse, or a touchpad. The virtual world was impersonal and mediated through typing or clicking the mouse. Touch screen technologies provides physical access to the virtual environment while also creating unique challenges in usability, accessibility, and the natural user interface.

Imagine the newest touch screen cell phone: the device is thin, wide screen, light and with one or two buttons at most. The user's hands are free to navigate the interface, available to pull up applications like Fruit Ninja or a virtual keyboard to type up an online search. The interface is diverse; there are multiple desktops, display functions, and icons that are free to move around. Almost like a clothing store, you can style your phone in any way that is user friendly to you. Touch screen technology have changed the way user interfaces are understood and designed. Using one's finger (or fingers) to provide direction allows for an interface that is flexible and more natural.

Touch screen technologies offers several advantages over standard forms of interfaces. The technology enhances our tactile senses and does not restrain users to the standard window, icon, menu, pointing device (WIMP) user interfaces. Unwiring society from traditional intermediate devices creates options for larger screen space and more versatile applications/operational modes. The input of data is faster compared to a text-bound interface and the technology takes up less space as it can be used with any size LCD touch monitor. The CHI 2009 – Spotlights on Works in Progress presented the article, Squidy: a Zoomable Design Environment for Natural User Interfaces, to examine the usability of natural user interfaces (NUI) in touch screen technology.[1] Squidy is an

[1] CHI 2009, Spotlight on Works in Progress . "Squidy: A Zoomable Design Environment for Natural User Interfaces." April 2009.http://portal.acm.org/citation.cfm?id=1520700

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interaction library “which eases the design of natural user interfaces […] the visual user interface hides the complexity of the technical implementation from the user by providing a simple visual language.” In this way, the interface becomes invisible with successive learned interactions. Touch screen technology allows for the natural interaction with the virtual world through instinctive gestures; for example, the user simply touches to the action or item that they want on the screen. Human-computer interaction is an emerging research field concerning design and development of user interfaces1. NUI decreases the amount of training necessary to understand and perform the task. NUI frameworks hide the complexity of the technical implementation from the user and have made touch screen technology user-friendly and popular1. There are a variety of NUI applications for touch screen technology that are commonly found in kiosks, ATMs, store and restaurant registers, phones, music devices.

Touch screen technologies can also limit our interactions with the user interface. Although this technology frees the user from the standard WIMP interactions, other challenges arise in accessibility, ergonomics, and feedback mechanisms that aid the user. Screen maintenance of a device is an inconvenience to the user and often requires the use of screen protectors. Touch screen technology also provides less flexibility with human error in the processing of screen input. For example, the application requires use of both hands to function effectively when typing which would slow down typing in inexperienced users who rely on looking at screen. Additionally, the technology requires more processes to run touch screen software with can take up more battery life in the device.

Touch screen technology also vary in levels of sensitivity and haptic feedback that can limit our interactions with the user interface. The lack of a standard touch screen user interface has resulted in a diverse range of tactile feedback options. Haptic technology is the tactile feedback that utilizes the user’s sense of touch through forces or vibrations.[2] The removal of traditional haptic feedback from physical buttons has resulted in less accurately and difficulties in using touch screen keyboards. The CHI-2008 article “Investigating the Effectiveness of Tactile Feedback for Mobile Touch Screens” compared devices with physical keyboards, a standard touch screen, and a touch screen with tactile feedback added. The research found that tactile feedback improves fingertip interaction and performance with soft keyboards on touch screen devices. Without the tactile response, users can only reply on audio and visual cues which can be ineffective in mobile devices due to small screens, outside noises, and other social restrictions. The feedback technology tested vibration actuators that gave short and sharp effects, reaching maximum acceleration in two to three wavelengths.[2] Haptic technology allows for NUI to occur through tactile recognition of non-physical keyboards and buttons.

As touch screen technology and devices are becoming more common place and difficult to avoid, there are emerging concerns regarding touch screens and the disabled community.

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[2] CHI 2008, Human Factors in Computing Systems. "Investigating the Effectiveness of Tactile Feedback for Mobile Touchscreens." 2008.http://portal.acm.org/citation.cfm?id=1357054.1357300

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The somesthesis and screen component requires the ability of both visually interpretation and physical interaction. However, most devices do not have audio or tactile feedback to aid users. The shift to touch screens and the loss of the tactile response presents access barriers to disabled users.

While excitement and interest in this new medium overpowers concerns regarding access and exclusion, it is important to promote universal design as technology becomes integrated in society. Universal design is the planning and engineering of products and environments that are inherently accessible to both able-bodied and physically disabled. Touch screens not only limit the blind community but also exclude those with cognitive impairments (all types), dexterity impairments, hand tremors, and those with reduced coordination. For example, NUI is difficult to achieve for the blind community who read by Braille as the screen does not allow for a Braille component. There are programs available such as screen reading programs and vibratory responses that make touch screen technology more accessible, however they are often expensive applications. Additionally because touch screen devices are not standardized, the user interfaces vary with the layout of the device and creating accessible technology is that is versatile is a continual challenge. The company Touch Graphics have attempted to address this challenges and have produced a Talking Tactile Tablet that provides audio feedback allowing user to view pictures, graphs, diagrams, etc and then to press on features to hear descriptions, labels, and other explanatory audio material through visual computing.[3] Audio-tactile strategies are one way to open interactive learning and entertainment to the visually impaired. However the Talking Tactile Tablet is a hardware investment that is not cheap and is still a very basic model.

Another approach to increasing accessibility and the development of the NUI examines the use of buttons for touch screen phones. Nashel and Razzaque's article Tactile Virtual Buttons for Mobile Devices proposed the use of vibration to indicate which button is under the user's finger before they push it. Additionally, the authors found that adding the tactile cues of a real button that conveys the feelings of the button location and activation allows for user manipulation.[4] Their technology required the ability to detect how hard the user is pressing the screen4. Haptic interface stimulates cutaneous and kinesthetic sensory through force-feedback. This research provides solutions to improve the NUI that gives reassurance to everyone, not just the visually impaired.

Touch screen technology is expansive and continues to evolve; multi-touch technology, created after touch screen technology, allows for multiple inputs of three or more distinct positions of touches. Pinching motions that use two or three fingers in multi-touch technology is one method of zooming in and out of

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[3] Landau, Steven. "Development of at Talking Tactile Tablet."*Information Technology and Disabilities,* 4/1/2001<http://www.freepatentsonline.com/article/Information-Technology-Disabilities/207644345.html>

[4] Nashel, Andrew and Razzaque Sharif "CHI 2003: New Horizons." April 5 2003. < http://portal.acm.org/citation.cfm?id=766032>

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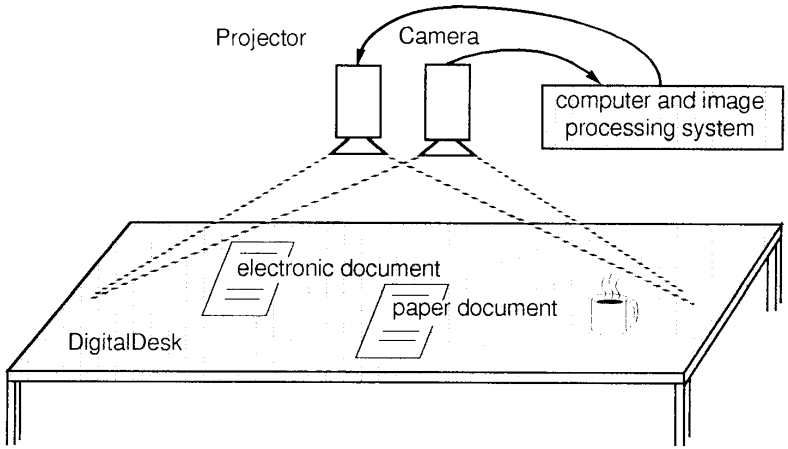
the interface. The development of multi-touch allowed for programs that support multiple users interacting with the screen simultaneously. This type of technology is most commonly known to be used in Microsoft Surface and Apple devices. This development of touch screen technology that allows for multiple users may change the way the interface is designed for personal or collaborative use. The Wall of Touch created by HP for example is already changing the social interactions in the workplace.

Social and cultural relationships with the screen through touch screen technology have changed our physical interactions with the user interface. Touch screen popularity have increased the technology's integration with society high desirability of touch screens Touch screen increases user interface functionality of infinite number of layouts or key configurations. "The exciting development of touch screen technology contributes to our knowledge of human capabilities and to new applications that exploit and support the rich, subtle functions of the sense of touch." As the future of touch screen technology continues to evolve, perhaps one day users will be able to break through the surface of the screen and redefine the meaning of the user interface.

Oh the Places We'll Go: is it Touchscreen or DigitalDesk's Day?

by Sam Burke



Touchscreens, recently most transparent in developing mobile communication technology, have become a driving force in the technium. The widespread use has fostered a new era of the screen, allowing for dynamic interfaces, streamlined design, increased control, and biotechnical intimacy. We likely owe the application age to the touchscreen (and more specifically the iPhone). But how does the use of touchscreens limit both the application and development of technology? As is pointed out countless times in technological discourse, we still live for the screen, of the screen, and by the screen; however, it contains us just as it frees us for like most things, it exists dichotomously. In this paper I will introduce and compare two technologies, the iPad and DigitalDesk. Both demonstrate the influence and direction of touchscreen technology. As will be explained, the primary adoption of one device over the other is evidence of the necessary development of touchscreen technology prior to its likely environmental incorporation.

What the screen requires has restricted mainstream technological progress; the need for touch, capacitive touch in most cases, and abled sight are two examples of requirements which hinder the revolution of like technologies and help to reinforce their evolution. It is not that these conditions serve the dominant, abled population which makes the touchscreen flawed, but the way in which such necessities have influenced the way we interact with them. The dependence on visual recognition and physical input has become a lens through which most consumer technology must pass through. Touchscreens have monopolized. The point of this essay, however, is not to demean the success of the touchscreen in its abilities to improve society, technology, life and its processes, but rather to highlight that a manifestation in more manipulate-able, interactive, and incorporated ways has the potential to be the future of interactive tech. In such the development, the touchscreen has played a necessary and pivotal role and will continue to do so as it mediates communication, media, interactive, and data technologies.

The iPad 2, claiming to be one of the, if not the, thinnest touchscreens bets its own success on the hope and knowledge that the more portable the screen, the more marketable a product. The portability for tablet pcs, influenced by the mobility of smartphone technology and the power of a computer, is the cornerstone of its appeal. The concept is to have a device as capable as a computer in the palms of your hands with a screen large enough to enjoy entertaining media and complete tasks, using capacitive touch as the primary tool.

Oh the Places We'll Go: is it Touchscreen or DigitalDesk's Day?

by Sam Burke

As vast as the capabilities it presents to the user, it too has its limiting factors: the size of screen, inability to use freely chosen external tools, environmental exclusion, and static existence. While the whimsical availability of the internet on a portable screen has proved incredibly useful and proficient, these limits stifle the technology's ability to fully incorporate into the user's life. It is important to note both the pros and cons of this capacity; in techno-philosophical discourse, the convergence of technology and biology is a salient topic. The consequences are often considered after the merge has occurred; how does the technology extend, reverse, retrieve and obsolesce1? The iPad 2, for example, can be considered an extension of the hand, brain, eye, and mouth/voice due to the facilities the device harbors. Mobility of such extensions has led to a culture promoting instant access, constant reachability and perceived technological literacy. Like other screen-based devices, the iPad 2 favors the visual and touch sensory experience over others, encouraging the use of sound at times. It does reinforce the existence of the acoustic space, understood as the encompassing experience mediated by electronic technology2 through the altered reality it can create for operators. Tablets have yet to obsolesce another- both its derivatives coexist in dissonant harmony as consumers debate the practical use of all three technologies. Touchscreens, however, have made some mechanics obsolete – the need for a keyboard, buttons, mice, and physical interfaces has decreased since their introduction. They have not disappeared, but their use has severely dropped since the mass production of touchscreen devices.

Amongst its limits, the touchscreen has provided revolutionary advancement in device-development. The creation of dynamic interfaces, mobility of devices, ease of use, sustainability, and application centered information technology can be attributed to the mass incorporation of touchscreens. Their importance in history is undeniable. Whether determinist or not, they have paved the way for multiple categories of technology. Understanding the limits however, forces another question: what comes next? Further, how will the touchscreen become obsolete? Or will it? These questions cannot be answered as traveling through space-time continuum has yet to become economical, but through examining preferences in touchscreen technology use and the forthcoming wave of new touch/interactive technology, we can signal the potential influences of touchscreens. Let us take, for example, the DigitalDesk (see image above).

Employing both camera and projector technology, the DigitalDesk exploits an average desk space and uses what is referred to as a 'tangible manipulation,' or a combination of hand/object tracking and touch-interaction creating a virtual reality in physical space3. The mediated desk experience is meant to add electronic properties to physical paper and objects4, creating an environmentally incorporated virtual experience in physical reality. The desk engages no touchscreen technology, but rather similar principles in order to manipulate the projected image and the objects on the desk:

[1] Schenold, "McLuhan Part 2" (1/19/11)
[2] Schenold, "McLuhan" (1/12/11)

[3] Pierre Wellner, "The DigitalDesk calculator: tangible manipulation on a desk top display," *Proceedings of the 4th annual ACM symposium on User interface software and technology* (1991): 29-30.
[4] Pierre Wellner, 27, 29

touch and hand movement. Using the camera and hand-tracking technology, information is sent to the projector to manipulate the projected image, which reflects not only the existence of the hand/body but also other objects in its space such as papers. It also allows for users to engage with external tools such as pens to manipulate the image. And like the touchscreen it has its flaws. The image quality of the projection, when the DigitalDesk was created in the early 1990's, was low and poor resolution. It was also immobile, and required specific lighting to be seen. It also requires the user to make larger gestures and engage with more energy to complete similar tasks as one might on a tablet, slowing proficiency with the device. It is now visible that where the tablet falls, the DigitalDesk rises and vice versa.

Now, however, the development of touchscreen technology has improved so significantly that the re-imagination of like devices could prove to be useful and extremely significant in the development of future technology; increased resolution, total mobility, imaging technology, user interfaces, and augmented reality are such advances. The DigitalDesk is an unlikely product in today's technium: it's large, requires expensive technology and is immobile. But the concepts used to create it, combined with advancements in touchscreens, have potential to be the future of touch-based interactive technology. A study in 2002 proposed the use of three devices: a conventional desktop computer, tablet pc, and DigitalDesk to architects. Asked to complete a variety of tasks such as image-sorting, drafting, and image manipulation, the participants were examined and questioned on the comparative use of the equipment[5]. The researches predicted that using the DigitalDesk would prove to be the tool of preference amongst the architects[6] due to the large surface area, ability to use a pen-tool, and its resemblance of typical architectural drafting space. What they discovered, however, was that the DigitalDesk was only as preferred as the tablet in sketching (due to the pen tool), and least preferred in image sorting. The large space of the desk required laborious gestures to complete tasks while the low resolution (though it wasn't complained about) and projection technology made sketching more difficult and less precise than on the tablet. From examination of the results, researchers also inferred that height played a role in determining a user's preference of the desk over the tablet. Shorter operators completed tasks slower on average than those who were taller[7]. These results play an important role in recognizing the potential of merging the two variations of touch-technology (touchscreens and environmentally incorporated tangible manipulation).

Though the iPad 2 and like technologies have become the primary source of touch-input devices, the relevance and potential use of other tools like the DigitalDesk is becoming evident and potentially predictable. These tangible manipulative technologies' shortcomings have been in many ways solved through the development of recent touchscreens; resolution, screen visibility, mobility, access, and extension are

[5] Ame Elliott and Marti A. Hearst, "A Comparison of the Affordances of a Digital Desk and Tablet for Architectural Image Tasks," *International Journal of Human-Computer Studies* 56, no. 2 (2, 2002): 173-179.
[6] Ame Elliott, 175
[7] Ame Elliott, 179-180

all necessary components to its success. As mentioned before, what it lacks is the capability to be fully incorporated into the users environment, which the DigitalDesk and like technologies excels at. Since its early development, the DigitalDesk has helped pave the way for gadgets such as Microsoft's 2007 DigiDesk8 or Microsoft Surface 2.09. These technologies utilize the efficient qualities of both touch-technologies to create a unique and usable device. The existence of both products is evidence of the importance and relevance of the development of touchscreens and how it has and will continue to mold technological progress. Though still a screen, requiring both visual able-ness and motor control, these devices are one step closer to a different era due to the simplicity of their environmental incorporation. That the user is not required to carry a device in order to access information or complete tasks, and still receive a similar experience as one would on a like touchscreen is dramatic. What is left is to discover the potential mobility and malleability of such technologies so that the person may choose to incorporate them into whatever part of their environment which they deem necessary. This is why the continual development of both implementations is necessary. The screen is not yet able to morph to its surroundings. Thus is likely the reason for the use of projection technology as it does not require a specific surface for use, yet its standards of resolution, interactive use and portability have not been fine-tuned as the touchscreen. The technologies have qualities to learn, take, and share with each other. It is this relationship which I believe to be the future of touch-interface technologies as we move through the post-image age of the screen.[10]

[8] "Microsoft's Touchscreen DigiDesk is All Work, No Play." *Gizmodo*. http://gizmodo.com/#!257811/microsofts-touchscreen-digidesk-is-all-work-no-play (accessed March 6, 2011).
[9] "Microsoft Surface 2.0." *Microsoft*. http://www.microsoft.com/surface (accessed March 6, 2011).

[10] Schenold, "Interfaces, Echo, and Amplify," (1/24/11)

P2P and Transparency of Information

by Gerald Wang

What is P2P?[1] P2P is the act of transferring information from one person to another, via the Internet to provide knowledge/goods to someone across the web. When you go online to shop, with many products currently carefully reviewed by peers like yourselves, it is an easy task to buy products nowadays without trying it out. This means the process of delivering knowledge to others has a different meaning, however. In this new age of P2P, by more and more people going on Amazon.com and purchasing items online, filtering them through the process of reviews that others have given, we are now stepping into a world that is reliant on the words of others.

[1] “Peer-to-peer”

P2P is most commonly referred to the transfer of files between two users that does not require a central server to coordinate you through servers. If you think about it, we can relate P2P to things on our everyday life, such as television, reading the news: basically, everything that can be thought of transferring information is related to P2P interaction somehow. When reading the news, the reporter goes to the scene of the event and writes down their personal encounter through the means of notes/script, which is then transferred through the means of e-mail to the news station, which then broadcasts the information to us viewers. However, with true P2P interaction, we would not have a need for the news station and automatically absorb information from the scene of encounter itself.

The fact of the matter is the “news station” can be compared to governments and people in higher up spots supervising this fresh information. By having this filtering of unaltered information, we won't only be able to hear what we want to hear, but only see what they want us to see. The good and bad sides of events would not show up, possibly only the good. “The root problem lies, of course, in the fact that people at the top of social hierarchies generally do not want to lose status or power and will often use their considerable influence to protect their positions. Age-related declines in capabilities have to be fairly pronounced before other people will go to the trouble of removing a leader, boss, ballplayer, professor, or board member." This issue of filtering has been prevalent through governments, showing us why the obvious issue of change has not been seen in the past; but in our time, there is hope for a global revolution.

P2P and Transparency of Information

by Gerald Wang

When people realize that what they hear and see on their TV's is propaganda and false information, they will seek to find another means to obtain the truth. In the past when the Internet was not available people would secretly sneak printed news through a physical world of hand delivery-by-messenger, it was a risky job for the people writing the content, and the ones delivering them. However, in the first time in history, through the use of P2P via Internet, individuals are now able to safely distribute information to others connected to the Internet without the consent of higher-ups. This means of safe delivery of information can be associated with the whistle blower group, "Wikileaks,"who submits information on its website on classified content it receives through its drop box, which then is carefully analyzed and deduced before being put on its website. The following quote is one that describes an issue concerning P2P: "If the original cyberspace is to survive, and if values that we knew in the world are to remain, we must understand how this change happens and what we can do in response […] Cyberspace presents something new for those who think about regulation and freedom. It demands a new understanding of how regulation works and of what regulates life there. It compels us to look beyond the traditional lawyer's scope-beyond laws, regulations, and norms. It requires and account of a newly salient regulator."[2] With this new approach to sharing files/documents freely, the rules of the game must be taken into consideration before we taken another step into the freedom of P2P.[3] The basics of P2P can relate to two people: one who gives, one who receives. A person in many bittorrent[4] websites have an account which has a karma rating[5] that people give, depending on how authentic the file is to the description. For instance, if one uploads and provides information about a new HD movie, but the receiver gets a virus instead, the receiver is more likely to give the user who uploaded the false movie a bad karma rating. With this said, people are more likely to download a file from a person who has a higher karma rating on their account because they know from the user's 99% karma rating that most of the time, that this user provides authentic goods.

Now, taking this a step further, we can look to see what with the opposition thinks on the issue concerning "Wikileaks." Wikileaks' ideal belief is that the government should be transparent, and how people should have the ability to know what the government is doing, evidence showing the errors are occur within that the government doesn't show. People who have a second opinion on Wikileaks believe that Wikileaks cannot be trusted purely on the fact that they know nothing about them, or their hidden agenda (if Wikileaks has one). This new type of transfer of information of classified information is a type that has not yet been seen before. This is a revolution of a new type of information sharing, combining the news that we've been hidden from (Wikileaks information) with P2P technology, in a way that we can get news directly from the

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[2] Johnson, Deborah G., and Jameson M. Wetmore. (*Technology and Society: Building Our Sociotechnical Future*. Cambridge, MA: MIT, 2009) 43.

[3] Wikileaks is a website that publishes anonymous submissions and leaks of sensitive governmental, corporate, organizational, or religious documents, while attempting to preserve the anonymity and untraceability of its contributors (Wikipedia)

[4] Bit torrent- a way of uploading or downloading files from another player without the need of a central server (third-party)

[5] karma-rating- a way for people to give fake points to users that do either good or bad with the files he/she uploads

source of the information to our screens. By doing so, we no longer need to worry about the third-party filtering information (news station) for us to view at, a way for people to feel safe with this type of transparency.[6] The reason why there is opposition towards Wikileaks is the context that it is involved within, the Internet. Many people use the Internet for Facebook, YouTube, and many other websites to entertain themselves People currently have skewed meanings for the different meanings the word “Internet” contains. However, some believe that this is entirely the opposite: “For some people, cyberspace is a place to 'act out' unresolved conflicts, to play and replay characterological difficulties on a new and exotic stage. For others, it provides an opportunity to "work through" significant personal issues, to use the materials of cybersociality to reach for new resolutions ." It is true that the Internet is a place for interaction and socializing, however, the same occurs with the word “games,” which has a similar connotation with the word “toys” as well. Words similar to these are words that are not yet “melted” into our society's melting pot, words that still need time to be adjusted to before being taken for the norm. A similar comparison would be Batman, a figure who does vigilant duties that are respectable, but imagine the first time that he came out; nobody would know how to respond to him. When people associate the Internet, a medium that can be edited due to not being in print, people are more likely to give less thought of information being legitimate, compared to the same documents that are written in stone.

With us being in a new era of Internet interaction, P2P and the Internet are having a hard time being considered a “serious” thing. It is only a matter of time before people realize that there is both truth and false associated with the internet. Peer to peer reviews of things can also be seen via the Internet. If one were to look online to buy eyeglasses, one would see decormyeyes.com[7] as a top site in 2010 for a Google search. The owner of this website buys eye wear from eBay and sells them on his website (stating the products are brand new) for profit. He buys old eye wear from eBay and puts the delivery location at the location a buyer from his website is at. By doing so, people who buy from his website get used eye wear from eBay. Most of the time, the people who purchase goods from his website complain and post negative things and reviews via the Internet however the owner abuses this system of P2P reviewing for his own good. By people providing bad ratings for his website, they also don't realize that most of the time they also post a link to décormyeyes.com, and by doing so gives the website more views when others look at the complaining review and click on the link to his website, bringing the website higher in searches for “eye wear” and similar key words, bringing in more profit for gullible buyers. However, as time progressed, vigilant users of the Internet got smarter as well. They told people to stop linking and clicking on links that direct them to decormyeyes.com, but direct them to reviews that posted the negative things about the site. By doing so, lawsuits accumulated and people started noticing that they were being lied to, which led to lawsuits and eventually the website no longer stopped being a top search for eye wear. With that said, as these types of con artists are being more creative with the way they do business, vigilant people are also

[6] Feenberg, Andrew, and Darin David Barney. (*Community in the Digital Age: Philosophy and Practice*. Lanham, MD: Rowman & Littlefield, 2004.) 108.

[7] decormyeyes.com – a website known for scamming people of their money by providing non-authentic goods to their consumers

P2P and Transparency of Information

by Gerald Wang

being equally as smart to fight back. However, it is no surprise that people take the Internet and P2P with a grain of salt.

The fact of the matter is P2P is an oncoming threat to the privacy of information being distributed via bit torrent. If a P2P website gets blocked from a country, then it's pretty much over for the people in that country; thus, forcing them to move to another bit torrent website and hope that the new one doesn't close as well. With bit torrent websites being easier to shut down than other private web sites with more experience such as Wikileaks, these are the websites that are more likely to stick in people's mind when they want to look for that information. For the first time, we are able to incorporate the accessibility of the Internet and its pleasures with the capabilities of having resources on classified documents. Continuing with the issue of bit torrent and distributing files in a massive scale via P2P, when one shares files and downloads them, nobody is certain what they get. By having others who take on that duty to be the first to take a peek and to judge it, information of the file can slowly generate more karma ratings, and slowly be more likely be downloaded by others. Nobody is likely to download a file that has zero comments from a user with a brand new account. Because of this fact, nobody is willing to take the chance of seeing for sure if the file is in fact real or not. Because of this, it is extremely difficult for important files to be safely transferred.

When looking at the very definition of P2P, P2P is not Wikileaks. There is no direct transfer of information from the source itself to us, the viewers. Wikileaks would not work if it was established in a bit torrent world solely because of the reason how P2P bit torrent programs work. To download a file via bit torrent, we would have to be able to know if the file is credible or not (from the karma ratings), and who the person submitting the information is. If a person were to submit classified information himself onto bit torrent, he would most likely be traced automatically due to lacking high-tech capabilities to hide his tracks from the government. If everybody were to seek classified information through bit torrent by typing in “classified information” through the search option, thousands upon thousands of documents would come up. However, which one of these documents are actually authentic? How would we know if they are authentic? If you position yourself and judge the file based on how we judged files from who the sources were (through the karma rating system), that user would have been eliminated early on before a large amount of karma rating could be accumulated. Therefore, by that deduction there must be a person/group that people can trust that they can rely this information to when releasing documents; a group that doesn't know/care who the source is but posts out information they receive that they can deduct is authentic, solely because they feel that it is the right thing to do.

With this said, Wikileaks is a hybrid of P2P technology. It contains the essence of P2P, the transfer of information from peer to peer, with Wikileaks being an invisible third-party which helps in the delivery of goods. For example, the post office: the mailman will help you deliver your goods without asking question, receiving letters with or without a return address that may or may not contain dangerous products such as cyanide, or lethal explosives within. However, they deliver the goods and allow the information that the sender wants to send, to be sent, without any third-party filtering to distort the

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information. This type of transfer of information is exactly the same as what Wikileaks is doing, except via the Internet. By the means of Wikileaks, they are the answer to our issue of the altered information we might get from news nowadays. Without Wikileaks' pressence, what we see would be what they want us to see, and the voice of issues going on would never be heard. With having Wikileaks as a way of focusing information in one reliable place, we are able to focus our sharing of information without the need to be afraid anymore. P2P sharing through Wikileaks may or may not be the true future of a transparent third-party organization, but all that we know is true is that it is our traffic light that safely guides us, another form of P2P in disguise.

Cyber Neckties

by Nick Tobin

Open-source is a truly remarkable phenomenon to exist in our current society. Also known as “free-ware”, this software is free to use. But it is more than that. Although all code is owned by the publisher who created it, it is still free for anyone to modify and distribute. Really it is more like “freedom-ware”. The form of production is contradictory to most development that we have seen in the past, and is not just isolated to a few individuals; it is global and spreading quickly. Sixty-five percent of web site servers use Apache, one open-source operating system, and nearly 40 percent of large American companies, including Google's search engine, use Linux another open-source operating system. Sendmail, an open-source email transfer service, handles 80 percent of the world email distribution, and film studios like Disney, Dreamworks, and Pixar use Linux to render their movies.[1] The market for this software is huge!

Within the networked world the constraints of industrial economy are surpassed with open-source software and it was the boom of the internet that made this change possible. With software production, no longer are products made on an assembly line, packaged, and shipped to department stores to be purchased. Huge products of software are created virtually and can be made by individuals, or by groups of people separated by huge geographical barriers, and distributed at no-cost. This openness has led to huge innovations of software. Although open-source existed before the internet revolution, the revolution encouraged and expanded upon the distribution and community of open-source developers.

In Kevin Kelly's paper, “What Technology Wants”, Kelly sees technological ideas as so complex and powerful that he considers them similar to a group of organisms continually evolving, even categorizing them as the “7th kingdom of life.”[2] Through this perspective it is possible to trace any technology back through its evolution to understand it fully. For example, open-source can be traced back to early technological development, with simple examples from history serving as good examples of an early open-source structure. Cooking recipes are a perfect example of an early open-source product. Within the recipe you have everything you need to reconstruct

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[1] Weber, Steven. The success of open source. (Harvard Univ Pr, 2005.) Print.

[2] Kelly, Kevin. What Technology Wants. (Viking, 2010.)Print.

the exact same dinner as long as the recipe reached you through that given network. The network is in fact the most crucial part of open-source. With the example of recipes (pre-internet of course), the network would extend to friends and families within a small closed community.

Most technologies derived from an open-source environment, but it is the structure of the network that determines the success of the development. It was when open-source platforms developed the first network ARPANET that things started to take off. This network would create the future communities of developers who would be able to meet without the mediation of outside forces. The network is what revolutionized open-source. No longer would development and distribution be confined to small circle of innovators or a geographically isolated institute. Now the whole world would be open the the idea.

Kelly also introduces an important definition of what it means to have an information product in a network society. “When economists speak of information, they usually say that it is 'non-rival.' We consider a good to be non-rival when its consumption by one person does not make it any less available for consumption by another.”[3] Kelly uses an apple as a comparison; if one person eats the apple, then no other person can eat it. But if one person uses a program, the other person is capable of using it as well. This capability is a perfect example of our progress from the industrial age, to the information age. In this new age, we are capable of distributing massive amounts of information without the apple being eaten up by anyone!

In Yochai Benkler's book, Wealth of Networks, he speaks about open-source software development. He defines the motivation for these innovators as purely for psychological well-being and personal gratification.[4] Innovation solely for material gain is a product of the industrial age. The profit earned from the product has to justify the cost of distributing the goods and the labor put into it. During the early age of all technologies was the free exchange of information. The physical distribution is what made capital investment necessary. Consider early automobile engines, from 1911 to the beginning of World War II. Patents did exist but information was exchanged openly amongst different companies without payment or lawsuits. The collaboration took place out of the excitement to innovate and create. Today this camaraderie is extended and expanded. Global connections are made every day and collaborations happen endlessly. We can also now distribute at no charge. Any person, with a personal computer has the tools to create software. And with network of millions of people, collaboration is less than an arm's reach away.

Another theory that Benkler suggests in his book is “Enhanced Autonomy”:

[3] Kelly, Kevin. What Technology Wants. (Viking, 2010.)Print.

[4] Benkler, Yochai. The Wealth of Networks: How Social Production Transforms Markets and Freedom. Y(ale Univ Pr, 2007.)Print.

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The networked information economy improves the practical capacities of individuals along three dimensions:

1. it improves their capacity to do more for and by themselves;
2. it enhances their capacity to do more in loose commonality with others, without being constrained to organize their relationship through a price system or in traditional hierarchical models of social and economic organization; and
3. it improves the capacity of individuals to do more in formal organizations that operate outside the market sphere.[5]

With this idea, Benkler almost cuts the arm from the person, and not in a morbid disembodiment way, but in a mental proximity way. He suggests that the network brings us closer to one another. Our capacity to innovate is able to exceed its physical barriers. The freedom found in the network allows us to not only work with those nearby, but those far away. This is a huge difference in production—especially if you are to consider those of us who are separated by personality differences. No longer is the work space a place where big innovations can be made, but our living rooms and dens are now socially productive locations. Thus Benkler's theory of "Enhanced Autonomy" is actually inappropriately named. A better term may be "Shared Autonomy." It is in the network that we are able to share these products, ideas, and tools. The personal autonomy seems too privatized when the ideas are shared so publicly. Never the less, these are the tools that facilitate these developments.

In Steven Weber's book, The Success of Open-Source, he defines open-source not as the product, but the process; "Open-source is not a piece of software, and it is not a unique group of hackers. Open-source is a way of organizing production, of making things jointly."[6] Weber goes on to say that the process is built on top of the unconventional understanding of property rights configured around distribution. The contemporary mode for distribution is based on exclusive property rights, division of labor, and management of transaction costs. With open-source the product is open and free, eliminating transaction costs and some of the traditional problems of property right. Division of labor does not apply. Labor implies work in an assembly line form. The product that a person would complete does not recur creativity, but in blueprints. In open-source, it is more like division of innovation. Weber comments that these forms of development are able to tap into a more personal level of production than assembly line production can. The division of innovation stretches the human concessions towards creativity over productivity. This is not saying that productivity does not happen, because if anything it happens faster and more spontaneous than capital production, but the production that does accrue is creativity based and the distribution is a byproduct of the finished work.

[5] Ibid.

[6] Weber, Steven. The success of open source. (Harvard Univ Pr, 2005.) Print.

Cyber Neckties

by Nick Tobin

Using Weber's definition of open-source not as the software but as the process, it is important to consider the processes of other free development resources that function similarly to open-source software. One of the most influential models to look at is Wikipedia. Andrew Lih wrote a book on Wikipedia's development called The Wikipedia Revolution. In this books Lih prophesies the rise of Wikipedia. Started in 2001 it can be seen as the flagship in our information revolution; “Wikipedia became an instant phenomenon because of both supply and demand. In an information era, with a sprawling labyrinth of information sources balanced and reliable content is a rare commodity, in high demand.”[7] In just three years Wikipedia overtook Microsoft in web traffic. The only ranked “web properties” above it are Google and Yahoo who operate at a multi-million dollar budget, while Wikipedia is just over $500,000. In just one year from launch their catalog went from zero articles to over twenty thousand. Lih also says something similar to Weber; “Wikipedia is not a technical innovation, but a social innovation... We had the web already but we discovered the basic idea of how to organize a community.”[8] The community that Lih addresses can work faster and more effectively than a twenty-four hour newsroom. And their development model is very similar to the development of open software. Lih describes the contributions to Wikipedia similar to contributions made by wasps and termites collectively building structures. The product of previous peers work induces to building of new structures. The “recent changers” tab encourages the new “structures.” Here the viewers are not encouraged through incentive, but rather through freedom to review previous works and make changes, as well as additions. The guidelines are rigid enough to encourage maintenance, but flexible enough to allow an article to evolve. What would start out as a small article can wind up as a huge colloquium of knowledge on that subject. Without this community of innovators, none of this would be possible. Wikipedia has built a network that is as vast in its reviewers as it is in its audience, since all viewers are encouraged to contribute their own knowledge. The filter that it receives is more rigid and demanding than any previous encyclopedia because it is written not by like-minded individuals, but by a diverse and multi-disciplined network.

John Gage, of Sun Microsystems, said that “the network is the computer.” This is also true of open-source. Without the expansive network these technologies would not be able to flourish as much as they have. Benkler's idea of “Enhanced Autonomy” defines the tools to communicate and innovate, and within our newly networked society these inventions can grow and thrive. These tools can be used by anyone with the hardware to do so. Kelly optimistically speaks about this; “Today’s users of information are not only today’s readers and consumers. They are also today’s producers and tomorrow’s innovators.[5]” innovations are not happening out of capital development, but out of personal creativity. As Lih says, these motivations to connect and create are not a new invention, but the ability to organize these ideas across geographical barriers is a huge invention.

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[7] Lih, Andrew. The Wikipedia revolution: how a bunch of nobodies created the world's greatest encyclopedia. (Hyperion Books, 2009.)

[8] Ibid.

How do Peer-to-Peer File-sharing technologies matter for society?

by Jennings Bryan Gamble

The “pirate” branding is cast so widely and so often in our society that when court cases (most often involving the Recording Industry Association of America (RIAA) when it comes to music files, and the Business Software Alliance (BSA) when it comes to copyrighted software) brand teenagers as “pirates” for utilizing P2P file-sharing technology, many onlookers agree and shake their heads. The teenagers are dismissed as simple bootleggers with fancier equipment than their pre-Internet, thieving counterparts. Even the FBI explicitly names Internet file-sharing networks as a source of the “growing threat” of intellectual property theft under the bolded, twenty-four point font “It's an age old crime: stealing”1. In far-flung dissent, Matt James Mason wrote the book The Pirate's Dilemma: How youth culture is reinventing capitalism, in which he explained that history has shown us that society needs the pirate's actions. Pirates are a sort of canary in the coal mine; a societal indicator of a market full of consumers demanding what it can't currently provide. Peer-to-Peer networks' ability to change markets as well established as the music and software industries has already been proven. The network's appearance has also helped establish something about consumers: people want mobile and downloadable music. They just didn't know they wanted it at first. Peer-to-Peer technology impacts global markets whether we demonize or exonerate it.

“Societies or companies that expect a glorious past to shield them from the forces of change driven by advancing technology will fail and fall.”

The temptation when thinking about file-sharing networks is to swing too far to one extreme of the debate: either the networks are solely for money-strapped college students sitting in screen-lit rooms stealing, or the networks are the tools for an anarchical revolution. Rupert Murdoch, the founder and CEO of News Corporation, exemplifies a rare inclusionist mindset when it comes to technology forcing change on established business; though not specifically relating to Peer-to-Peer networks. Mason is the one to take that step. Mason believes that society has more to gain from embracing the inventions of the pirates than shunning them. As a supporter of Peer-to-Peer technology, the most important misconception to address is that Mason, like author of Free Culture, Lawrence Lessig, doesn't advocate for a propertyless society, nor does he advocate for a society that doesn't pay its

[1]“FBI: Intellectual Property Theft”, http://www.fbi.gov/about-us/investigate/cyber/ipr/ipr

artists. His notion of a positive piracy is absolutely saddled in the material, for-profit world. Arguments like these are typically countered with a resound declaration that most of what file-sharing networks are used for is the downloading of copyrighted material. But pro-Peer-to-Peer arguments garnish considerable poignancy when one considers how entire business empires have been built on markets that were created by Peer-to-Peer technology.

Napster creator Shawn Fanning hardly set out to design a “pirate tool”. Nor did he set out to create a Peer-to-Peer network, or set the scene for subsequent businesses based on new forms of distribution. Napster was developed to solve a problem2. MP3s of mainstream songs existed on the Internet long before Peer-to-Peer networks made them so searchable. Producers, editors, and mixers of music had long since been putting MP3 files on the internet to facilitate work tracks that were being produced in multiple places3. Before Napster, the process of getting at those songs with a search engine if one didn't know exactly where to look was long and tedious, however. The network produced the solution to that tedium- a single platform built to facilitate the exchange of music from the libraries of the entire user-base. In 2001, this exchange Napster was facilitating was declared an unauthorized use of copyrighted material under the Digital Millennium Copyright Act (DMCA). After being unable to pay the $26 million fine for damages, Napster was forced to declare bankruptcy. By this time, the Napster community included upward of 25 million users; 25 million users that were accustomed to on demand, downloadable music. This hunger for the MP3 was the beginning of something new for the music industry.

The Ubiquity of MP3s as files that store songs for the individual's music library can make it difficult to remember that the MP3 wasn't actually developed for public distribution. Rather, the MP3 was developed for the creators of music (producers, editors, and mixers) as an intermediate step: a data compression that allowed for easy storage on the internet. The MP3 was a stepping stone for music producers not geographically in the same place to work on the same project before copying the finished tracks to a CD. The idea of playing music that was stored on the computer itself, as a digital file, hadn't occurred to anyone yet.4 In providing the ability to search for these MP3 files, Napster created a new market full of people that wanted the files more than the CDs. And they wanted to be able to find them all in a single place. That turned out to be a very powerful idea. An idea that Apple would eventually take advantage of.

In 1999, the only application that let Mac users play MP3 files was the primitive third-party application MacAmp5. It lacked both the pizzazz of an official Apple application, and the usability of its soon to be illegal cousin, Napster. The first handheld MP3 playing device was called the Diamond Rio, and was released in September of 1998. It couldn't sync up with the Mac. Looking back to the late nineties, with only two years until the unveiling of iTunes in 2001, it's very difficult to pin

[2] David, Matthew. *Peer to Peer and the Music Industry: The Criminalization of Sharing.* Sage Publications, 2010. p33
[3] David, Matthew. *Peer to Peer and the Music Industry: The Criminalization of Sharing.* Sage Publications, 2010. p32

[4]Levy, Steven. *The Perfect Thing.* Simon & Schuster, 2006. p26
[5]Levy, Steven. *The Perfect Thing.* Simon & Schuster, 2006. p26

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Apple as the company that would eventually reign over the digital music distribution business. Bill Kincaid, an old Apple employee, was working for a start up when he first heard about the Rio, and immediately began a side project to make the device Mac compatible. The result was interface hardware that allowed the Rio to physically connect to the Mac and the program “SoundJam”, a much more impressive Mac MP3 player and interface for the Rio in a Mac environment. Steve Jobs noted in a Fortune Magazine interview that he was under the impression that Apple had lost its chance to be a contender in the digital music arena. With Apple so far behind the rest of the players in the new digital music market, the company was more than happy to buy SoundJam rather than start from scratch. Apple then set a team the task of transforming the scrappy third-party project into what would become iTunes[6]. In four months, iTunes was released.

Napster created a market for MP3s, for which Apple was completely ill-equipped. But the fledgling market's potential was observed and SoundJam came to give Mac users some of what they enjoyed in Napster- a player that played MP3s. Apple then bought SoundJam, employed the men behind its design, and beefed it up until it was the iTunes Steve Jobs could proudly unveil at the 2001 Macworld Conference and Expo. It is said that truly potent design introduces people to the things they had no idea they had always wanted. If it weren't for Shawn Fanning's “piracy”, this market of virtual music may have laid undiscovered, and we may not have had our iconic iPods, or iTunes. Even if the networks themselves are used to download copyrighted material, their introduction produces technology or repurposes it to accomplish tasks people want done. Napster was built to solve a problem.

Peer-to-Peer networks and their software are very good at solving problems. Opponents of Peer-to-Peer technology are now facing the daunting task of shutting down a network with thousands upon thousands of parts that know they're coming. Many networks and clients are now open-source, allowing anyone with programming proficiency the chance to make their own clients and networks. The Gnutella network was created by Nullsoft, a company bought by America Online in 2000. After examining the flaws of Napster, they created and released the source code for the new Gnutella network on their website. In only a few hours the code was yanked from the website by America Online, but it only took that long for over 10,000 people to download copies[7]. Distribution was an easy task after that. Peer-to-Peer technologies are evolving with the people that are using them as well as the laws that are attempting to contain them.

The problem Napster set out to fix has already been explained: it was created to quickly find MP3 files on the internet. The company didn't survive in its original form. However, the idea it created evolved past Napster and its faults. The defense Napster's creators put up during its Los Angeles court trial was that they could not determine what users used their service for any more than a phone company, or an internet provider[8]. Internally, Napster's structure was based around a centralized

[6] Levy, Steven. *The Perfect Thing.* Simon & Schuster, 2006. p29

[7] Wang, Wallace. *Steal this File Sharing Book, what they won't tell you about file sharing.* San Francisco: No Starch Press. p24

[8] David, Matthew. *Peer to Peer and the Music Industry: The Criminalization of Sharing.* Sage Publications, 2010. p34

server, which they used for advertising revenue. It turned out to be this centralization that the legality of their service was called into question for. The centralized server gave the company a “direct mediating role” in each interaction performed on the network9, therefore the company could be held responsible. This combined with the fact that the Digital Millennium Copyright Act (DMCA) was directed at technology that would promote infringement of copyright10 was the proverbial final nail in Napster's coffin. But it was hardly the end for file-sharing. Gnutella wasn't being designed after Napster users realized the service was doomed; the aforementioned public release of the Gnutella network occurred on March 14, 2000- well over a year before Napster was liquidated. Peer-to-Peer has the benefit of virtually a whole generation of support and evolves as quickly as takes someone in the group to find a solution to a problem that bothers the aggregate. Truly, dismantling them will be difficult.

Even if P2P networks are only improved by the tiniest percentage of people utilizing their service, the huge numbers of people on that service ensure that the networks will evolve faster than anything that is designed to stop them. Gnutella ran into another problem because of the way it conducted its searches. The network is one of the most popular currently on the web, with huge troves of treasure waiting to be discovered. Unfortunately, when a user searches for a file, that query is run through every computer connected to the network11. As the network grows, everyone's search times get longer. The FastTrack network is partially based on the Gnutella protocol, but uses updated structures called Supernodes to locate files. Computers in the network are divided into Supernodes and leaf nodes based on ability, and queries are sent through Supernodes instead of the whole network. Once a Supernode detects a queried file in a leaf node, it will notify the user's computer to begin the transfer.

After networks like Gnutella divorced themselves from any kind of centralization, it became much harder to prosecute the creators of the networks; they truly had no means of surveying the entire network. At this point, prosecution turned to the uploaders. With the RIAA and MPAA attacking college students and forcing ridiculously overpriced settlements out of them, the networks took another form. Torrents came from the same protectionist mindset that fostered the split from the centralized servers of Napster. Creators of the system could evade the law if the didn't directly provide copyright material, so the same loophole was applied to the users12. Torrents provide a sort of address to download different pieces of a file from different people. No individual could be held responsible for the transfer of a file. This not only solved the legal issue, but fixed the issue of users losing a download because someone turned their computer off. Finally, there are networks like the MUTE network. The MUTE network is also designed for users looking for security in their downloads. Instead of facilitating two computers for a standard file swap, it breaks the file into

[9] David, Matthew. *Peer to Peer and the Music Industry: The Criminalization of Sharing.* Sage Publications, 2010. p35
[10] David, Matthew. *Peer to Peer and the Music Industry: The Criminalization of Sharing.* Sage Publications, 2010. p35
[11] Wang, Wallace. *Steal this File Sharing Book, what they won't tell you about file sharing.* San Francisco: No Starch Press. p24
[12] David, Matthew. *Peer to Peer and the Music Industry: The Criminalization of Sharing.* Sage Publications, 2010. p37

separate pieces and sends it through the entire network before it reaches its destination. So watchers of the MUTE network have to observe all the nodes in the network to understand where a file is going or where it is coming from13. Different networks are optimized for users who are looking for different things in their file sharing experience.

Apple is an example of a company that was able to create a product that surfed the waves of a new market that was created by “pirated technology”. The word “pirate” is a powerful buzz word that shows up when one party is accusing another of intellectual theft. Many actions of pirates are most definitely theft, but the pirate label is almost always applied after an entity has realized the rules of engagement in the marketplace have changed. Mason, of The Pirates Dilemma, would not disagree with this. One of the three habits of highly effective pirates he sites is that pirates don't look for innovation within a market. They look for innovation outside of it. In creating new markets, pirates, or whatever one chooses to call them, leave old markets abandoned for obsolescence. But if file-sharing networks have shown us anything, they've shown us that legality isn't an issue for which they're unprepared. The networked society we live in allow them to evolve almost as quickly as anyone in the network can point to a fault. Apple is now the vanguard of legal digital media distribution. The company boasts 350,000 files available for download, and over 300 million downloads to date. These include not just music files, but movies, podcasts and television. Peer-to-Peer technology is significant for society because it opens new markets for companies like Apple to sow if they are willing. Or they could continue outpacing the legal system that is desperately trying to keep ahold of them.

[13]Wang, Wallace. *Steal this File Sharing Book, what they won't tell you about file sharing.* San Francisco: No Starch Press. p37

From Floppy Disks to Pirates, the Evolution of P2P Technology

by Chris Bragg

Peer to peer technology (P2P) has evolved rapidly since the age of the internet, manifesting into what is now known as BitTorrent and file sharing. File sharing over the last decade has increased and improved dramatically: the internet has become the center of piracy and legal issues because of the growing popularity of torrents and P2P technology. The development of BitTorrent software has spawned a new movement of peer to peer technology in the form of file sharing, beginning as a simple music sharing client and now existing as a P2P hub known as The Pirate Bay. The evolution of BitTorrent and other peer to peer technology can be traced back decades, and recently becoming popular at the turn of the millennium. The resilient Pirate Bay and other alternative file hosting websites are at the forefront of the battle for internet piracy and the anti-copyright movement.

P2P technology, specifically file sharing, has been around for decades; before the wide use of the internet file sharing had to be done manually. In the 1970's the floppy disk was the first removable media for manual file transferring. Gradually better technologies were created such as the compact disk but most importantly the internet. With the creation of the World Wide Web in 1990 and MP3 peer to peer rapidly expanded to file sharing through the internet. The cyberspace of the internet made it ideal for file hosting services accessible across the globe to anyone who had a computer and modem. The first of many file sharing websites was created in 1997 by five UCLA computer science students: Scour Inc. Scour was a search engine that could search and download media files, one of the earliest P2P file sharing service of the internet. Scour, although going bankrupt, paved the way for many more file sharing projects, most importantly Napster.

Napster was the beginning of modern day peer to peer technology which also subsequently started the legal war between piracy and industries such as the Recording Industry Association of America (RIAA). Napster was created in 1999 using an early method of BitTorrent technology. Although only used to share and download music, Napster paved the way for far more uses of file sharing such as movies, books, games, software, and applications that are common to find online today. It was the first of many decentralized P2P file sharing programs and lead to many copyright and intellectual property rights violations and legal battles. Napster caught the attention of the RIAA within the same year of release due to their success and popularity. Ultimately, Napster was shut down after a compelling lawsuit of the RIAA based off assisting in copyright infringement and is now a paid service.

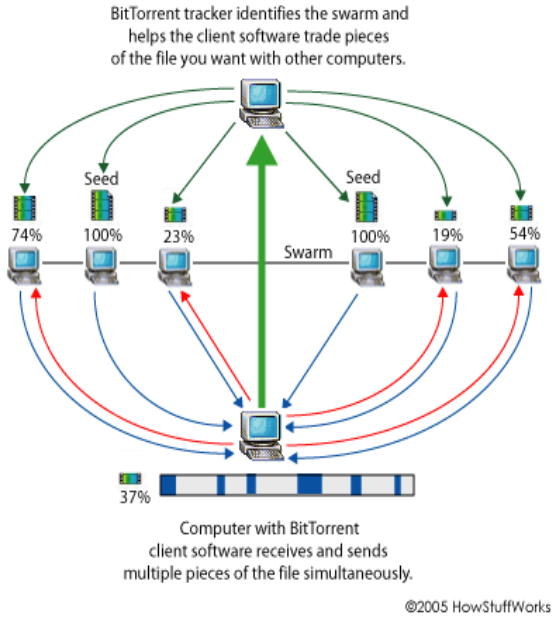
From Floppy Disks to Pirates, the Evolution of P2P Technology

by Chris Bragg

Napster used an early version of software similar to BitTorrent; it was considered a “first generation P2P network”. Although the user would search through Napster’s indexed servers, the files (mostly MP3’s) would ultimately remain decentralized on the host’s computers instead of Napster’s server. Napster was the medium between the user and the host, not providing any files directly but instead connecting peers to directly download from each other. This advancement in P2P technology became very popular and preceded the coming of BitTorrent technology that would rule the P2P world today.

Although Napster was simple and easy, there were still disadvantages which would coin it a “first generation P2P network”. Broadband internet is a major issue in download/upload speeds. The download can only be as fast as the upload speed of the host, which is usually many times slower than the download speed of the user. Napster was inherently slower than bittorrent technology because it was still limited to a certain amount of upload/download speed due to the bandwidth connecting the two users. Although not a huge problem for small files such as MP3’s which usually contain about 5 megabytes of information, a file such as a video with a gigabyte of information would take weeks to download. Another problem of Napster was the centralized common index server that connected the peers. The Napster server, which contained a list of all available songs, was at the center of the network. This centralization made it easy for the courtroom to rule against Napster and shut down their servers, sending the millions of users back to a P2P stone age.

Although modern P2P technology would not exist today without the internet or the creation of Napster, it was the invention of BitTorrent which has created the P2P network popular today. BitTorrent has been the staple of file sharing for the past few years. Although invented in 2001, no one had implemented BitTorrent technology to good use until the Pirate Bay. BitTorrent software and technology is the method of file sharing that makes downloading files fast and easy. In traditional downloading, the server hosting the file will send a direct copy of the file to the user. However, the more users downloading the file and the more traffic with the server will lead to slower download rates: the weakness of traditional downloading. BitTorrent however, is faster with the more users downloading the same file: the more files shared, the faster downloads are. The decentralization of the hosted files helps reduce server load and leads to much faster download speeds between users.



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BitTorrent fragments the file into multiple pieces which are downloaded, and subsequently uploaded simultaneously, at the same time. Instead of downloading from start to finish, the user downloads one part of the file from one user (a seeder) while uploading another part to another user (a leecher). This method leads to increased speed and less bandwidth use because the user pieces together the file from multiple computers instead of one server that the entire swarm is leeching from. The more users involved in the download, the faster the file sharing will be because there are more sources with each fragment of the download. For large and popular files such as music and games, this gives BitTorrent an extreme advantage over traditional downloads.

The evolution of peer to peer technology and file sharing services has manifested into one extremely popular and effective bittorrent website known as The Pirate Bay. The Pirate Bay (TPB) is a website and file sharing service located in Sweden that is currently the largest open BitTorrent tracker and “the world’s most resilient bittorrent site.” Established in 2003, TPB has been the central hub of illegal downloads, file sharing, and the peer to peer available on the internet. Using bittorrent technology, The Pirate Bay hosts access to 3,346,240 torrents, including games, music, videos, and much more, available free to anyone with internet access. TPB has been at the center of hundreds of legal disputes and controversies, the Los Angeles Times states TPD is “one of the world’s largest facilitators of illegal downloading” and “the most visible member of a burgeoning international anti-copyright or pro-piracy movement.”

The Pirate Bay implements bittorrent technology and open tracker software to utilize their popularity to ensure downloads are the fastest on the internet. With millions of registered users (although registration is not required to download files), popular files can be downloaded at remarkable speeds due to the sheer volume of seeders and leechers that are downloading the file at the same time. Without bittorrent technology, TPB would not be nearly as successful as it is, boasting over 25 million unique peers as of November 2008. Although there are countless numbers of websites and projects similar to the pirate bay, none are as famous and widely used as TPB. The Pirate Bay through countless legal battles, threats, and hacking attempts is still at the front of the anti-copyright movement.

The Pirate Bay has been the beacon of light for the anti-copyright movement. Their resilience to never remove a torrent is shown in detail on their very own website. On TPB website links to legal threats by e-mail from corporations such as Dreamworks, Microsoft, EA, Apple, and many more companies are showcased for everyone to see. TPB taunts their accusers with claims of stupidity and corporeal suggestions involving batons. TPB brags on their website: “we used to have a nice graph here, but it's simpler to just say: 0 torrents has been removed, and 0 torrents will ever be removed.” Being based in Sweden is a major advantage to TPB, being able to ignore most copyright laws in the US and other countries. In May of 2006 their servers were raided by police and shut down, but only after 3 days the website was back up again in servers across the world in the Netherlands, Russia, and Belgium. Although found guilty in court for “promoting other people’s infringement of copyright laws” and sentenced to a year in a jail and a hefty fine for each of the four owners of

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TPB. Nevertheless, The Pirate Bay has been back in action and untouched for years, serving as the file sharing hub of the world much to the displeasure of the corporations.

There are many alternatives to The Pirate Bay, there are countless P2P networks that also host thousands of torrents and provide access to free file sharing. BTJunkie is a popular alternative to TPB, possessing the largest BitTorrent index with a web crawler capable of searching for torrents from thousands of other web sites. BitTorrent.com is another popular choice by users, created and operated by the founder of BitTorrent technology Brah Cohen. Although the internet is filled with alternatives, none can boast the capacity and popularity of The Pirate Bay. Most websites must make adjustments and can't store torrents on their servers to avoid legal troubles. Being based in Sweden allows TPB to ignore most copyright laws, but websites such as BitTorrent.com and BTJunkie based in countries like the US must abide by copyright laws in order to stay online and avoid millions of dollars in fines.

The legal war surrounding peer to peer technology, file sharing and illegal downloading has been long going and immense. The RIAA, the most notorious for chasing down copyright infringement, and many other transnational corporations create lawsuits and complaints yearly against websites like The Pirate Bay. There is and will always be a heated controversy surrounding technology that allows copyrighted material to be copied, downloaded, and freely dispersed across the globe. Most of the lawsuits involve accusations against copyright infringement and intellectual property rights, as well as the ethics and morality of the obvious internet piracy.

Although direct copyright infringement is not violated, these websites help make available and help in the distribution of copyrighted material. It is a much harder challenge to bring down bittorrent sites due to the decentralized nature of the website.

Although TPB is providing access to copyrighted material, TPB's servers themselves do not contain any copyrighted material, and they have no control over the users actions, and that the TPB cannot be held responsible for the collective crimes committed by the millions of users themselves. Known as the King Kong defense, TPB lawyers during their trial stated: "he who provides an information service is not responsible for the information that is being transferred. In order to be responsible, the service provider must initiate the transfer. But the admins of The Pirate Bay don't initiate transfers. It's the users that do and they are physically identifiable people. They call themselves names like King Kong... According to legal procedure, the accusations must be against an individual and there must be a close tie between the perpetrators of a crime and those who are assisting. This tie has not been shown. The prosecutor must show that Carl Lundström personally has interacted with the user King Kong, who may very well be found in the jungles of Cambodia..." This argument has been the basis of most legal battles over P2P sites such as TPB: It is not the TPB violating copyright laws but the users themselves, and the hosting website which contains no copyright materials cannot be held accountable for the millions of users who are downloading the files.

To combat against The Pirate Bay and other file hosting websites, Internet Service Providers (ISP's) have begun to

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block the websites, mainly TPB, to prevent illegal file sharing and to avoid law suits and further legal action against them. ISP's were under major pressure from companies and courts to block TPB or face legal action for assisting its customers in copyright infringement by allowing the use of TPB. ISP's in Denmark, Germany, Greece, Ireland, Italy, Netherlands, Norway, China, Sweden, and the UK have all started to block the website in an attempt to take legal pressure off them, and some for ethical reasoning. Facebook, the world's most popular social networking website, has also begun to block all links and messages regardless of content that is associated with TPB. Facebook chief privacy officer Chris Kelly states that Facebook has the right to block links where there is a "demonstrated disregard for intellectual property rights," although TPB has so far been the only targeted P2P website for blocking.

The future of file sharing is very debatable, and depends on how the next few court cases are decided. Peer to Peer technology has started to bloom and its users continue to grow in number every day. However, if allowed to grow further file sharing will become a prominent part of individual expression and a step towards a neutral internet. Without regulations prohibiting content from being shared, the user will have access to a lawless world and become capable of sharing and downloading any files imaginable. Bittorrent still has room to grow, a purely P2P network would have no trackers, servers, or a central database: it would be a swarm made up of purely individuals functioning as the servers to connect from. It is doubtful that TPB and other websites will somehow shut down due to an overwhelming and compelling argument from corporations due to the popularity of these websites. Without bittorrent technology file sharing would be sent back to the stone ages again until another method is eventually invented.

Peer to peer technologies, although highly controversial and the center of countless legal disputes, are here to stay. The popularity and growth of file sharing networks is a prime target for future entrepreneurs. File Sharing has evolved from simple floppy disks that manually store information for sharing, into a worldwide database that hosts millions of files available at the click of a button. The first generation of file sharing websites such as Napster helped open the gates to a new age of P2P interaction through the internet, only to be followed by more efficient, popular and resilient successors such as The Pirate Bay. The legal battle over copyright infringement and intellectual property rights still rages on and could determine the future of the popular P2P networks. Regardless of regulations and laws however, P2P technology has taken off and hasn't slowed down. The limitless number of users can attest to the popularity and need for P2P which will only increase exponentially as better technology and easier interfaces find its way to the P2P world.

(Re)Defining Disability in the Technology Era

by Kayla Thompson

Eugenics is defined as the science of improving a human population by controlled breeding to increase the occurrence of desirable heritable characteristics[1]. Early eugenicists believed that genetics were the cause of social problems like welfare, crime, and disease, and used quantitative research to prove that these certain traits should be eliminated from the human gene pool. While these ideas may seem extreme and even primitive, they have been implemented throughout history. Best illustrated in World War I, Germany's leader Adolf Hitler used the idea of eugenics to justify his racially based social policies—emphasizing the improvement of the superior Aryan race by targeting and 'sterilizing' the Semitic or unworthy people. Below are pictures of subjects who were tested based on their physical appearance to see whether or not their phenotypes met the standards of the superior race. This 'social-Darwinism' led to genocide an estimated 11 million deaths.

[1] "Facing History and Ourselves," *Race and Membership: The Eugenics Movement*, 2011. http://www2.facinghistory.org/campus/rm.nsf (accessed 28 February 2011).

Race, gender, sexuality, religion, and disability are all defining characteristics that make each person idiosyncratic. We as humans inherit a very unique genetic makeup, which allows for a very diverse human gene pool, but in the modern world today it is nearly unfathomable to think that mass 'purifications' (like the Nazis) could take place—or is it? The continually progressive biotechnology now provides us with instruments that both screen to prevent and 'treat' these sometimes unwanted characteristics. Genetic testing and DNA mapping are available and often used to prevent these unwanted characteristics or 'handicaps' from society. Other innovative biotechnologies are now available to treat, cure, and alleviate disabilities. Author Remis declared that, "The 21st century would be 'The biotech century' and that it would be an age in which humans would be able to alter their DNA radically, encoding their visions and vanities while concocting new life-forms."[2] Eugenics illuminates the idea of eliminating the psychically and socially weak in order to build a stronger, better society, but is that not exactly what preventing and treating disabilities is? Does having a disability make you inferior?

One technology that has specifically influenced the disabled community is the cochlear implant for the deaf. Cochlear implants are electronic devices that helps those who are profoundly deaf make sense of sound. To the right it is illustrated how, "The implant consists of an external portion that sits behind the ear and a second portion that is surgically

[2] Michael A. Rembis, "(Re)Defining disability in the 'genetic age': behavioral genetics, 'new' eugenics and the future of impairment." *Disability & Society*, no. 24 (2009): 5, 587.

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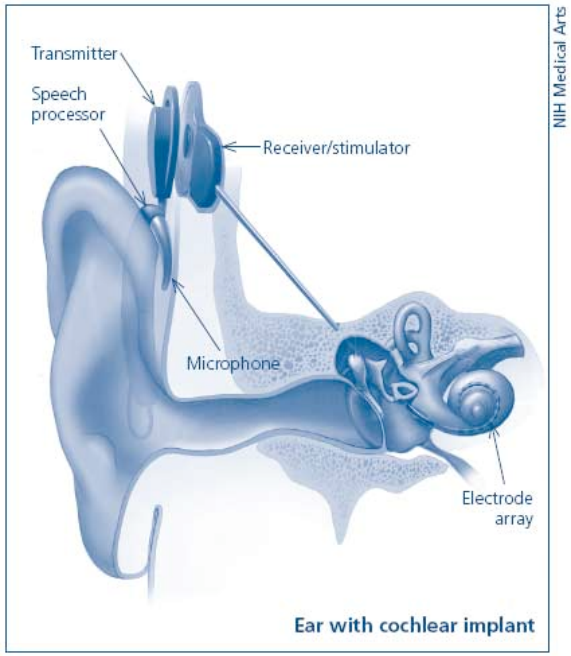
by Kayla Thompson

placed under the skin… Cochlear implants, coupled with intensive post-implantation therapy, can help young children to acquire speech, language, and social skills."[3]



Advocates for the cochlear implant justify many deaf people's successful integration into society through improved speech and communication skills. "Language development of children with implants at early ages (<36 months)…exceeded that expected from deaf children without an implant, with the most

[3] "National Institute on Deafness and Other Communication Disorders," *Cochlear Implants*, August 18, 2010, http://www.nidcd.nih.gov/health/hearing/coch.asp (accessed March 1, 2011).

rapid language growth occurring among children who received the cochlear implant at the youngest ages."[4] While these outcomes are often considered beneficial, there are also many negative aspects of controversy.

The decision whether or not to conform to society's norms and surgically implant the cochlear implant is not always as simple and straightforward as it may seem. There is a tremendous attempt to normalize, control, and standardize the deaf through this biological manipulation. The questions we need to be asking are what is this socially constructed normalcy and why must everyone strive to obtain it? Thinking of the pathology of deafness creates the notion that being deaf or disabled is a disease—something that needs to be medically treated and cured. Hearing thus becomes the goal, the normal, the privileged term, with the cochlear implant as a solution. The cochlear implant reinforces deafness as a handicap while constructing the normalcy and superiority of those hearing people.

Though technology now provides it, being deaf does not mean that one should be altered to this normal standard. The traditional method of communication among the deaf is ASL (American Sign Language), an accredited language with unique culture, history, and meaning. While society leads many to believe that the deaf are simply hearing deficient people who must be helped, they fail to acknowledge their heightened sense of smell, sight, taste, and especially touch.

[4] Jareen Meinzen-Derr, "Children with cochlear implants and developmental disabilities: A language skills study with developmentally matched hearing peers," *Research in Developmental Disabilities*, no 32. (2011), 759.

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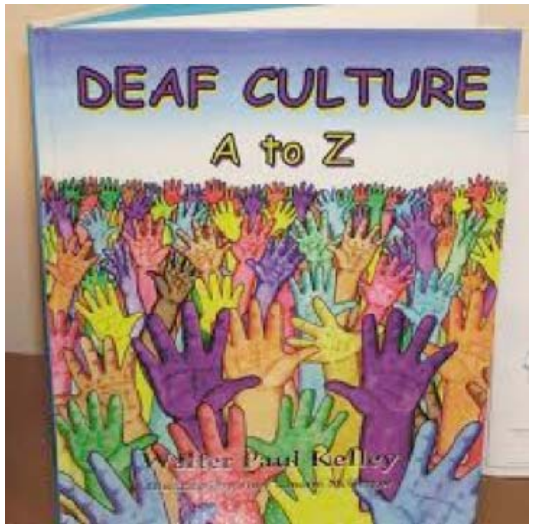
Above is a picture of a sign language book illustrating the deaf culture through the emphasis of hand signals and movement.[5] While medical technologies like the cochlear implant offer a solution to replace this hearing capability loss, we should question if deafness is really a deficiency at all and if it really needs to be fixed?

In the article "Ethical Issues in Cochlear Implant Surgery", it is described how the deaf have been assimilated into a deaf culture called the "Deaf-World" in much of the way in which minority groups are assimilated into their specific community. The people here are said to have their own "language, culture, and unique experiences."[6] Within the Deaf-World, being deaf is highly valued—a characteristic and lifestyle that many parents hope to share with their children. The two completely opposite views on deafness illustrate how categorizing being deaf as an inferior disability is simply a social construct. Deafness is a lifestyle and culture completely separate from the hearing—not considered an inferiority that should be aided.

While implementing eugenics today may seem far-fetched, categorizing disabilities, specifically the deaf, as lesser humans lacking an essential mean of communication to society creates the societal need for some sort of a solution. The cochlear implant reinforces the idea that being deaf means having a deficiency. While this innovative technology is bridging the gap of communication to normalcy, it represents the loss of the exclusive deaf community. The endless human gene pool is yet again altered, changing the flow of genetic diversity. And although there is a chance that cochlear implants may deliver close to normal hearing for most implanted, the thriving culture of deaf people would eventually diminish if all children were 'facilitated' with these cochlear implants. With the analogy of deafness being most like a minority group in today's culture, author Grodin argues that, "the variety of humankind and cultures enriches all cultures and contributes to the biological, social, and psychological well-being of humankind."[7] Throughout these claims it can be inferred that without deafness in our world, eugenics would have simply eliminated one more form of diversity.



[5] "Deaf Studies," *St. Joseph's School for the Deaf*, http://www.sjsdny.org/deafstudies.html (accessed March 1, 2011).

[6] Michael A. Grodin, "Ethical Issues in Cochlear Implant Surgery: An Exploration into Disease, Disability, and the Best Interests of the Child," *Kennedy Institute of Ethics Journal*, no 7. 3 (1997), 234.

[7] Michael A. Grodin, "Ethical Issues in Cochlear Implant Surgery: An Exploration into Disease, Disability, and the Best Interests of the Child," *Kennedy Institute of Ethics Journal*, no 7. 3 (1997), 237.

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Society creates a mold, a stereotype, and a norm towards what individuals should strive and aim for. The advanced technologies of today offer variations of genetic counseling and reproductive interventions that can be considered "aimed at reducing the number of births of children with congenital and genetic disorders; that they are both eugenic and oppressive."[8] Yet despite these criticisms, society today moves forward with the craving for constant innovation towards 'flawlessness' in biotechnology. Why are we unable to cope with the diversity of different communities such as the deaf community? Why is there a need to solve these 'problems'? Author Rembis explains that, "USA, like most western societies, posses a central vision of itself as steadily progressing towards a future free of disease and impairment, an assumption based largely upon the perceived ability of experts, the state and private investors to gain increasing control over nature through the tools of modern science."[9] The necessity to satisfy our human nature and desire for genetic 'perfection' exemplifies eugenics through today's modern biotechnology. We now have the power to choose which specific genetics characteristics are most and least desirable—despite if it is for the good or bad for the individuals and the further implications on society as a whole.

The question how does a new technology like a cochlear implant effect the eugenics of society can be summarized with another question: Why is there a constant societal need for technology to advance our biology? Biotechnology can be a wonderfully useful and positively innovative aspect in today's medical world, but how far is too far? When is the line drawn between eradicating a disease and the eugenics of eliminating a community or population? The term disability has moved into the 21st century as a social construct that must be fixed, and cochlear implants are just one example of how biotechnology has allowed society to rethink the definition of a disability. Cochlear implants create the implication for the deaf (and the greater audience of all people with 'disabilities') that there is an obligation to normalize, to eliminate the weak and build a society full of the strong—biotechnology's innovative eugenics of the 21st century.

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[8] Michael A. Rembis, "(Re)Defining disability in the 'genetic age': behavioral genetics, 'new' eugenics and the future of impairment." *Disability & Society*, no. 24 (2009): 5, 587.

[9] Michael A. Rembis, "(Re)Defining disability in the 'genetic age': behavioral genetics, 'new' eugenics and the future of impairment." *Disability & Society*, no. 24 (2009): 5, 587.#

Considerations of Biotechnology and Bee

by Kelsey Dunlop

"If the bee disappears from the surface of the Earth, man would have no more than four years left to live" -Albert Einstein

The current state of the honeybee is a dismal one. For years now, concerned articles about the disappearance of honeybees have shown up a multitude of times in mainstream news media. Articles regarding the honeybee as it is being used as a biotechnology for military warfare arise across far less often however significant it may be to helping with answering the question as to why the bees are disappearing. In this paper I will examine and discuss the use of the honeybee as it has been remade for agricultural and military purposes. The fundamental question is: when considering that humans have been biologically remaking the honeybee, what then are the possible ecological and technological impacts of this forced metamorphose?

It is surprising to note the reason for and the extent to which bee's bodies have been physiologically and physically remade in just the last hundred years. Although remaking the honeybee did not first begin at this point in time, this time period does represent a significant shift in the uses for honeybees in the global economy. In 1851, a man named Reverend LL Langstroth invented the move-able frame hive; multiple vertical frames for bees to build their wax honeycombs.[1] This technology was created to improve and fill the need for the transportation of beehives, which was a growing business. Honeybees began to be transported globally and all the buzz was about commercial beekeepers. The demand for transportable honeybees was there and it continues in our current day. It is also fairly stressful on the beehives. Commercially operated beehives and honeybees are generally discussed in terms of mechanics and overall functions of the hive because the amount of production by the hive had the potential to be a profitable business. The restructuring of the beehive began- as did the restructuring of the individual bee. Suddenly certain characteristics of some bees were preferable to others and were thus sought out with hopes to then replicate certain genes.

In 1919, another member of the monastery crowd, Brother Adam, set out to use cross breeding practices to create a bee that was "a gentle-natured, productive bee with low swarming

[1] Benjamin, Alison, and Brian McCallum. *A World without Bees*. New York: Pegasus Books, 2009. 31-33.

tendencies and that was unlikely to die during winter."[2] There was a widening gap in the genetic diversity of bees, due to the agricultural industry their specific manipulations and intentions for the honeybees. A lack of genetic diversity has really become a common feature of modern agriculture. In Ecologies of Empire, Jake Kosek discusses how the worker bee's bodies "have changed color from black to yellow, become almost one-third larger in size, and sport more hair. Bees now have a reshaped digestive tract and an exoskeleton almost twice as thick as those of their ancestors just a hundred years ago"[3] and therefore their life span has been shortened by fifteen percent. Farming systems became incredibly market focused and those systems include the honeybee. There are goals of selection to create the epitome of bee for the agricultural industry.[4] Unfortunately, the lack of genetic diversity that comes with modifying or remaking honeybees for a certain purpose translates both into positive and negative outcomes. Honeybees with a shortened life span, who were weaker and far less healthy, ensued.

There are a plethora of reasons for the physical remaking of bees: ranging from industrial honey production and designing hives as "'factories' to facilitate honey production", to pentagon strategists using honeybees as "insectoid forms of warfare."[5] This illustrates the point that there have been significant modifications to bees on behalf of industries and our military, and that this revision of bees down to their very physicality and physiological structure has in effect shortened their lives, drastically changed their social structure, and has had monumental effect on our society. Bees have been quite literally trained to go places and use their senses in ways that humans will never be able to. Interestingly enough, honeybee colony collapse is not what is generating the largest amount of research funding in the United States today. There is more money being put into the militarization of honeybees and researching new honeybee-centric technologies to use than any other research relating the bee. There is clearly something inherently valuable here.

This new honeybee technology represents a wealth of new ideas and new possibilities. One new idea is a current biotechnological project under way, called the DARPA project, which requires inserting micro-mechanical technologies into bees that are in the larval stage.[6] Putting aside this objectification of a living creature, I understand this technology as the creation of honeybees literally being mechanized. This speaks to the paramount capabilities of human beings and the power dynamics between humans and living creatures. Part of the way in which I understand the significance of the mechanization of a living being is that it is a problematic display of power but it is also a suggestion of new possibilities. The DARPA project is all about controlling the insects movement. Theoretically it would mean that therein a human and insect interface would be created and used for intelligence and military purposes. These bees would work to locate harmful toxins, chemicals, and even bombs due to their very powerful olfactory sensors. They are likened to the number of

[2] Benjamin, 70.
[3] Kosek, Jake. "Ecologies of Empire: On the New Uses." *Cultural Anthropology* 25, no. 4 (2010): 651.
[4] Benjamin, 71-72.
[5] Kosek, 652-654.
[6] Kosek, 660.

receptors in dog noses, which means that honeybees have a very vast assemblage of receptors! Hence this technology would ameliorate the need for bomb sniffing dogs (and ideally bomb sniffing dogs would then live in blissful retirement). This really brings to mind the question of what creatures we as humans believe are as deserving of protection and the various hierarchies of species, how we value them, and what that value is based on. Humans, dogs, and honeybees alike are all living creatures, but even so, there is a certain level of comfort knowing that this biotechnology is being funded to keep non-animal soldiers in safer situations. Envisioning swarms of mine-sniffing honeybees as replacement for mine-sniffing dogs illustrates to me blatant speciesism, but also new possibilities.

Marshall McLuhan might consider the biotechnology of using honeybees for strategic military purposes as the honeybee becoming an extension of our own senses. Much like how McLuhan demonstrated new media to be extensions of our senses, militarized honeybees extend and heighten our military capabilities. This point is further stated in Ecologies of Empire, when it states that "rather than being used simply as weapons of war, bees have become involved in the search for what is beyond the reach of human senses. The behavior and physiology of bees have become instrumental in extending the capacity of the human senses."[7] Humans would become better acquainted with the world around us due to use of bee senses. In this way, I'm actually likening bees to humans! The human could be considered as becoming more "bee". If we then flip our perspectives, we could view it as bees are becoming more "human": the motivations on behalf of humans are becoming a very real, integral part of the bee. This does bring to mind a startling image of a half-human/ half-animal war machine, but I digress.

Aside from the ethical issues involved in mechanization of honeybees, there are significant problems to be considered in the current state of the disappearing honeybee that I believe are very possibly due to our current utilization and remaking of the honeybees. A recently published New York Times article had within it interviews with various scientists and soldiers, who collectively decided this collapse in bee colonies was due to a sort of double teaming effort by a fungus and a virus. As far as for a few of the rogue bees, who were behaving un-bee-like by flying off from the hive before dying; they were possibly suffering from "a kind of insect insanity" (Johnson A1). I would implore us to look at other possibilities for the "20-40 percent of the bee colonies in the United States"[8] which are suffering from this colony collapse. I find it hard to doubt that the modifications of the honeybee and the industrialized formula we've encroached on bee colonies does in fact lead us to a cardinal set of problems within these innovative biotechnologies- one of which being that bee colonies are facing this collapse.

I understand using bees in these biotechnologies as being overwhelmingly powerful. The modifications of the honeybee are cruel, severe, and potentially devastating to our ecology with impacts that could result in an extinction of the honeybee. Inversely, this remaking of the honeybee also illustrates groundbreaking innovation and vastly expanding capabilities

[7] Kosek, 665.

[8] Johnson, Kirk. "Scientists and Soldiers Solve a Bee Mystery." *New York Times*, October 07, 2010.

on behalf of humans. The US is researching the ability to quite literally create military machines out of a honeybee! Our agricultural system is so intertwined with the honeybee to the extent that our very economy and way of life would collapse if the honeybee were to become extinct. I think there is a lot to be gained from considering our relationship with the honeybee: how we affect them and how they affect us.

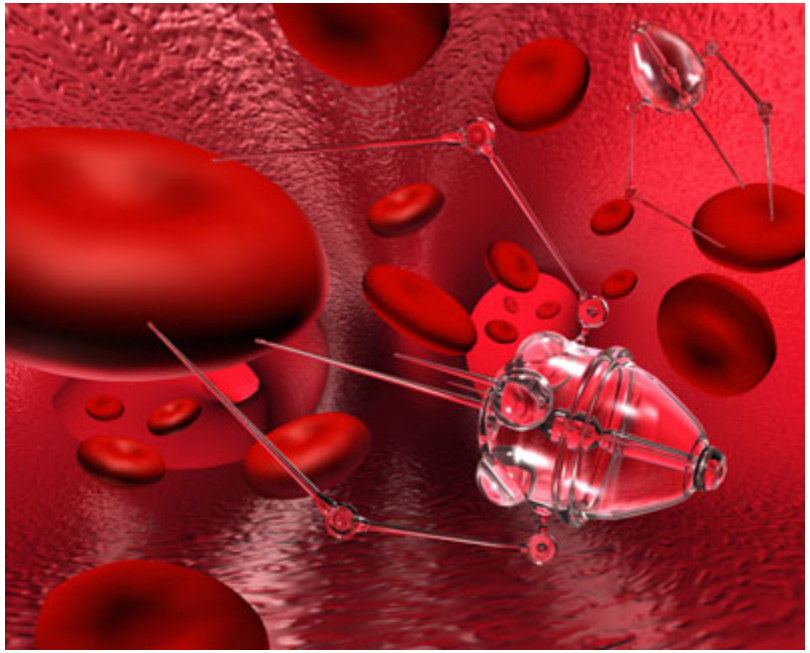
Front-image from *Ecologies of Empire* [9]

[9] *Image:* Kosek, 661. “Bees are fully individualized and placed into cells to be trained to be part of chemical detecting devices”

A Tiny Solution to Many of the World's Biggest Problems

Nanotechnology is Going to Change Almost Every Aspect of Life

by Jessica Charity



Although still in the process of research, once nanotechnology starts to make its way into our daily lives it will have limitless potential to affect how an extremely wide variety of facets in our world operates. Nanotechnology will even go as far as affecting the way our injuries heal and will be able to not only detect but even treat a wide selection of diseases including different types of cancer more efficiently than ever before. There is no doubt that the use of nanotechnology is going to have a strong influence on our lives, but whether it will all be positive or not has to be considered when such a huge force is being introduced into the delicate nature of our planet. I am specifically interested in nanobots and nanotechnology as a biotechnology concerning our health-related issues and where it is going to take us in the future, physically as well as mentally. If this technology becomes advanced enough to follow through with all that is promised of it, it is bound to affect the way we go about our daily lives just from the simple fact that this new biotechnology will just keep getting more and more advanced, and brings promise of us living longer and healthier lives.

Although it would seem that the benefits of nanotechnology used on humans, to complete tasks anywhere from repairing damaged tissue and even significantly helping to repair and replace our bones, should outweigh the risks, we do not have the slightest idea of what the extent of the risks could be so there is no possibility of comparing the two at the present moment. At this time the views of nanotechnology can be summed up to three views including the life-saving biotechnology, the ultra advanced nanotechnology that will be used in our everyday lives, and the life-threatening nanotechnology that could be used as instruments of war. Although we would like to be optimistic about this newly emerging technology, we must always consider the chance that such a powerful and versatile technology like nanotechnology could end up in the wrong hands, as with any new technology.

Within humankind, having financial success or power seems to be just as passionately pursued as saving lives and this kind of obsession can very well lead to the misuse of nanotechnology in military, government, or even amongst the public. Some might remember the reference to nanotechnology in the G.I. Joe: The Rise of Cobra movie that came out in 2009. The evil

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villain character in the movie, Cobra, threatens to release a sort of Nano-Bomb on the world that was essentially comprised of a huge amount of tiny nano-bots which would eat through almost every material on earth. This type of scenario sounds highly unlikely, but before nanotechnology has even been released there are already reports of Israel trying to create robots, smaller than a hornet, that "will be able to chase, photograph, and even kill its opponents…the flying robot will be based on nanotechnology, it will be able to navigate narrow alleyways to target rocket launchers". This type of scare should not stop us from pursuing the research of nanotechnology, but the likelihood of a nanotech war is becoming more of a reality with the ongoing research of nanotechnology; the thought of it should be kept in the back of everyone's mind. "Nano materials are harder than conventional materials, in particular metals, so certainly you would have more destructive materials that could be built."[1] There is always bad that comes with the good, especially pertaining to technology, old and new.

Despite the potential of nanotechnology becoming a threat to our lives, there is many sources of evidence that outline the significant good that nano biotechnology could bring to the medicine. Nanotechnology is making it possible for tools to be built that are smaller than cells and can attack cancer at the cellular and genetic level. This could be used to detect, treat and even stop cancer before it has a chance to form[2]. Researchers at Rice University were able to use "nanoparticle-enabled thermal therapy" on mice, induced with cancer, to completely rid any cancerous tumors leaving the mice healthy Ninety days after given the treatment. "Nanotechnology could provide new treatments for many cancers with minimal side effects. One promising approach is the targeted deconstruction of malignant cells using localized heating. This procedure could be relatively simple to perform, minimally invasive, and useful in vital regions where surgical removal is out of the question". Just how much significance will this new technology have on humankind? Everyone knows someone who has died from some kind of cancer. "Despite great progress in the fight against cancer, one American dies every minute, and one out of every two men and one out of every three women in their lifetime will be told they have cancer."[3] Imagining a world where cancer and a great many other diseases could safely and efficiently be treated is what we have been working towards for most of humankind's stay on earth. I cannot help but to wonder though, as wonderful as this sounds, how will our lives be affected by this big change. Positive or not, there are bound to be ramifications when introducing a big change of life like the safe treatment of diseases and conditions that are killing off a portion of the world's population. Who should have priority access to these nanotechnology

[1] Brown University-Global Media, "Nanotechnology". http://www.youtube.com/watch?v=xZs3FolkI-8&feature=related

[2] National Cancer Institute for Nanotechnology in Cancer, "Video Journey into Nanotechnology". http://www.youtube.com/watch?v=5jqQxuVncmc&feature=related

[3] National Nanotechnology Initiative, "Strategic Plan" 8. http://www.nano.gov/NNI_Strategic_Plan_2004.pdf

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treatments? Which diseases are considered more worthy of treatment than others? Or even, how are we going to have enough resources to accommodate the population that would have died? There is a certain way of life that we, as humans, have adapted to since we could remember and that is the simple fact that a good portion of the population will die from cancer and an assortment of other diseases. Without this, in a way, rule of life, we will have to dramatically change our living situation to fill the needs of the surplus in population, if this is even actually possible. Deciding who is going to be treated with this new nanotechnology could even be thought of as playing the role of God, which is something significant to think about when considering how different religious groups are going to respond to this new practice of medicine. With the huge backlash that was received about stem cell research, it seems almost impossible that there is going to be a calm consensus on the role that nanotechnology will ultimately play in our lives.

Besides the obvious good and bad that inevitably comes with nanotechnology treating human illnesses, there is also an infinite number of other possible outcomes that can come out of the introduction of this new biotechnology. The health industry is bound to change, as well as employment. There are many different universities and institutes emphasizing the importance of teaching students about nanotechnology so we can safely assume that there are going to be a huge offering of jobs in this field when it is finally released. But with this opportunity of a vast amount of employment opening up, there is also the likelihood that many of the more traditional employees in the health industry will be replaced and very outdated if they do not keep up with the advances in biotechnology. And although this 'In with the new, out with the old' concept seems beneficial to our society at first glance, it is important that we touch base with our roots instead of completely letting it all go. What I mean by this, is that soon nanotechnology will be affecting almost all aspects of our lives, from being incorporated into material object to make them better, faster, or stronger, to affecting how we will go to war, and to the way that we even heal and overcome illness. This is a huge revolution that will be extremely hard to take in if we do not approach it in baby steps and think out every possible outcome. Although change is good, it is not necessarily always a good thing as we have seen many times over the course of our time on earth and we need to sit down and educate ourselves on what exactly nanotechnology is and what is intended of its use. Like I mentioned before, Israel is already implementing nanotechnology into their war technology, there is already talk about super soldiers using this new technology to heal faster, run faster, and block out ammo and yet, when asked about nanotechnology, a majority of Americans would not be able to give an accurate description of what exactly it is or what it could ultimately do to change our world.

Nanotechnology affecting our health and the way that medicine is going to be practiced is only one way that it is going to affect the environment and our way of life. There are many more areas in which researchers are anticipating it to greatly affect, including everyday items, heavy machinery, fiber-optics, military, etc. I am completely convinced that if and when nanotechnology takes off, it will be unstoppable. Much like the internet has had on our society, nanotechnology will be a soft

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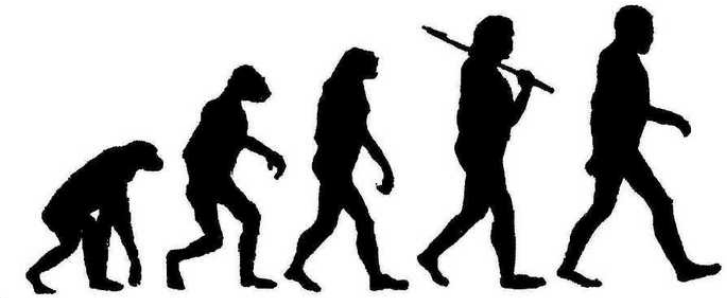
determinism that will be entirely embedded into our culture, which means that we are going to have to be fully prepared the all of the benefits it will bring, as well as the many potential threats. Whether we can stop it altogether seems very unlikely, so being ready and educated about everything that is to come with nanotechnology is something that should be high priority for the young and old generations. Nanotechnology is coming sooner and with a stronger force than we think. Although I would agree that rearranging the nature of earth in such a big way is undeniably going to change our lives completely, I believe that we are always going to be an advancing culture and we would be cheating ourselves if we did not proceed with new technology, with full force.

The Evolution of Evolution

by Brian Buck



Evolution takes thousands, if not millions of years to affect a change in living organisms. With the introduction of modern scientific techniques this process now takes years, months, or less. Current technology allows scientists to select specific genes and essentially edit and revise the code for life. Specific traits are selected and can either be added or removed from an organisms DNA. Genetic engineering is opening doorways that until recently no one ever imagined possible. The ability to change life so drastically is making us rethink our ideas of what is possible. Crops that grow faster and stronger, cows that produce pharmaceuticals drugs, animals that grow human organs intended for transplants, and even altering human DNA is all within the grasps of genetic engineering. Genetic engineering is and will continue to change the way the human species lives.

Current genetic engineering processes allow scientists to determine what traits are associated with what genes in an organism and even transplant that gene into another organism. This process works not only on plants, but also on animals and bacteria. There are different technologies that are used depending on what type of organism is being modified, but they all operate for the same purpose, to alter the traits of that organism. Actually, a significant amount of produce and grains are GE crops, genetically engineered crops. These crops are given traits that allow for higher yields with less fertilizer and pesticides, which are more resistant to disease. Farmers spend less and work less to produce a safer product in greater amounts. Throughout history, man has been changing the DNA of organisms to the benefit and sometimes the detriment of mankind.

Evolution, without mans' meddling, takes an extremely long time to have any significant changes to an organism. Previously, natural selection was the main way for specific genes to be passed on from generation to generation in organisms, may this have been for color, size, growth rate or even behavior. The idea is that the strong survived and the weak died, thereby strengthening the species. Once humans began using agriculture techniques, selective breeding became a new way to change the way plants evolved. Farmers would, and still do, select plants based upon desirable traits and use them to produce further generations. The process of selective breeding is still used today extensively. Depending on what type of plant or animal is being selectively bred, it may take hundreds of years of breeding to produce an organism with all of the desired traits. For example, most modern dog breeds are the products of hundreds of years of selective breeding practices.

The use of selective breeding has allowed humans to alter organisms to better serve society, and it has changed the way we think about evolution. Selective breeding can be thought of

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as human influenced evolution, because instead of the organisms going through natural selection, the organisms are now being altered for the benefit of humans... not the organisms. This alters the idea that the strong survive and the weak die, because with human intervention the weak may often survive along with the strong. With the advent of selective breeding, the idea has changed into “the desirable survive and the unwanted die.” Selective breeding has inherent limitations and can take hundreds of years to accomplish a “final” product. The limitation is that humans can only make organisms do what they already do better or worse, and they cannot introduce new traits. The next iteration of evolution has come in the form of modern genetic engineering and breaks through the limitations of selective breeding.

Genetic engineering allows precise manipulation of the building blocks of life. DNA can be modified, essentially rewritten to include new and foreign blocks of information to fundamentally change an organism. The ability to literally add and remove traits at will not only changes the ways in which we can use organisms, but how quickly they are created. Genetic engineering began in the early 70’s and started with simple bacteria. The techniques used on the bacteria are now used on mice, cattle, corn, tomatoes, pigs, salmon and many more organisms. Much of the research being done is for consumption purposes. Such as crops that do not need fertilizer or pesticides and livestock that grows faster and is more resistant to disease and infection. It is possible for some of these things to be accomplished through selective breeding processes, but what makes genetic engineering different and revolutionary is the ability to use genes from other organisms that do not naturally occur in the organisms being engineered. Such is the case with what is known as the AquAdvantage Atlantic Salmon, which possesses growth genes from a Pacific Chinook Salmon and an antifreeze gene from an eel like fish known as Ocean Pout. These genes could never exist in an Atlantic salmon if it were not for genetic engineering. They allow the salmon to grow twice as fast as its' non-engineered counterpart. More interesting though is the alteration of animals such as cows to produce pharmaceutical drugs, also known as pharming. The idea is that genes are added to a cows' DNA so that the cow produces chemical compounds that are excreted with the milk. Bacteria are being engineered to produce chemical compounds as well, and are also being repurposed to help solve the fuel crisis. Even silk worms are being spliced with genes from spiders so that they produce spider silk. The possibilities are potentially endless, and we are only on the cusp of what is possible with genetic engineering.

Genetic engineering allows humans to change the actual function of organisms. Where cows previously functioned as producers of milk and meat, they now are chemical factories. Bacteria that once served to get us sick, will now be reassigned to attack cancer cells and tumors. Diseases that killed millions could be rewritten to be harmless or helpful to humans. Since the modern methods of genetic engineering have only been around since the early 70’s, there are innumerable uses that are yet to be imagined. Most animals are still what they once were, but now they can be repurposed as if they are being recycled. The organisms can become commodities like our electronic goods that have patents and copyrights. Using the cow again as an example, it can no longer be thought of as the animal we know. We will have to look at the label that the cow bears in order to determine its purpose. Is it supposed to be slaughtered

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for meat? Is it supposed to produce milk for consumption? Is it supposed to produce chemicals? Is it supposed to meow instead of moo? Is it supposed to act like a dog? Is it supposed to hop instead of walk? Though some of these questions may seem comedic, similar questions will need to be asked if genetic engineering of animals becomes widespread. However, most of the research currently being done is to provide greater access to food with less impact on the environment and to improve human life. Such as the AquAdvantage salmon that reaches market size in half the time, rice that needs less water and is nutritionally superior, pigs that excrete less phosphorus in their manure, and crops that are resistant to infestation. All of these mean more food while having less impact on the environment and improving the lives of humans. As many plants and animals are being used to create consumables for humans, animals also contain the potential to produce human parts. Imagine splicing human DNA into that of a pig or a cow, and having that animal grow organs that could be transplanted easily into a human. Genetic engineering could allow this to become reality. The animal now becomes a human parts factory. As this technology advances, it will force society to construct a new framework for organisms. Genetic engineering has the ability to fundamentally change what we think we know about plants and animals.

The biggest area of controversy and where genetic engineering ultimately leads us to is rewriting the human blueprint. This means that we could alter the human species. Just like we can make cows produce drugs, we could make humans do similar things. This obviously has moral and ethical issues, but imagine being able to select the traits of your children. It would be like ordering a custom child. Female, her mother's eyes, her fathers athleticism, her cousins hair color, 5' 8", size 8 shoe, etc. All of these traits could potentially be selected through genetic engineering. With these possibilities come great unknowns. There is no telling what the future of the human race would look like if we began rewriting our own DNA. It could exacerbate inequality issues in society, "the transgenics vs. the normal." Instead of race issues, we could have gene issues. On the other hand, it could be used to remove the risk of disease and infection and allow humans to live even longer. Not only that, but scientists could possibly slow aging, improve intellect, make muscles stronger or makes us faster. The possibility for a customized race of humans comes into view quickly, yet it is completely unknown what it should, could or would look like. Imagine if we could repurpose humans into order to serve others. Create human drones that performed work and menial tasks that society deemed unworthy of the "standard" human. Or even giving humans special traits to live in extreme environments and sending them on exploratory missions into space? How about splicing the gene related to hibernation into the human genome and allowing astronauts to hibernate for months at a time? Think of it as the reverse of animal personification, instead of giving animals human like characteristics, we give humans animal like characteristics.

Genetic engineering will undoubtedly cause us to reconstruct our ideological and ethical definitions of plants and animals; it will eventually cause us to reconstruct our idea of what is human. Just as selective breeding allowed humans to speed up evolution, genetic engineering is allowing humans to almost skip evolution. We have the technology to repurpose plants and animals to do whatever it is we want them to do. The definition of plants and animals will no longer be defined as what they

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look like, how big they are, what color they are, what they produce, what noises they make, but by either their exact DNA blueprint or by the purpose they perform to serve humans. As society has evolved, we have wanted better results faster and easier than before. The potential that genetic engineering has to affect the human race is yet to be understood and determined, all that can be assumed is that the changes will come quicker than ever. We can embrace it or fight it, but Pandora’s' box has been opened and the future is coming.

Disabled or Enhanced?

More Questions than Answers

by Christy McNeil

Prosthesis: An artificial device to replace or augment a missing or impaired part of the body.
(Merriam-Webster)

The question that stems from this definition is what exactly constitutes an impaired part? My other inquiry is about the views toward current prostheses. People who suffered through amputations were once considered disabled, now some of the devices available to replace the lost limb(s) are superior to the human body providing a competitive advantage to the athlete. As athletes are always seeking the advantage, I will discuss developing theory of techno-doping. This paper will leave you with more questions than answers, but these questions are ones of great importance that I believe we should all consider to develop our personal feelings

My research, which began with a desire to find out more about the technology involved in prosthetic development, has lead me on a quite emotional journey. I have read stories about military, athletes, and "regular" people who have dealt with the physical and psychological pain involved with the amputation process. Reading articles by people stating that wearing a prosthetic device may be so advantageous that athletes may choose to augment their bodies through amputation just to reap the benefits has shifted my personal thoughts toward what "disabled" really means.[1] Hours, and many tears, have been spent viewing Internet videos of athletes and everyday people using prostheses to accomplish movement they once thought would never be experienced again. While I doubt we'll see athletes choosing to remove parts of their bodies to gain a prosthetic advantage any time soon, but there is an interesting line being presented in this discussion that leads me back to my first question: What, exactly, constitutes an impaired body part?

The easy answer to this question is to say that the proximal remains of any body part removed in some fashion, is now impaired. Thus, the utilization of a prosthetic device seems necessary and accepted. But, what about hair, would the wearing of a swim cap be considered a prosthetic? It's a device that covers a part of the body that produces lag, therefore an impairment to swimmers who can win or lose by one one-hundredth of a second. When swim cap technology was applied to a full body suit in 2008 by Speedo, many thought their days

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[1] "Let 'em Play, August 23, 2010, http://sports.espn.go.com/espnmag/story?id=3357051

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of full body shaving were over. Hair is hair, whether it's on a head or elsewhere, it produces drag which is the absolute last thing a swimmer wants. Though, shortly after the Speedo LZR suit was released, the body suit was banned from competition on January 1, 2010. During its year and a half tenure, 135 long and short distance records were broken.[2] Why is the swim cap allowed but the body suit is not when they both accomplish essentially the same task?

Those who exist with high arches and pronation issues or flat feet may swear by their orthotics, the prosthetic devices that allow them to walk or run pain free. These are allowed in competition, they are actually touted as performance enhancing devices.[3] When placed in player's shoes, the player experiences greater support by supplementing the output of the local muscles, which either reduces pain already present and/or lessons the chance of injury. This sounds like another performance enhancer: steroids. Human Growth Hormone affects the strength and productivity of muscles as well[4] yet it is outlawed within sport leagues. Where is this line drawn, the line between allowable and banned devices? Swim caps and goggles have become accepted within competitive swimming, is it only a matter of time before the full body suit earns a longer presence in the spotlight? Will sports authorities finally tire of endless drug testing and allow the players to inject or ingest liquid prosthetics to their own detriment?

I believe South African sprinter, Oscar Pistorius, will soon be a household name. He is the man who tried to gain clearance to compete in the 2008 Beijing Olympics only to be denied by the IAAF (International Association of Athletics Federation.) The man is quick, his 400 meter best is 46.56 seconds, the Olympic standard is 45.55[5] making him extremely close to qualifying, but this was not the reason the IAAF would not allow Pistorius to compete. Pistorius was born without a fibula bone, the posterior of the two bones of the lower leg. Without this bone he would never walk meaning his parents had to chose one of two options: quarantine their son to a wheelchair for life or amputate both of his legs and allow him to learn to walk with prosthetics. They chose the latter, and their eleven-month old precious boy was about to become a double amputee. His first "legs" were fiberglass pegs, today he is a world class sprinter running on "Cheetahs."

Icelandic company, Ossur, has created devices that have allowed Pistorius to be the fasted bilateral amputee in the world[6]. Each Cheetah is custom built from high performance carbon fiber and is designed to be utilized in sporting activities.

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[2] "Hi-tech swimsuit banned from January," page last updated July 31, 2009, http://news.bbc.co.uk/sport2/hi/other_sports/swimming/8161867.stm

[3] "Sports Orthotics Help NFL Athletes Enhance Performance," November 24, 2008, http://footcarexpress.com/foot-orthotics/sports-orthotics-nfl/

[4] "Human growth hormone explained," July 27, 2003, http://news.bbc.co.uk/sport2/hi/front_page/3101343.stm

[5] "Pistorius might try…more realistic," page last updated May 19, 2008, http://sports.espn.go.com/oly/trackandfield/news/story?id=3402789

[6] "Oscar Pistorius-Special Feature," date unknown, http://www.ossur.com/?PageID=14506

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The arc-shaped devices are made for both trans-femoral and trans-tibial amputees and attach posteriorly to the affected socket. Pistorius has earned the name "Blade-runner" as the Cheetahs look like blades and as he runs they make a scissor-like cutting sound.

Pistorius, like most athletes, wants to be the best. He has proven his speed and talent against other "disabled" athletes, now he wants to take on able-bodied runners. Unfortunately, the IAAF decided, in January of 2008, to prohibit him from competing against able-bodied sprinters when a study stated that the Cheetahs allow Pistorius' limbs to utilize 25% less energy when compared to runners with in tact appendages[7]. In May of 2008, Pistorius appealed the decision and one when the Court of Arbitration for Sports decided that the cited study was inconclusive[8]. Now Pistorius is looking ahead to the 2012 Olympic games, and I hope to see him there.

Glasses, contact lenses, ibuprofen, swim caps, goggles, speed skating skin suits, orthotics; these are all devices which could be considered prosthetics. If an athlete can compete at a world class level shouldn't he be allowed to run against the best? Yes, the blades allow for 25% more oxygen usage in his body as the blood only has to circulate to his knees and the weight of the Cheetahs is significantly less than two lower legs and feet

[7] "Oscar Pistorius banned…advantages," January 14, 2008, http://www.sportsscientists.com/2008/01/oscar-pistorius-announcement-banned_14.html

[8] Gregor Wolbring, "Oscar Pistorius and the future nature of Olympic, Paralympic and other sports," *Script Ed* (2008): 141-142.

would be, but there are some definite circumstances that are not supporting him. One downfall is the amount of time it takes for Pistorius to feel steady on his "legs" is longer than that of an endowed runner.[9] Another is the fact that these devices are just not his legs. He cannot feel the ground, he cannot make the minor adjustments that could prevent a devastating fall like runners with feet. He has no proprioception below the thigh, he cannot feel the track or determine whether his "feet" are providing enough or sufficient power.

I have to wonder if the IAAF would allow a runner who was missing an arm to run in the Olympics? This runner would also have better oxygen usage and less weight therefore making him or her a more efficient runner. If Oscar could run this fast on wooden pegs, would he be allowed to compete? If he is allowed to compete, will this lead to athletes removing body parts to foster an advantage based on increased oxygen usage and knowledge that current and evolving technologies will provide similar if not better extremities?

"Techno-doping[10]," the theory that amputation, with prosthetic replacement in most cases, will increase athletic performance as does blood doping. As a dancer, this idea is absurd to me. Losing a body part is a large fear of mine as I've worked on my body knowledge, proprioception, and technique skills for 29 years. The idea of purposefully eliminating one of these parts is

[9] Josh McHue, "Blade Runner," *Wired*, March 2007, http://www.wired.com/wired/archive/15.03/blade.html

[10] Jamals Cascio, "Techo-doping' and the New Olympics," *IEET*, (2008): 1.

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not fathomable, to me, because I can't image a situation in which that would help my performance. The only equitable comparison is when I cut my hair to allow for greater upper body speed and clarity in movement, this example is weak in contrast. In the case of a world class sprinter, one for whom time exists in hundredths of seconds, they will often do anything to shave time. If the Cheetah blades were granted permission for use, would the world see a rise in voluntary unilateral or bilateral leg amputations after knowledge is spread of the 25% better usage of oxygen and three times higher returned energy, from each stride, than the human ankle?

Lance Armstrong is not a stranger to allegations of doping, he is one of the hardest working athletes on the planet and is continuously hounded by those accusing him of illegal enhancements. I usually don't pay attention to the latest headlines surrounding Armstrong but I was intrigued by one simply titled "Lance, Enhanced." The article sites a study published in PubMed whose aim was to lay the Lance doping rumors to rest. The scientists hypothesized that there could be another reason as to why Armstrong's recovery between endurance events seems to be greater now that before he was diagnosed with and treated for testicular cancer. The study found that the hormonal changes his body experienced after the unilateral orchiectomy are great enough to have an impact of his recovery.

These hormonal changes, specifically an increase in gonadotropins (and prolactin) required to maintain serum testosterone levels, alter fuel metabolism; increasing hormone sensitive lipase expression and activity, promoting increased free fatty acid (FFA) mobilization to, and utilization by, muscles, thereby decreasing the requirement to expend limiting glycogen stores before, during and after exercise.[11]

So in simpler text, Armstrong processes his fuel in a way that promotes faster recovery. Recovery is the key to excelling in endurance events; if the athlete does not recover properly he/she cannot tap into their full energy stores during today's event because the body is still processing the division and distribution of fuel to recover from the previous day. The study states that their findings were sufficient enough to warrant more testing on the subject as they don't know how much losing one testicle improved Armstrong's performances so in this situation it's difficult to imagine an athlete removing one or both testicles to gain an unknown advantage. But as is a theme in this paper, the question becomes whether or not one would do so if a known advantage were discovered.

These questions are the future of not only sport and athletics but also our human population. Humans already replace hip and knee joints with metal and plastic when these joints begin to fail in their desired usage. The development of a superior foot could lead those with plantar fasciitis to trade in the afflicted part for Foot 2.0. Amputations could become the norm if the day comes when replacement parts function equal or superior to our given body parts. Pacemakers exist, what about a fully mechanical heart? Lose or impair your sight?

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[11] Atwood, C.S. and Bowen, R.L, " Metabolic clues regarding the enhanced performance of endurance athletes from orchiectomy-induced hormonal changes," *PubMed* (2007): 1.

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Replace those old, warn out eyes with robotic devices complete with a digital display fully programmable for remote access to your TV, cell phone, and coffee maker! These words may be on billboards within our lifetimes. Is there any part you would like to trade in?

The Future of Internal Prosthetics

by Lauren Lorbeski

Before we had prosthetic replacements for body parts such as eyes, arms, legs, and teeth, people who became injured, infected, or otherwise had a disabled body part were forced to either amputate or die. Medical technology has come a long way in the last century and most innovations were created as a response to a growing need. Injured soldiers, children with birth defects and people who contracted cancer in the bone had little hope of a normal life, if any at all before prosthetics came along. From wooden peg legs to glass eyes and artificial hearts, prosthetics have been used to help otherwise disabled people to regain mobility, function and the resemblance of a more normal, active life. Medical technologies are always transforming into something newer and more amazing and the possibilities available with internal prosthetics can be endless.

In order to understand how the field of internal prosthetics can impact the future, you have to examine where it began and how far it has come since.

Artificial body parts began with the replacement of exterior limbs such as legs and arms and then began to evolve in order to include the replacement of joints, bones and to some extent, organs. The realization of the need for artificial limbs and other such body parts came about when the demand rose. Some of this demand was fueled by wartime veterans needing replacement limbs but a lot of it had to do with the fact that people were living longer and their joints and hearts began failing. Research and clinical studies for the first artificial heart sustaining technologies began in the 1950's and were used primarily for sustainment of life while patients were in open-heart surgery.[1] This kind of technology eventually evolved into internal devices that could be used as a bridge until a transplant could be found. Along with developing artificial hearts, the medical field has developed artificial joints and bones for other patient needs as well. Over the years medical technologies have advanced significantly in order to provide longer lasting, more durable, compact prosthetics.

Since the 1950's artificial hearts have been able to sustain human life for up to 2 years and extend the amount of sustainable life before receiving a transplant.[2] As of right now the purpose of artificial hearts is to provide a bridge between estimated heart failure time and the time in which a transplant

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[1] Renee Lorbeski (Physician Assistant), March 2011.

[2] Eric Sorensen, "Ventricular Assist Devices and Total Artificial Hearts," *Biomedical Instrumentation and Technology*, September/October 2007, 385-389.

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by Lauren Lorbeski

arrives. The complications that have made the mass production of this kind of prosthesis difficult have been its relatively short life span, and complications with infection or rejection from the body. Over the years these problems have been significantly reduced, however there remains to be seen a type of artificial heart that would be a viable option for a permanent replacement for the natural heart. While the development of internal organ prosthesis has been very complicated and slow growing, there have been many advances in other kinds of internal prosthetics that are worth noting.

Joint replacement is quickly becoming one of the most common surgeries among the elderly populations in well developed countries. Here in the United States, patients can receive replacements for all major joints including hips, knees, shoulders, ankles, elbows and wrists. These replacements typically last about ten years but have the ability to last for up to fifteen or twenty. Over the years these replacement surgeries have become very low risk and the actual replacements have become more lightweight and natural in order to allow for relative normalcy after recovery. These types of prosthetics have become very efficient for treating injuries, birth defects or infections that have no other better alternative.

Another type of prosthetic that has been designed for internal use is artificial bones. These types of replacements are mostly used in patients who develop some kind of cancer in their bones. Cancer in the bones can quickly become fatal if it should reach the bloodstream and if it cannot be contained with radiation or chemotherapy treatment then medical professionals now have the option of actually replacing the infected bone with an artificial one. These prosthetics have the ability, through a bone graft, to attach themselves to the adjoining bone or bones. There has been a very recent advancement in the development of bone prosthesis to now include expandable bones. These expandable bones are typically used in pediatric cases in order to compensate for the child's natural growth in the opposing limb.[3] This kind of prosthesis has been useful so that children who need an artificial bone don't have to have annual surgeries in order to replace the previous bone with a longer one. With this new technology, one bone can typically be sufficient for a child's growth needs for several years until a more robust bone is needed to compensate for weight. Even though this new technology is not perfect, it provides a significantly more positive alternative to previously existing bone replacement.

More recent developments in the field of prosthesis have begun to include the advancement of the generation and growth of tissue cells in order to "restore, maintain, or enhance tissues and organs".[4] This kind of technology is typically used with burn patients in order to decrease the healing time or in the case of some organ damage the tissues can be used to either maintain or restore function. Tissue engineering has the possibility of reducing the need for "organ replacement, and could greatly accelerate the development of new drugs that

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[3] Judith Phillips Otto, "Relief for Growing Pains: Expandable Internal Prosthesis for Children," *OandP.com*, May 2006, http://www.oandp.com/articles/2006-05_02.asp.

[4] Linda G. Griffith, et al, "Tissue Engineering—Current Challenges and Expanding Opportunities," *Science AAAS* 295, (2002) : 1009-1014.

may cure patients, eliminating the need for organ transplants altogether."[5]

These kinds of innovations in internal prosthetic technologies could have significant impacts on the future of medicine if the field continues to grow at an exponential rate. Fully functional artificial hearts could take the place of failing natural ones, people with bone cancer could be cured by having an infected bone replaced, an array of damaged or injured joints could be restored to normal function with the help of artificial joints and just maybe, we could innovate other artificial organs so as to reduce the demand for transplant donors. There are endless possibilities in the future of artificial prosthetics, however, no technology is perfect and proceeding with potential life-saving technology without proper study could have devastating effects. It is important to look at both the pros and the cons and decide if the former outweighs the latter.

Since research began on the artificial heart in the 1950's, increased efforts have been made to further the capacity of this life-saving technology. There are researchers and scientists that expect to have a fully functional artificial heart ready for clinical trials on humans in the year 2011.[6] Whether or not this timeline is on track is still unknown but the possibility of not having to wait for a donor transplant would be phenomenal. Every year an average of 800 people do not receive their much needed transplant.[7] If an independent, long lasting, artificial heart was approved for use by the FDA, then there would be a possibility that the 3000 people in need of a transplant each year could actually get one. Now obviously the clinical trials of a possible artificial heart would have to be very extensive, thorough and have longevity in order to ensure knowledge of any possible complications or side effects before putting it on the market. If the proper protocols were followed and results studied for any inadequacies, then this technology could have the potential to replace transplants. This could reduce the possibility of the body rejecting the donor heart, possibly reduce the risk for infection from a donor and if it functioned well enough, it could extend the life of a critically ill patient to that of a healthy person. As a more far-fetched idea, this technology could even extend the lives of normal human beings. Of course right now heart transplants are only advised for those critically ill patients with no other options partly because there is a huge shortage and also because it is very dangerous and the technology isn't that substantial yet. However, if we got to the point where artificial hearts could sustain life for an unknown amount of time, and the risks of surgery decreased at the same rate that the technology for the artificial heart increased then theoretically it would be possible for aging but otherwise healthy people to receive a heart transplant in order to live even longer. The possibilities with this technology really seem endless but even in the short run it would be a significant improvement if everyone who needed a

[5] Linda G. Griffith, et al, "Tissue Engineering—Current Challenges and Expanding Opportunities," *Science AAAS* 295, (2002) : 1009-1014.

[6] "Total Artificial Heart to be Ready by 2011: research team," *AFP*, October 27, 2008, http://afp.google.com/article/ALeqM5iIwgL3sqXqQD-rnoeEOjEYgZId3g.

[7] "Heart Information Center," *Texas Heart Institute*, February 2011, http://www.texasheartinstitute.org/HIC/Topics/Proced/hearttx.cfm.

new heart could receive a fully functional one with custom size and shape made just for them.

Going along with the idea of the artificial heart as a functioning internal organ, I think the next development or research project would be to develop other artificial internal organs that could resolve other health problems as well. As of yet they only have certain tissue engineering that can help with skin, liver and some pancreas issues but if they could create entire organs that were modeled after the artificial heart then problems such as liver disease, kidney failure, diabetes, diseased lungs and some cancers could be a thing of the past.[8] Now I believe that there would be some unseen complications from having a combination of artificial internal elements with natural ones but farther down the road maybe they could adjust for that as well. Learning from the generative processes of the artificial heart as well as the natural regeneration of liver tissue could have the benefit of combining synthetic components of lab technologies with natural structures or appearance could create technology that has life sustaining power unlike anything we've seen before.

In terms of any other artificial internal prosthetics, researchers are currently trying to perfect replacements for other joints such as the wrist and elbow. Right now there are common replacements available for hips, knees, and shoulders and while replacement of the ankle, elbow and wrist are possible, they are not commonly recommended yet. The ankle, wrist and elbow have a few more complications than some of the other joints which have made them more difficult to perfect. All joints have many muscles, nerves, ligaments, tendons and other soft tissue that have to be moved or cut and then put back in the right position after surgery. The wrist and ankle have many tiny bones that are difficult to work with, replicate or position and the elbow is very small and has lots of nerves and thin muscle tissue to work around. These last three joints are not commonly replaced except in rare cases for severe arthritis or out of a demand for an alternative solution for instances where all other treatment options have been exhausted. It seems likely that in the near future we will have enough expertise and experience to be able to replace all major joints with minimal risk and optimal recovery. This kind of innovation will help millions of people with ill-affected joints to experience relief from constant discomfort and return to a full and active life.

As with any of these innovations that are in the making, there are some historical lessons from which to learn. It is quite possible that we are becoming too smart for our own good and that these advancements could have unforeseen implications. If we manage to create organs, joints and other internal elements in the likeness of ourselves then we are well on our way to creating an unprecedented form of artificial intelligence that this world has never seen before. This aspect on its own is rather daunting. Whether you think it to be a problem or an ingenious revelation is no matter. We all know that the inventors of everything we use today had no idea the ways in which the technology would be used. And maybe they wouldn't approve of how we use it today. Just as there is no way for us to know what we are creating when we're still in the process of creating it and the outcome of those creations is

[8] Linda G. Griffith, et al, "Tissue Engineering—Current Challenges and Expanding Opportunites," *Science AAAS* 295, (2002) : 1009-1014.

unfathomable. Another, more specific, difficulty with the creation of artificial internal prosthetics that can fix most bodily dysfunctions is that people will inevitably abuse the system. An example from today is the use of abortion by some women as a means of birth control.[9] Clearly getting pregnant if you don't have a desire for a child is not a smart thing to do but there are some women who choose not to use conventional (approved) birth control methods and instead choose to just have an abortion should they end up pregnant. If you have the capability of fixing problems such as liver cirrhosis or kidney failure then you will inevitably end up curing patients who had self-induced diseases that erected from their own bad habits and by them knowing that there is a cure should they become ill will only encourage them to continue their bad habits. So while I believe that these new, upcoming technologies for internal prosthetics will be very beneficial for those who need it, I also believe that there will be unforeseen consequences that will arise from the creation of this technology but that the majority of people will be too blinded by the short term positives to see the upcoming implications and that all innovation should proceed with great caution and understanding.

[9] Renee Lorbeski (Physician Assistant), March 2011.

The MidiDancer: Adding Another Layer Of Liveness

by Bliss Kohlmyer

When the movement of the dancer's right arm creates a gesture that implies circularity, the video projection changes from black and white to color. As she rapidly rolls from stage right to stage left, the electronic music abruptly stops. However, if in that same trajectory she chooses to perform a series of falls and leaps that propel her into the air, the music will not cease, but will play in reverse. The dancer's voice controls the sidelights, while the level changes within her movement manipulate whether or not the props remain in darkness or become a crucial part of the visuals. This particular series of interactive events is fictional, but it is not unheard of in the arena of dance and technology.

Historically, artists have mined technologies to explore new ways of moving, create new visual effects, and discover new ways to express oneself. In addition to many other aspects, the art form of dance is about the body and its relation to space. According to Marshall McLuhan, technology is an extension of ourselves. Because of its relationship to space, dance is the perfect arena for this extension to take place, not only through props, costumes, lighting, and other bodies, but also through prosthetics that allow for an organic body to manipulate an inorganic system. The fusion of the organic with the inorganic brings to the foreground an interesting debate in performance theory concerning "liveness." I will use Troika Ranch's interactive technologies as a lens to dive more deeply into this debate. First, however, let us take a closer look at the prosthetic device that allows for interactions between the performer and the technology.

Interactivity has been an important facet of the work of Troika Ranch, a multi-media dance theatre company based out of New York City, since the company's origination. Marc Coniglio, a composer and engineer, and Dawn Stoppelio, a dancer and choreographer, created the company in 1994 as a means to fuse their interests in dance, theatre, music, and digital interactive media. What is interactivity? Creating a relationship between organic and inorganic systems, interactivity is the linkage between the actions of humans and digital content. According to Coniglio, interactivity extends a performer's physical capabilities, allowing for myriad improvisatory opportunities during performance. In order for a dancer to possess interactive control over digital media, he or she must be connected to some sort of prosthesis.

Attached to the fictional mover described above is such a prosthetic device: the MidiDancer. This is a body suit that acts as an interactive tool that can manipulate video, sound, and lighting choices. Sensors attached to the joints of a dancer, determining the amount of flexion and extension at the

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dancer's joints, are connected by wires to a microcomputer on the dancer's back. The motion tracked by the sensors sends signals to an offstage computer, where the signal is turned into code by a software program called Isadora.[1] Isadora is a "graphic programming environment for Macintosh and Windows that provides interactive control over digital media, with special emphasis on the real-time manipulation of digital video."[2] The Isadora software allows artists to follow their creative impulses because rather than a set way of interpreting the movement data collected from the MidiDancer, artists can transform both the input and output of the data by reconfiguring the over one hundred building blocks that make up the program. Isadora receives the tracked movement information and relays the information, in real-time, to other media such as cameras or sound devices.[3] For example, in our fictional scenario above, the dancer may curve her spine to soften the sound or arch her spine to increase the volume. In sum, it is the combination of the MidiDancer and Isadora software program that extends the capabilities of the dancer by amplifying his/her movement and transforming that movement into different mediums.

According to Coniglio and Stoppelio, the interactivity enabled by the combination of sensing devices and software allows for digital media to have the same amount of vivacity and "liveness" as the human performers on stage.[4] While these artists believe that interactivity gives the performer improvisatory opportunities that can in effect change the trajectory of a work, it is the proposition of the "liveness" of digital media where we dive deeper into the reasons why they are so enthralled by these ideas. And, it is this proposition that I, an artist and scholar, am most intrigued by. As stated earlier, liveness has been a source of contention in performance theory since the incorporation of film footage into live media almost a century ago. There is no real answer to the liveness problem because while some theories make sense of what's happening in our contemporary culture, in regards to the onslaught of digital performance, that same theory becomes blurry and clouded when an opposing theory is introduced.[5]

Two of the most prominent performance theorists focusing on the issue of liveness in contemporary theatre are Peggy Phelan and Philip Auslander. Phelan's definition of liveness, very close to the dictionary definition, states that live performance disappears as soon as it is enacted. The documentation of a performance is something other than the original. It is a representation of the live performance. In addition, according to Phelan, the idea of liveness depends on the performer's

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[1] Kathryn Farley, "Digital Dance Theatre: The Marriage of Computers, Choreography and Techno/Human Reactivity." *Body, Space, and Technology* 3.1(2002).

[2] "Isadora," *Troika Tronix: Live Performance Tools*, http://www.troikatronix.com/isadora.html (accessed February 26, 2011).

[3] Farley, ""Digital Dance Theatre: The Marriage of Computers, Choreography and Techno/Human Reactivity."

[4] "Isadora," *Troika Tronix: Live Performance Tools*, http://www.troikatronix.com/isadora.html (accessed February 26, 2011).

[5] Steve Dixon, "Liveness" in *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation* (London: MIT Press, 2007).

organic body.[6] If we believe her definition, there is no such thing as a recording of a live performance because liveness is always and only happening in the exact moment in which it is occurring.

On the other hand, Philip Auslander, the author of *Liveness: Performance in a Mediatized Culture*, offers a view that lies at the other end of the spectrum. While he believes that Phelan's idea of live is possible, he contends that thinking about it in this way no longer makes any sense. In our historical context, Auslander believes, what's considered "live performance" hovers between a mix of live and technological mediation of liveness. Why is this happening? In a 2004 survey, Auslander reported that more people consume arts in mediatized forms rather than attending live events.[7] Although, personally, I find these results to be maddening, they help me to understand why it is almost impossible to attend a contemporary dance performance wherein advanced technology is not a crucial component of both the visual and aural environment.

According to Auslander, because we live in a screen culture, theatre is replicating the television modality to make people feel comfortable. When raised on television, we begin to expect live events to resemble the media forms that have had a substantial hold on our daily lives. As a result, he claims, there is no such thing as live performance. In our mediatized culture, because most performances mix live with media effects, live performance has become a mediated product itself.[8] Reflecting on the views of both Phelan and Auslander, I will attempt to place the work of Troika Ranch, specifically their use of prosthetic devices and interactivity within this "liveness" debate.

The co-artistic directors of Troika Ranch, Coniglio and Stoppelio, began to create with the MidiDancer because at the time of this prosthetic's creation, real-time interaction between a performer and digital media had actually become possible. Coniglio explains, "We had no true notion as to why it was essential to the aesthetic expression."[9] It was not until many years later that these artists realized the true potential of interactivity and why it was indeed a crucial component to a performance's liveness. In accordance with Phelan's theory, Coniglio explains that liveness allows for things, ideas, actions to change at any moment depending on how a dancer is feeling emotionally and physically, his/her skill level, the energy between the performer and the audience, the temperature in the space, the texture of the floor, the interactions with other dancers on the stage, and a host of other reasons. In essence, liveness means that things can change in an instant. On the other hand, Coniglio contends, digital media has the opposite effect of liveness because it is bound, stagnant, and unchanging.

While these characteristics are considered strong points of digital media, allowing for duplications and recordings, they do not support the fluid notions of liveness. Because of its inanimate quality, digitally recorded music does not allow a

[6] Ibid.
[7] Philip Auslander, *Liveness: Performance In A Mediatized Culture* (London: Routledge Press, 2008).
[8] Ibid.
[9] Marc Coniglio, "The Importance of Being Interactive." In *New Visions In Performance. The Impact of Digital Technologies,* ed. Gavin Carver and Colin Beardon, (Lisse, The Netherlands: Swets and Zeitlinger, 2004), 5.

performer enough leeway to "play" with movement material because he/she has to abide to the static nature of the electronic machine. As a performer myself, there is nothing more satisfying than suspending a movement more than usual or playing with the rhythm, nuance, gesture, weight, and many other components that constitute a piece of choreography.

In response to this discovery, Coniglio began to wonder what would happen if he provided "interactive control to the performers as a way of imposing the chaos of the organic on to the fixed nature of the electronic, ensuring that the digital materials remain as fluid and alive as the performers themselves."[10] The result was that the digital media became more alive. Rather than his performers reacting to a fixed state of video, lights, and sounds, another level of liveness was added to their already live movement performance. Their improvisatory and spontaneous choices created performances that refused to be duplicated for they created interesting and ever changing results as the less organized organic ideas were imposed upon the static inorganic systems. Coniglio explains this conclusion:

Regardless, I do think that the use of interactivity in live performance is essential. Live performance is perhaps the most inefficient of contemporary art forms, because you cannot do with it what you can with digitally stored artworks: duplicate and inexpensively deliver it to a large audience. But, it is specifically the ineffable quality of liveness that draws me to create and attend performance. By using new technology to allow our performers to become real-time creators, and by asking our audience to be present to their on-the-fly artistry, we ensure that each performance of a work is absolutely unrepeatable, which may be the boldest move of all.[11]

While Peggy Phelan, a live performance purist, may argue that liveness must be performed by a human performer, I believe that she would commend Coniglio for attempting to keep the ever-changing and ephemeral quality of live art alive. How would Philip Auslander react to Mark Coniglio's ideas? In many ways, Coniglio's argument for interactivity turns Auslander's argument against itself. Auslander contends that there is no such thing as live performance in this contemporary culture because media effects have turned live performances into media products. Troika Ranch's attempt, and I believe that they succeed, is to use prosthetic devices to extend the capabilities of the human being and therefore, allow a greater sense of liveness and spontaneity on stage through interactivity. In essence, they have used media effects to not, as Auslander would argue, turn live performances into media products, but rather to deepen and expand the performance's live nature.

Since the creation of the MidiDancer in 1989, Marc Coniglio has gone on to create even more sophisticated sensing prosthetic devices that have added to his works' liveness. But, no matter the technology, he has always considered the dancers' freedom of movement an absolute necessity. Never has the technology inhibited the movement of the performer. Though the art form of dance is changing with the advents of

[10] Coniglio, "The Importance of Being Interactive." 7.

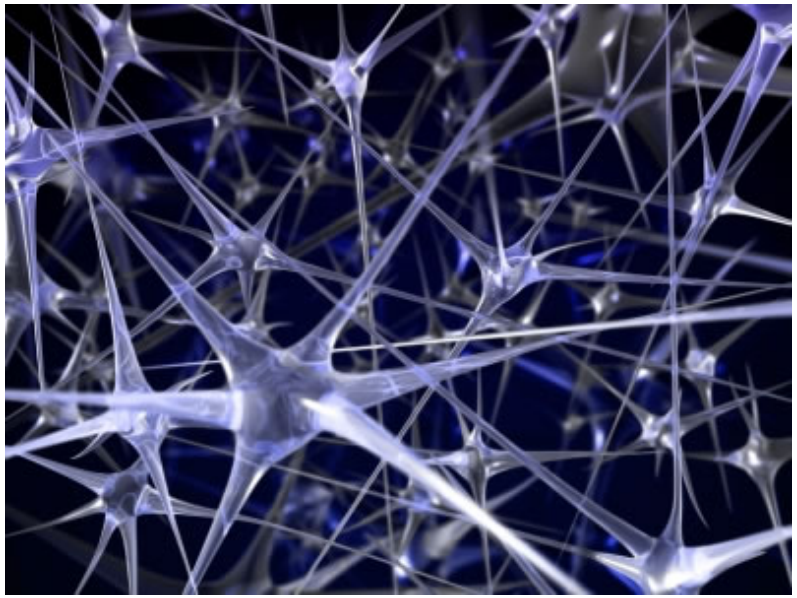
[11] Coniglio, "The Importance of Being Interactive." 12.

new technologies, this is an important element that artists must not ignore. While artists continue to exploit new technologies to explore alternative avenues of self-expression, I believe that it is crucial to the future of the art form to follow the example set by the artists of Troika Ranch and remember that technology must serve the dance, the narrative, and the performer, not the other way around. Perhaps in the future, performance theorists (such as Philip Auslander) will look to lesser known artists (such as Mark Coniglio) and realize that technology is capable of rendering a performance *more* “live” than less so.

Neural Integration

Culturally Expansive Technology but Problems Loom Large

by Matt Brown



The prospect of being able to control machines using only neural signals directly from our brains is an exciting proposition that will open the door to many important opportunities in the future but it also presents many potential pit falls. Researchers are currently working on systems that will allow humans to control machines like prosthetic limbs using a direct connection to the brain. These systems decipher the electronic signals that the brain generates to initiate the movement of different muscle groups and translates them into signals that control the movement of electric motors on the prosthesis. They also hope to be able to create a feedback mechanism that will allow the user to feel what the prosthesis feels. For example if the user were to pick up a hot cup of coffee sensors on the prosthesis would register that feeling of warmth and relay it directly to the users brain. As these systems become more and more capable they will ultimately diversify out of medical applications and into more industries. Imagine a crane operator using a Neural Integration System to control a giant construction crane using an array of cameras on the crane for visual input and directing the movement of the crane with his thoughts instead of manually controlling a multitude of joysticks, pedals, and levers. While this technological advancement opens the doors to an infinite realm of new possibilities it also presents an equally vast array of potential problems. It is important that we limit the negative impact this technology could have on our society and prevent it from being misused and having a negative impact on our future.

A Neural Integration System (NIS) works by inserting an array of sensors into the user's motor cortex, then capturing and converting the signals detected by the array to a usable movement command that can be sent to a machine.[1] The figure below shows the hardware portion of a Neural Integration System.[2]

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[1] Donoghue, J.P., Nurmikko, A., Black, M. and Hochberg, L. R. "Assistive technology and robotic control using motor cortex ensemble- based neural interface systems in humans with tetraplegia." *The Journal of Physiology*, no. 579 Issue 3 (2007): 603-611

[2] Donoghue, et al

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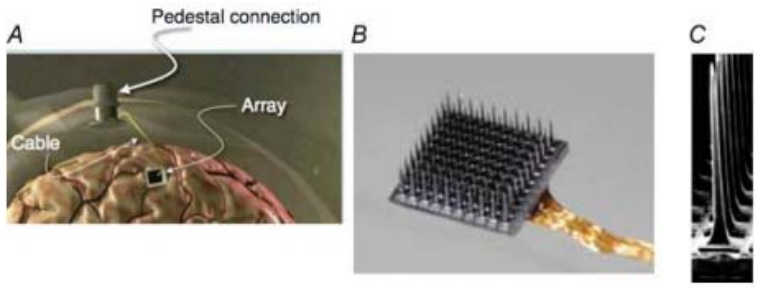

Figure 1. NIS implant and sensor
A, parts of the implant include the array, skull mounted percutaneous pedestal, and a 96 wire cable that connects them. *B*, 10 × 10 array of electrodes, each separated by 400 μm. *C*, scanning electron micrograph one electrode showing its shape and pointed, platinum (Pt)-coated tip.

These systems are being developed to give people that are either unable to move their limbs due to injury or disease, and people missing limbs the ability to move prosthetic limbs to assist them with everyday life. Scientists are currently developing a system to provide feedback to the user so that they will be able to sense with these prosthetics as well as pick things up with them. The same principles that make these types of prosthetics possible have already been used in thousands of patients with other types of health problems. These NISs use the same types of technology that underlie things like cochlear implants and deep brain stimulators.[3]

As these systems become more and more capable they will move out of medical only applications and become part of everyday society. As outlined before they could be used in construction, or they could also be used by everyday people to change the way we interact with computers. Someday instead of typing out a paper by hand we will be able to hook up our NIS wirelessly to our computers and instead of physically typing on the keyboard or physically controlling the mouse we will be able to control them with our thoughts. This could potentially revolutionize the way we interact with technology. Instead of our brains creating an electrical signal, then transferring that signal to the physical movement of our muscles, which physically moves the mouse, which creates an electrical signal that can be interpreted by the computer, we could have the electrical signal created by the brain directly transferred to the computer. Imagine the process of adding a chart to an excel spreadsheet. Instead of manually selecting the data you want to reference and the type of chart you want to use, you would be able to think of adding a pie chart with the specific data you want to reference. This is a rather mundane example of the use of this technology but it is still revolutionary. The limits of this advancement are boundless. There are also a multitude of other applications within the medical field. Image you are involved in a serious accident in a rural area. You are taken to a local hospital with limited staff, and no experts on your specific injuries. They could call to a specialist thousands of miles away and have them hook into a control unit that is networked to machines in the rural hospital. The Doctor at the remote location would be able to control those machines with his thoughts just like he was performing the operation at his current location. He would also not have to be on his feet through the long operation he could be resting comfortably in an easy chair while controlling the surgical instruments with his brain. By allowing patents to be treated remotely you could significantly reduce the chances

[3] Donoghue, et al

that they would die from their injuries before they reach help with the adequate skills and experience to treat them. Instead of flying a patient in a helicopter to the nearest major medical center they could be treated remotely by specialists. There are also military applications. Instead of sending solders into harm's way they could be remotely connected to robots that would be put in danger instead. The complexity of the tasks that these robots could complete would be greatly expanded by using an NIS instead of a solder controlling a joystick and a multitude of buttons and switches because instead of trying to retrain the solders mind to use the physical controls he would be able to think about making his normal movements just like he does every day. Although these types of systems would likely be subject to the same ethical concerns that have been brought up regarding the use of the military's predator drone aircraft, they still present a viable opportunity to reduce the harm of armed conflict. Although the potential benefits of this technology are vast it is equally important to think of the negatives associated with it as well.

Just as easily as a robot could be sent into combat instead of a solder, a robot could be sent into work instead of a human. We could end up living in a world populated with avatars of our selves, or what we would like to be, instead of whom we really are, just like in the Bruce Willis movie Surrogates. In the movie everyone is actually sitting in a specialized chair in their room at home and sends a "surrogate" that represents their ideal self out into the world instead of themselves.[4] The military applications of this technology could also result in a situation where the decision to go to war is not taken as seriously as it was before because none of our solders will be in harm's way, thus resulting in an increase in the number of wars fought, and likely increasing the number of innocent civilians killed. It is important to think about the litany of potential negative consequences of new technologies while they are still in their infancy so that society can shape the way that the technology grows and not be dramatically changed in a negative way by the technology.

In David Nye's book Technology Matters, he talks about Thomas Hughes's ideas of "Technological Momentum" and "Soft Determinism."[5] Nye outlines technological momentum as the process through which a technology is adopted by a wider and wider population and the evolutionary changes to the technology during that process. He defines soft determinism as the norms that are established as a technology is developing that after its wide adoption make it impractical to change despite the availability of a better option. For example despite the negative effects that internal combustion engines have on our environment, the massive infrastructure surrounding internal combustion engines and their related industries makes any effort to move away from that technology nearly impossible. These two ideas should be a key for how we view the growth and adoption of NISs. We as a society need to pay attention to the evolution and adoption of NISs so that as they gain technological momentum, they do not begin to move in a

[4] *Surrogates.* Directed by Jonathan Mostow. 2009: Touchstone Pictures

[5] Nye, David. Technology Matters. Cambridge: The MIT Press (2006)

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way that will have a negative effect on the society of the future that we will not be able to change because of soft determinism. If we do not keep a close eye on the evolution of this technology and an open dialogue about the positive and negative impacts that it may have on society we may end up in a situation where society has lost a key piece of its identity and the soft determinism exerted by the technology makes it almost imposable to reverse course and get it back. I think that the potential for NISs to build strong technological momentum and swing out of control and result in very serious unintended consequences is greater than what is present in most technologies because of its potential to allow us to disconnect from reality. If these systems develop to their full potential and allow users to operate machines remotely using our thoughts it creates a disconnection between our actions and their consequences. For example a crane operator that is not sitting in the crane controlling it, may be more likely to take greater risks in the way he operates it because his own life is not at stake if something goes wrong. Also the doctor that is operating on a patient remotely does not have to deal with the consequences of making a mistake during surgery in the same way that he would if he were present in the operating room. Not only does he not have to physically watch the person die right before his eyes, he also does not have to go out into the waiting room and tell the family that their loved one didn't make it and see the emotional pain his mistake inflicted on them. When actions are separated from their consequences it is much easier to take risks and much harder to make the right decisions. This is one of the reasons it is so hard to quit smoking. All the benefits to smoking, satisfying the craving for nicotine that a smoker has become dependent on, is an issues that is present and immediate. The long term side effects that should be a key to making the decision to quit and are much more serious than a nicotine craving are far off in the distant future, making them much easier to ignore than the constant craving for nicotine that is very persistent in the early stages of quitting smoking. When actions are separated from their consequences they tend to be easier to ignore.

NISs are going to be an important technology in our future. Their potential to revolutionize the way we interact with technology, and the positive impacts that they will have is undeniable, but this advancement is not without potential problems. It is vital that as a society we control the development of this technology, and keep it from developing technological momentum, that takes us in a direction that will have a negative effect on society, and be irreversible because of soft determinism. As this technology develops it will move in stages that will gradually reach a wider audience. Each one of early stages is an opportunity to influence the evolution of the technology. If one generation of the technological evolution of NISs moves in a direction where the marginal costs of the advancement outweigh the marginal benefits, it is important that we take the opportunity to influence the direction that this technology will take. As individuals it seems unlikely that we can influence something as massive as technological evolution, but we as individuals make up the force that Adam Smith called "the invisible hand of the market." Our collective will is one of the strongest forces in the economy and it is a power that we can use to shape the world of the future.

Cochlear Implants:

Sounding Disability and Shifting Cultural Understanding

by Daniel O'Neil

The focus of this paper is the advent of the cochlear implant and how the existence of this particular technology affects the way the Deaf[1] community is perceived – both within and without this community. The cochlear implant is a powerful advancement, but not only in its potential to advance the well-being of deaf individuals by increasing hearing capacity. It is a powerful technology because of the impact it can create beyond the realm of the body. In fact, there is a sizable amount of debate between the Deaf community and the medical community, with respect towards the larger impact and influence experienced by individuals and families who decide to use the implant. It is difficult however, to define the spectrum of attitudes without encountering rather extreme cases of biased opinion. I will attempt to touch on the main aspects of the debate, and then show the varying degree to which each aspect stems from an underlying theme: The technological advance of the cochlear implant, as a powerful personal implant prosthetic, exposes the need for a more critical examination of deeper socio-cultural understanding of disability, normalcy, and priority of language as a fundamental human right.

It is first necessary to describe the design and overall function of the implant before addressing the broader implications of the use of the device. The cochlear implant is a two-part system that enables a restoration of hearing sense to profoundly deaf individuals. The implant consists of two parts – and internal mechanism and an external mechanism. The external mechanism is comprised of a microphone that receives sound signals from the environment.

The microphone feeds this signal into a sound processor, which is programmed to filter sound signals to discern audible speech sounds, and then encode these sound signals into electrical signals. The electrical signals are then sent through a transmitter, which employs electromagnetic induction to transmit the signal to the internal portion of the implant. The internal portion of the implant consists of a receiver, which receives the electric signal from the external mechanism, and a stimulator. The stimulator sends these signals to an array of electrodes that are implanted into the cochlea – the portion of the inner ear that normally converts sound wave patterns into nerve impulses – therefore bypassing the damaged nerves of the inner ear and stimulating the auditory nerves.

[1] Deaf (capital d) refers to the self-identified community of deaf and hard-of-hearing individuals; while deaf (lowercase d) refers to the medical classification.

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Upon first consideration of this technological advent, one could understandably be quite amazed at the possibility afforded to a deaf or hard-of-hearing individual. However the case is not as simple as it seems on the surface. For one example, the existence of the technology has carried along many cultural and social implications, for example the notion of 'normalcy' and deafness as a disability. By viewing a deaf person as disabled – missing a quality of human life, the hearing sense -- the use of the cochlear implant can imply that deaf persons are 'broken' and that medical science has a way to 'fix' an individual. By extreme analogy, it can be viewed as simple a solution as acquiring a pair of eyeglasses to correct a vision problem. However, it is clear that nature of the cochlear implant alone presents a much more complicated issue. For one, the implant is by no means a 'miracle cure' for deafness. When one decides to go through with the procedure, the implant is only the first step in a long process of acclimation: speech and audio therapy will be necessary for the patient.

The hearing that is gained through the implant is far from the sounds that hearing individuals experience; the sound is filtered and processed before being approximated in its mapping onto the existing auditory nerve system. Another critical issue is that whatever residual hearing does remain within the inner ear is almost always destroyed upon implantation. There are many other complications that can surface, such as the increased risk of meningitis, inability to receive MRIs (due to the magnet implanted in the skull), and damage to the processor by electrostatic discharge. With all of these possible complications, it is clear that the use of the implant must be carefully decided, and the individual has a right to be fully informed of the risks as well as the benefits.

Another concern that is voiced in many discussions is the emergence of a "middle ground" between the Deaf community and the hearing community. For many implant recipients, the hearing afforded to them by the device is far from a normal hearing sense, so the individual is still considered hard-of-hearing or deaf by those who can hear. However, due to the fact that they have an implant, some individuals are shunned or ostracized from the Deaf community in extreme cases. This can be highlighted in situations where an implant recipient relies only on methods of lip reading and cued speech to supplement their use of oral/aural communication, rather than learning and utilizing sign language as a mode of communication. For such an individual, this can lead to a complex relationship between the self and the Deaf community. While many deaf or hard-of-hearing implant recipients may not personally encounter this issue, the fact remains that the technology has generated a new space between the two conventional realms of "hearing" and "deaf". On the one hand the implant is a wonderful advancement and tool that benefits many individuals already. On the other hand, it has exposed certain aspects of how individuals and groups perceive disability and normalcy.

On the other side of the debate, the medical community maintains that the risks are outweighed by the benefits of the implant. Although results can range from mere detection of sounds to understanding speech without lip reading, most parents who decide to implant their deaf children are looking for even the slightest success. The medical community also

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claims that the cost of the cochlear implant is less than the overall cost of alternative education, interpreting, and other assistive technologies. It is also common for medical professionals to address the cochlear implant as a way to grant deaf children, especially, the gift of the ability to hear, as if the decision to not implant would be denying the child their right to a hearing life. Due to the importance of development and education, it is especially important to address all of the factors when making the decision to implant or not. The success rate is highly variable -- a child who is born deaf will have trouble acclimating to the implant. Conversely, a child who has lost their hearing during a later period of life is much more likely to benefit from the implant. A child who is born deaf will have no previous knowledge or faculty to process and interpret sound signals received. However, a child who has previously used spoken language with a prior sense of hearing will require much less time and therapy to benefit from the implant. It is therefore crucially important for the parents of a pre-lingually deaf (born deaf) child to consider the long-term implications of such a procedure. Many voices within the Deaf community argue that instead of implanting and trying to "solve" the problem of deafness, the time and funding would be better spent on immersing the child in a signed language environment as early as possible. The years between 0-6 consist of the critical language-learning period for children, and many Deaf experts argue that implanting within the period can be a hindrance to the language faculties if sign language is ignored and replaced with the aural modality. In addition, some argue that deafness should be embraced as a cultural identity rather than a medical disability. Therefore, it should be treated as such, and deaf children should be raised within the community of Deaf individuals. A cochlear implant is not necessary to enjoy life; many deaf persons are just fine without the use of an implant.

With this overview of the current debate, it is necessary to step back and examine the deeper implications of this particular technology. It is clear that the cochlear implant, as a prosthetic technology, can be a powerful tool and medical advancement. However, in its current state there are limitations to its application, and its use must be determined carefully. It is far from a miracle cure for deafness, despite being marketed as such. Because of its direct link to the nervous system, the cochlear implant is a very interesting tool: it can be viewed as a replacement prosthetic, yet it is quite different from a conventional replacement limb for instance. While a prosthetic leg or arm is primarily of physical, aesthetic, and functional concern, the cochlear implant reaches a more personal level. Because it deals with the sensory perception of hearing, the decision to implant can be a difficult one to make. Deafness is so closely ties to identity, both personal and cultural, and the increase in occurrences of implant procedures is shifting the way people conceptualize deafness. The technology has advanced quite drastically from the first implants approved in the 1980s -- processor power as well as electrode design have been improved over the last few decades, and the overall quality of results has increased. But it is clear that this increase in "successful" implantation has also carried with it a growing sense of ambiguity for what it means to be deaf. We are far from a perfect bionic ear, and even if one is created, it will be likely that any controversy surrounding the technology and its use will only be intensified.

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As seen above, Deaf culture can be a source of pride, and the introduction of this particular prosthetic has potential to degrade certain aspects of cultural identity and pride associated with it. It can serve to accentuate the dichotomy between hearing, able bodies and deaf, disabled bodies. If it is marked as a way to more easily attain "normalcy," what is to be said about deaf individuals who do not require implant devices to lead "normal" lives? The implant can be seen as a devaluation of deaf society by means of promoting a medical device to fix a disability. Conversely, if the implant is viewed as another tool for increasing effective communication, it can be treated as such; there are benefits but there are also limitations. If one considers the implant as a technology to regain hearing, chances are that it will not be considered a success due to the high standard it will be measured against. But if one realizes that it can be an addition to the other tools used in facilitating communication between people, the implant can be likely regarded as a success. The point that seems to be stressed by both sides of the argument is that at the end of the day, it is a matter of personal choice. For this reason, it is crucial that medical professionals give potential candidates as much unbiased information as possible so the patient can make an informed decision. It is also important that the parents of a deaf child understand the importance of language development, and that they be flexible in possible approaches to giving the child opportunities to learn.

It seems that the current debate will continue well into the future, and as mentioned above, I can only foresee more problems if the cochlear implant advances to the point of near-perfect hearing replication. As with many emerging technologies, access is limited to the wealthy, thus creating further issues concerning disability and economic status. We are nearing an age in which prosthetics are no longer replacement but enhancement -- the boundaries between man and machine are quickly dissolving. If the cochlear implant is further advanced, it will become better than the natural sense of hearing we come born with. Imagine being able to turn up the sensitivity of your bionic ear, giving you increased hearing capabilities. Or if one is in an uncomfortably loud environment, one can turn the volume knob down or even off. If this type of trajectory is followed, what then becomes of the notion of medical devices as privilege? Soon, people with just sub-standard hearing will demand that medical science grant them their rightful sensory organs, since the technology will most likely lower in cost over time as newer advancements are made. If this were to be the case, what would then happen to the already marginalized deaf community? It could only serve to increase the rift between cultures, and possibly relegate Deaf culture to a position that is even less understood than it is now.

The cochlear implant is more than just a personal prosthetic device; it is capable of affecting communities as well as individuals. It is a powerful device that can create or destroy identity, and it should be treated as such. The future for the prosthetic device looks promising, but also invites further strife between two already severed communities. As we move forward with technological innovation, it is even more important that we maintain a sense of humanity. It seems to be a simple task, yet it has proved to be a difficult one to effectively address.

The Gamespace of Pokémon

Networks, Commodity Fetishism, and *Ningen Kankei*

by Gary Walsh

Perhaps the most well known cultural production to come out of Japan in the last ten years is the *Pokémon* franchise.[1] Originally conceived by Tajiri Satoshi in conjunction with videogame development firm Game Freak in the 1990s, *Pokémon* was adopted for Game Boy by Nintendo in 1996.[2] Since that time the *Pokémon* franchise has branded everything from chewable vitamins to All Nippon Airways jets. This anecdote speaks to the ways in which one medium, in this case a videogame, can transcend the limitations in which it was formulated in order to produce new cultural productions that otherwise are not obvious or necessarily intended. In stepping back and looking at the videogame series of *Pokémon* and the medium of the Game Boy, the social significance of this product becomes clearer. That is, *Pokémon's* popularity rests on the global circulation of consumer goods while also indoctrinating youth into a system of global competition and material accumulation. At the same time, however, *Pokémon* creates new virtual communities by way of trading *Pokémon* over Wi-Fi connections. The game technology of *Pokémon* therefore promises to create bonds between individuals while simultaneously socializing youth into a system of postindustrial capitalist logic. At once connected, the medium of the Game Boy also reflects the lives of youth living in post-industrial societies by way of its portability and individuality. As anthropologist Anne Allison argues in describing contemporary Japan, "in an environment where everyone moves fast to accomplish more and more everyday, the human connectedness (*ningen kankei*) once held as fundamental society is said to be eroding…"[3] *Pokémon* is symptomatic of contemporary societies such as the United States and Japan in that individuals are increasingly more connected through digital networks (though face-to-face communication remains important) but also increasingly disconnected given the reliance on individual

[1] When italicized, *Pokémon* refers to the videogame franchise. Pokémon without italics refers to the characters.

[2] Anne Allison, *Millennial Monsters: Japanese Toys and the Global Imagination* (Berkley and Los Angeles: University of California Press, 2006), 197, 198.

[3] Anne Allison, "Pocket Capitalism and Virtual Intimacy: Pokémon as Symptom of Postindustrial Youth Culture," in *Figuring the Future*, ed. Jennifer Cole and Deborah Durham (Santa Fe: School For Advanced Research Press, 2008), 180.

portable devices such as I-pads, I-phones, and hand held gaming devices which help to navigate everyday life as well as construct identities.

The game of *Pokémon* was originally envisioned for the 8-bit gaming platform known as Game Boy which was an AA battery operated hand-held system that featured a monochrome display screen. Produced in 1989, the Game Boy brought the videogame experience out of the arcade or home and made it portable.[4] Despite the technological limitations of the game such as a small monochrome screen and limited interface potential, *Pokémon* was hugely successful when it was released on the Game Boy platform in 1996 in Japan. Allison notes that, "Initial predictions were for only modest sales, given the Game Boy and its eight-bit technology was on the wane in an electronic game world now dominated by far more powerful machines."[5] The game was also novel in that players could link-up their Game Boy systems together and trade *Pokémon* that they had captured. In fact, the brilliance of the game design was that the original series came in two forms: red and blue (green in Japan). No one game contained all the original 150 Pokémon and some Pokémon would only change into new forms once traded. Thus, despite being a virtual world, *Pokémon* fostered cooperation and face to face interactions.

The initial success of *Pokémon* was that it made use of existing technologies to create "software [that] is simple yet fun and uniquely designed to foster communication and exchanges between children."[6] In 2002, the development of Game Boy Color was coupled with hardware that would allow the player to link into the Nintendo 64 (N64) gaming console. This allowed players to mediate the *Pokémon* game play experience with the larger viewing screen of the television and even to place captured Pokémon in the Game Boy series into N64 games such as *Pokémon Coliseum*. The drawback to these technologies; however, was that the gamer was largely limited to direct face-to-face interfacing or machine-to-machine interfacing to enhance game play experiences.

Tajiri Satoshi envisioned Pokémon to foster a sense of communication (*tsūshin*) and human relations (*ningen kankei*) within a Japanese society plagued by a growing sense of unease (*fuan*) and apathy (*mukanshin*).[7] The ability to merge a game that could achieve this with the fast-paced mobile lifestyles of Japanese youth (and adults) was more fully realized with the advent of the Nintendo DS in 2004. While there was a large emphasis on the split screen interface of the Nintendo DS, this system was also equipped with internal wireless hardware which could allow users to connect to each

[4] Jussi Parikka and Jaakko Suominen "Victorian Snakes? Towards A Cultural History of Mobile Games and the Experience of Movement," Dec 2006, <http://gamestudies.org/0601/articles/parikka_suominen> (5 February 2011).
[5] Anne Allison, *Millennial Monsters,* 198.
[6] Anne Allison, *Millennial Monsters*, 199.
[7] Ibid. I provide the original Japanese words here to signify that the English translations do not exactly capture the meanings of the original Japanese terms. For example, *mukanshin* literally translates as indifference, but is more properly understood as apathy in English.

other via Wi-Fi.[8] Players could connect with each other across the same room or across the globe. Therefore, with the transfer of *Pokémon* onto the DS "the line between communication and commodity, electronic individualism and human relationships *(ningen kankei*), is increasingly hard to discern."[9] In other words, Satoshi's *Pokémon* moved beyond what has been termed the "Walkman culture". Kuroki Yasuo, the inventor of the Sony Walkman, noticed portable devices such as the Walkman produced cybernetic hybrids whereby individuals could isolate their entertainment experiences specifically at the level of the individual through portable technological mediums. Although this concept is taken granted for today given the presence of the I-pod and similar products, without the Walkman and the "Walkman culture" the I-pod could not have been created. What the "Walkman culture" produced, then, were more personal and delocalized relationships with machines and thus the potential to reorganize "space/body/machine borders."[10] Unlike a wristwatch or a pacemaker for instance, machines like the Walkman could be temporarily part of the body, interfaced with, and even personalized by way of the cassette tape. Like the listening experiences of the Walkman, the Game Boy allowed for a truly nomadic gaming experience in which the gaming platform moved within real-space with the individual but the gamer could also chart virtual-space in real time, anywhere at their convenience. But the DS version of *Pokémon* moved beyond "Walkman culture" given that no two gaming experiences would ever be alike, and players could even share their individual gaming experiences despite owning copies of the same game cartridge. Each Pokémon could be personalized to suit the needs of the player, and personal experiences such as in-game Pokémon battles could be recorded and stored in the "Poké-web" for other gamers to view at their leisure.

Tajiri's vision of creating an experience in which individuals could foster *ningen kankei* was largely achieved through the technological enhancements found in the handheld Nintendo DS system over previous Game Boy incarnations. This, however, has not rendered *Pokémon* unproblematic. In Tajiri's original envisioning of *Pokémon*, he was concerned that "the rewards of millennial Japan have come with a loss to humanity. Nostalgic for a world not yet dominated by industrial capitalism, he strove to re-create something from his childhood in the imaginary play world of *Pokémon*."[11] Although a sense of exploration and fantasy is rendered in the gamespace of *Pokémon*, the game itself also comes to mirror that which it seeks to overcome. In creating a game in which individuals can interact wirelessly, and providing an enjoyable gaming experience which in itself seems benign, *Pokémon* creates a "fantasyscape that promises an alternative word of connectedness but in which the logic of play also presumes, and socializes children into, a worldview of accumulation, competition, and consumption very much aligned with the

[8] Steven Kent "Nintendo DS: Doubly Good; Dual Screens Elevate Gaming" *USA TODAY* (2004): 4D. *WorldCat.org*, Lexus Nexus Academic (6 February 2011).
[9] Anne Allison, *Millennial Monsters*, 89.
[10] Anne Allison, *Millennial Monsters,* 116.
[11] Anne Allison, *Millennial Monsters,* 201.

problems of youth in millennial capitalism."[12] Whatever gains are made in connecting individuals over distances of time and space are largely trumped by a system in which "what one learns about this world is in the form of goods useful to the pursuit of acquisition."[13] Individual game play as well as interactions with other gamers becomes dominated by a capitalist logic in which relationships are defined by the act of commodity exchange. In essence, the value of others is measured by gains to the self.

Given the aforementioned issue it would appear that Tajiri's original purpose of creating *Pokémon* "to give kids a means of relieving the stresses of growing up in a postindustrial society" was a failure.[14] I do not take this position, but rather postulate that the game of *Pokémon* as technology is an important means of understanding how youth increasingly interact with one another and view their world. Therefore, what is important is to acknowledge how *Pokémon* situates itself in the contemporary moment as both a technological and social phenomena. How a technology is used as opposed to the technology itself is what matters here. Perhaps most prominently, *Pokémon* reproduces the realities of many youth in that the "tale of *Pokémon* is postmodernist, featuring multiple subjects with flexible attachments who never stay in one place and have goals that, while clear-cut, are open ended and take them in many directions."[15]

[12] Anne Allison, "Pocket Capitalism and Virtual Intimacy", 183.
[13] Anne Allison, *Millennial Monsters,* 211.
[14] Anne Allison, "Pocket Capitalism and Virtual Intimacy", 184.
[15] Anne Allison, *Millennial Monsters,* 196.

Pokémon is a game in which chance and luck play an important role and social relationships with other players as well as with the Pokémon themselves tends to be ephemeral. In this sense, *Pokémon* mirrors a world in which the future is uncertain and the rules are ever-changing. Of course there is a set pattern of what a player can and cannot do in the game but, in mirroring real life, the opportunity to acquire resources is never guaranteed and flexibility is more practical than being preoccupied with a single strategy of success. In other words, youth are faced with a world in which there is no guarantee of procuring a job that will provide lifelong employment or benefits, and individuals must be resourceful as well as adaptable to adjust to ever changing economic conditions. This is mimicked in the game itself by the presence of wild and domestic Pokémon whose strengths and weaknesses are unknown to the player prior to being engaged in combat.

Players must keep in their possession an array of Pokémon that can exploit the weaknesses of their opponents while minimizing the potential to have their own weaknesses exploited. Further still, in the act of trading Pokémon, players are exposed to a system in which investments do not always yield returns and that in order to exploit the circulation of global resources one must have access to networks. To address the first point, unless directly trading face-to-face, players can put up one of their Pokémon up for trade only to receive a less valuable Pokémon in return by an anonymous individual. The digital nature of Pokémon becomes like that of the digital circulation of capital. *Pokémon* reflects the economics of globalization in that "*Pokémon* is the play version of casino capitalism: getting and trading commodities in a market highly

dependent on fantasy, luck, and also skill".[16] Pokémon is itself both reliant on the global circulation of commodities while also reproducing that same economic system within its gamespace. In addition, players that have access to Wi-Fi therefore have the potential to enhance their own game experiences. This is reminiscent of Jan van Dijk's network society in that those with "a high level of access to and participation in the new media will obtain better positions and more resources of all kinds."[17] What van Dijk is referring to is that access to networks via computers (in this case the Nintendo DS and *Pokémon*) allows individuals to potentially connect to individuals who have control of resources and information not within the immediate area of the individual. While there is a certain amount of risk involved, players that have Wi-Fi can look for other players around the globe to battle as well as exchange rare items and Pokémon. Indeed, there is even a further incentive in that traded Pokémon grow faster, and therefore stronger quicker, than Pokémon that are simply caught. Players without network access are at a disadvantage and can only access resources within their own immediate gamespace. The networking aspect of *Pokémon* is virtually limited to commodities being "bought and sold on the marketplace and of a play logic that, itself, mimics a marketplace of continually transacting and accumulating things".[18]

Pokémon is sometimes labeled as a simple fad that will eventually dissipate over time. But to dismiss *Pokémon* as a fad would be to dismiss the importance of the technologies utilized in playing the game and how *Pokémon* reflects the lives of global "youths who are already living postnational and postmodern realities".[19] In addressing the former point, Nintendo DS technology allows a player to trade or play with *Pokémon* players from all over the world for free. This helps to foster a sense of community and identity that transcends geopolitical borders. Everyone is equal in the gamespace of *Pokémon* despite where players link into the network. Indeed, the popularity of *Pokémon* has allowed for the production of consistently new generations of games to be developed. The latest of which is *Pokémon White/Black* which features improved graphics and a revised interface. Despite these new incarnations, the gameplay of *Pokémon* remains virtually unchanged, and continues to be problematic in the sense that the gamespace represents natural environments as something to be colonized and the creatures that dwell within them as exploitable commodities. In this case, instead of Pokémon fostering stronger social ties and cooperation, *Pokémon* is "simply manufacturing more active forms of enslavement to the commodity."[20] Aside from this criticism though, *Pokémon* provides a genuine sense of *ningen kankei* as Satoshi hoped.

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[16] Anne Allison, *Millennial Monsters,* 256.
[17] Jan van Dijk, *The Deepening Divide: Inequality in the Information Society* (Oakland: Sage Publishing, 2005), 167.
[18] Anne Allison, "Pocket Capitalism and Virtual Intimacy", 194.
[19] Tomiko Yoda, "A Roadmap to Millennial Japan," in *Japan After Japan*, ed. Tomiko Yoda and Harry Harootunian (Durham and London: Duke University Press, 2006), 38.
[20] Thomas LaMarre, "Otaku Movement," in *Japan After Japan*, ed. Tomiko Yoad and Harry Harootunian (Durham and London: Duke University Press, 2006), 373.

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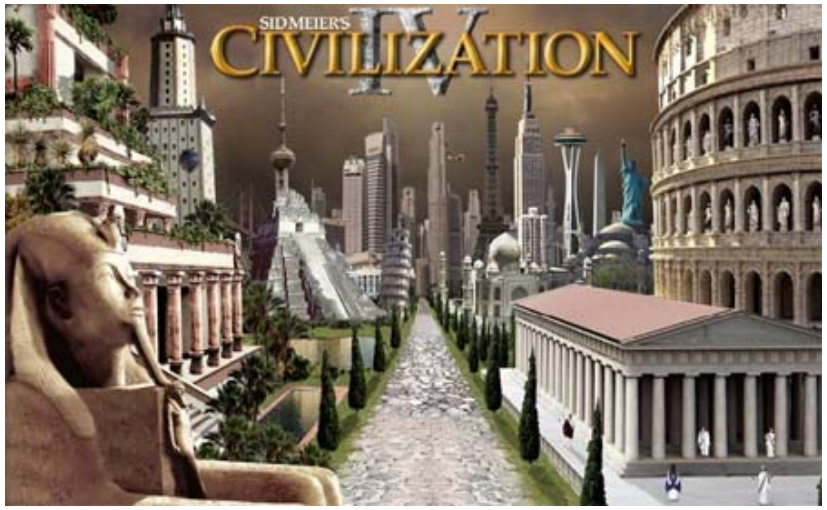
by Gary Walsh

Virtual pets (i.e Pokémon) provide convenient, though limited, companionship while also allowing similar fluid relationships with other players that are marked by the removal of physical and temporal barriers via Wi-Fi. *Pokémon* is a videogame that acknowledges the realities and concerns of youth today, and despite the problems with its commodity fetishism, it is undeniable that "Japanese corporations like Nintendo…touch the lives, imaginations, experiences, desires, and material resources of children in many parts of the globe."[21]

[21] Barrie Thorne, "'The Chinese Girls' and 'Pokémon Kids': Children Negotiating Differences in Urban California," in *Figuring the Future*, ed. Jennifer Cole and Deborah Durham (Santa Fe: School For Advanced Research Press, 2008), 83.

Games Matter for the Development of Society

by Eric Schaller



It seems that in media today, almost all of the information we hear about video games is negative. We hear about murderers blaming their actions on Grand Theft Auto because they play a lot, kids bludgeoning their parents to death because they took away their Playstation, and kids jump starting their sex-lives by witnessing "extreme" sexual content in mature games, such as Mass Effect. You rarely hear the opposite side of the argument, and you never hear about the millions of other people who also play these games, and are not affected in ways that significantly change their lives for the worse, or make them commit acts of violence. Even when you do hear from the opposition, it seems that they are brought into the spotlight only to be lambasted by the media, in the case of Mass Effect, at least. However, video games provide players with much more than just entertainment, violent and vivid graphics, and a venue to waste their time. They are capable of helping people learn concepts such as international relations, learning basic skills like reading and arithmetic, helping us learn how to solve problems like economic crises, they provide us with stronger social connectivity, the opportunity to become part of something bigger than ourselves, and the opportunity to meet new people. The goal of this essay is to look at video games in a different light, and see how video games provide positive effects and help develop society.

First, let's take a look at how video games benefit our society by providing alternative methods for learning. Video games can cover a massive range of students, and are capable of teaching some of the most basic abilities we learn when we are little, as well as some of the most complex skills we can even hope to learn. Take, for example, games targeted at young students to assist in their learning of basic arithmetic, language arts, science and reading. A couple games of this nature, and targeted towards younger children are The Magic School Bus series and the Leapfrog system. The Magic School Bus was originally an educational cartoon in which viewers learned about a plethora of topics, such as life science, physical science, the human body, forces and motion, dinosaurs, water and the ocean, and much more. Eventually, this television show was spread to the video game world, allowing fans of the series to become interactive with their learning. The Leapfrog company provides toys for children as young as three-years-old such as the Leapster system, in which children learn to read with games related to their favorite TV shows or movies.

Games like Math Blaster teach children math from the levels equivalent to a four-year-old, up to algebra and geometry. Math Blaster uses a fun and interactive interface in which children of a wide age range can be engaged and entertained

while learning math. Reading Blaster is a similar game from the same company (Originally Davidson, now Knowledge Adventure), in which players are set on a quest to restore knowledge to the human race by defeating an evil computer, Cyclotron X, who has taken control of the earth. The Blaster series is a great way for children to learn some basic skills, and prepare them for more difficult tasks ahead in a way that keeps them engaged, and wanting to accomplish more, without boring them with old fashioned text-books.

Video games, as mentioned before, can also help teach much more complex and higher level skills. One example is from the University of Florida, where they use the game Starcraft, which is a high-pressure real time strategy game in which players micro manage their units to adapt to situations and macro manage an economy, to illustrate skills that can be applied to real life. "The students in the course will learn to apply problem solving, critical thinking, and collaboration in multiple situations," says Peter Zimmerman, who is the Content and Social Media manager at the University of Florida.[1] The goal of the course is to use the skills you learn in Starcraft, such as managing resources and units, utilizing build orders, and decision-making, to synthesize those skills for use in the business world. "In today's job environment where multimillion dollar marketing campaigns are finely tuned and where information flows at exponential speeds, these skills are extremely useful." [1]

Another example of video games used for higher level learning comes from using the game Civilization to teach history and international politics. Civilization is a computer game that allows players to create a civilization to compete against other civilizations. Like Starcraft, players manage resources to develop their civilizations, establish trade relations, establish diplomatic relations with other civilizations, and open peace and military alliances. Northern Kentucky University used Civilization in order to actively teach international relations, focusing on the complexities of international politics through the game.

"A much cited source in the active-learning and problem based learning literature indicates that students retain 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they see and hear, 70% of what they say, and 90% of what they say as they do something (Stice, 1987). As such, using simulations can complement and enhance classroom instruction (Gee, 2003, 2004; Ip & Linser, 2001; Oberlander & Talbert-Johnson, 2004; Squire, 2002, 2004, 2005)."[2]

Professors at the university say that once students learn the rules of the game, and have built up a basic competence for the

[1] Peter Zimmerman, "21st Century Skills and Starcraft: Academics Behind the Strategy" Peter Zimmerman's Blog, September 2, 2010 (2011): 1, http://community.education.ufl.edu/community/pg/blog/peterdz/read/44770/21st-century-skills-and-starcraft-academics-behind-the-strategy

[2] Kimberly Weir and Michael Baranowski, "Simulating History to Understand International Politics." Simulation & Gaming, 2008: 1-20. http://sag.sagepub.com/content/early/2008/10/10/1046878108325442.full.pdf+html

game, they begin to learn from the game, and not about the game. Computer games allow students to become more actively involved in their learning, and process abstract concepts and, and these concepts can be made directly relatable to real-life skills. The goal at Kentucky University is to use Civilization to teach such as problem solving, high-order rules, defined concepts, concrete concepts, and discriminations. Students also learn synthesis, analysis, comprehension, application, and knowledge.[2]

In order to integrate the game into the classroom, Kentucky University used the game as a supplement to regular course material. The game was paired with a few written assignments and "debriefings" which allowed students to connect with the course concepts with little additional class time needed. If time permitted, classes used a few hours of professor-guided gameplay and assigned additional gameplay outside of the classroom throughout the semester, which allowed the students to have an idea of how the game works and may better enable them to make connections between play, concepts covered in class, and assigned readings.[2] Some limitations of using Civilization in a course are its complexity and required time to achieve competence, and the time required to play each game. However, Kentucky University ultimately found that using Civilization gave students a unique and innovating way to learn international relations concepts, as well as teaching students general skills, like critical thinking, general skills, and analytical logic.[2] These examples of video games being used to teach children from young ages to those in college courses are just a couple ways that video games are being used to better our society today.

Another aspect in which video games provide us with societal benefits is the realm of social connectivity. Similar to the internet in general or telephone calls, online video games allow us to connect with people who are miles away instantly. However, these video games allow us to interact with those other people in a way that cannot be achieved over the phone, or through something like E-mail. Video games enable us to compete with one another, while talking to each other through text chat or voice chats like Skype, Ventrilo, or TeamSpeak. They let us keep in touch with family members in a way that is more than just calling to say "Hello" and keeping the conversation as succinct as possible so we can get back to our lives. With these games, we get to experience what Jane McGonigal calls "Happy Embarrassment." McGonical uses the example of the game "Lexulous" on Facebook, which is similar to scrabble and allows players to chat and gently tease each other, or as we know it today, trash-talk.[3] "Trash-talking, when it's a playful way to insult your opponent, is almost as important to our enjoyment of social network games as the actual core gameplay."[3] McGonigal compares trash-talking to the way dogs playfully bite each other, allowing us to provoke the other's negative emotions in a mild and playful way. This teasing has two important effects: One is that the person doing the teasing is showing that they have the capacity to hurt, without having the actual intention to hurt; the other, is that the one being teased is allowing the person doing the teasing to feel powerful, and showing that we are able to let ourselves be vulnerable.

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[3] Jane McGonigal, Reality is Broken: Why Games Make Us Better and How They Can Change the World (London: Jonathan Cape, 2011), 77-94.

Games Matter for the Development of Society

by Eric Schaller

We also crave the ability to say we have beaten someone in a game, and we even like being beaten at a game by people who we like. Online video games, beyond just social network games give us the opportunity to have these experiences more often since we are able to engage our friends in these activities with much more ease than if we were to have to travel to a mutual location to play some other game. Video games provide us with more than just entertainment. They give us ways of maintaining relationships with family, keeping up with our social circles, as well as extending them.

Online video games have opened up a world that has never been seen of this magnitude. Players are able to meet new people on a daily basis. People who live on opposite sides of their countries, people who they may never have met had they not been playing the same game together at some point in time, and they can become good friends. Most of the time, these acquaintances are just some person that you're playing with or against for a small amount of time, then you move on to the next game, and the next team. However, occasionally players may re-encounter one another, and begin forming a friendship, sometimes even very strong friendships that develop through the games. There have been stories of players even meeting their future spouses in an online game. Players may meet new people in a quick match of Battlefield, a short mission in Alien Swarm, or a battleground fight in Rift. Regardless of where these players meet, these games provide society with extra venues in which to meet people, and these meetings can develop into lasting friendships.

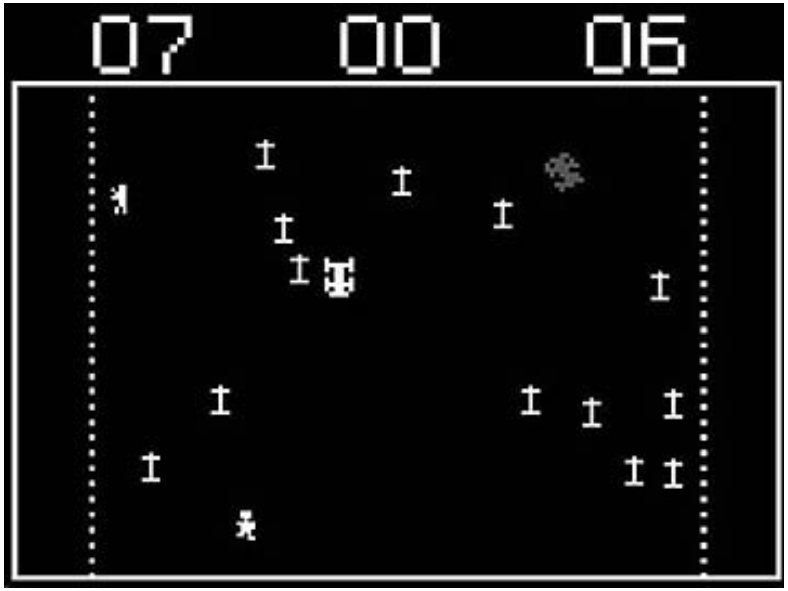
Another important contribution that video games bring to society is the feeling that the players are participating in something bigger than themselves. In 2009, Halo 3 players worldwide had achieved a milestone for the Halo series; they had collectively killed ten billion of their virtual enemies.[3] While this statistic may not mean anything to most people, to the players, it can mean something. They took part of a worldwide, concerted achievement, and they contributed to a community. This achievement for the Halo community gives the players a feeling of significance, a very important aspect of the contributions that games have towards society. These goals and achievements may not have real life value, but they are meaningful to the players. Whether a player is participating in an epic raid in World of Warcraft, defending their world against the Covenant in Halo, or protecting their realm's relics in Dark Age of Camelot, becoming part of these efforts that are bigger than just themselves gives the players a sense of accomplishment, belonging, and a meaningful goal to participate in.

So, as we can see, video games provide many contributions to society today. Video games can make official contributions to school related work that mediums like LeapFrog, the Blaster series, Starcraft or Civilization provide, or social contributions that social network and other online games provide like social connectivity, meeting new people, and becoming part of something bigger. Video games always seem to get a bad rap when it comes to coverage from the media, but it is important that we stop focusing only on the outlying negative effects that these games have and start embracing and utilizing the capabilities that video games can offer to society.

Video Game Graphics and Violent Graphics

by Nicolas Mirabelli

With all the improved technology today, graphics in video games have become almost realistic looking enough that the violence they contain looks realistic as well. Many parents are concerned over violence in video games as they are not just watching it happen, they are making it happen. Violence is so popular in video games that a recent study[1] conducted found that 89% of video games contain violence. That includes games that are rated Everyone where you might throw something at someone or something. Simulation games that are based on real events and facts or use the Kinect, Move, or Wii, are games that add to the violence debate even if the graphics do not look that great. But the main question is how does the increased graphics in video games matter for the violence that is in them?



Death Race 1976

Let's start with some video game history to pinpoint the violence timeline. If we go back a few decades to 1976 we will find the very first "violent" video game called *Death Race*. The first "violent" games to see the light of day were mostly all arcade games. Death Race was an arcade racing simulator were you would run over stick-figures that would turn into headstones after you hit them[1]. The graphics for this game were so bad compared to today that nobody really cared about the violence because you were just running over sticks. About sixteen years later, in 1992, the first Mortal Kombat game is released. Instead of stick figures, you play with actual looking "blocky" people as characters and the object is to kill your opponent. This game was perhaps the biggest controversial game of its time thanks to its real-life graphics and never before seen images of gore[2]. Mortal Kombat graphics took real life looking violence in video games to the next level. Eight years later sees the release of Soldier of Fortune[3]: a game so violent, you could blow chunks of flesh off your enemies as well as watch them bleed out through their throat. Even during the numerous debates going on over video games and violent

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[1] "Psychology." *Violent Video Games: The Newest Media Violence Hazard*, http://www.psychology.iastate.edu/~dgentile/106027_07.pdf (Accessed Feb. 19, 2011)

[2] "Encyclopedia of New Media." *Computer Games – Violence – Case Study: Mortal Kombat and Manhunt*, http://wiki.media-culture.org.au/index.php/Computer_Games_-_Violence_ _Case_Study:_Mortal_Kombat_and_Manhunt (Accessed Feb. 19, 2011)

[3] "IGN." *Soldier of Fortune*, http://pc.ign.com/articles/162/162287p1.html (Accessed Feb. 20, 2011)

content at the time, Raven Software decided to give people a reason to debate this topic.

Even though the graphics of the game were not immensely improved over Mortal Kombat, the new technology did allow the developer to show dismantle body parts as well as make it realistic when you shoot your opponents. For example, if you shot someone in the throat, they would grab their neck and fall to the ground making gurgling sounds. If you shot someone in the leg, they would hop around on the other. The new technology allowed for enhanced reaction to where someone was shot. Finally, only one year later in 2001, Grand Theft Auto III[4] was released taking violence and improved graphics to a whole new level. Unlike its predecessors, GTA III used a brand new game engine called RenderWare which gave the developers the ability to take the game even further than ever before. The game created the "sandbox" type of game allowing players to go anywhere they want in the world that was created. The graphics were improved upon as well. In the original release of the game, you could blow off somebody's head, arm, or leg. Since you were able to kill cops, controversy surrounded this game which forced the developer to make an edited game so there was no gore. In the edited version, you could no longer blow off limbs. However, a cheat became available online that allowed you to turn back on the gore. As you can see, it took just three decades to quickly improve graphics from stick figures to being able to shoot the flesh off someone as well as have open 3D worlds.

[4] "IGN." *IGN Presents: The History of Grand Theft Auto*, http://retro.ign.com/articles/863/863037p4.html (Accessed Feb. 20, 2011)

Grand Theft Auto 1997

Grand Theft Auto (GTA) has been the most controversial game franchise to ever hit the streets. It features everything from excessive violence to sex, drugs, and language. Even though the controversy stared with the first game, it did not really blow up until GTA3 came out thanks to its fully polygonal people and city landscape. GTA3 came out just four years after the original game and two years after the second. In a very short time, GTAs graphics had a drastic makeover. GTA3 was the first game to give the player a real looking open virtual world for you to explore. In the first two (and the London spinoff) GTA's graphics were called "top-down" because you have an aerial view of the city. The game closely resembled Death Race but it was in color and the graphics were improved. Not only could you shoot cops, hit random civilians, run over people, set people on fire, and take their money after you killed them, but you could also, in the original version, blow off limbs. Even though you could do all these things, you could

also play the game without causing any violence by playing some non-violent mini-games and exploring the vast open city[5]. If you really wanted to, you could just drive around normally by sopping at traffic lights and stops signs. You could even become a taxi driver and take people to their destination, fight fires while driving a fire truck, and save people by driving an ambulance. This is what made the game even more unique.

All the games with great graphics have a game engine to help create those stunning graphics. RenderWare was a big graphics engine in the early 2000s. RenderWare was a big part of the last generation consoles as it was used in all the big games like GTA III to San Andreas, the Burnout games, some Mortal Kombat games, sports games, and others. Unfortunately, RenderWare was not strong enough to support the next-gen games and was soon cut down[6]. Game engines keep improving with today's modern technology. Game developer Rockstar created their own game engine called RAGE, Rockstar Advanced Game Engine. The first game to use this engine was 2006's Rockstar's Table Tennis. In this game you can see the sweat take over someone's shirt and drip down their arm. This is the same game engine used in GTA IV. The same types of graphics are in the game Heavy Rain as you can see the rain drip down their faces. If you go one step further to the upcoming game L.A. Noire, you can see every facial expression on the character's face from a smirk to an eyebrow raised. This is thanks to the new technology they used called MotionScan[7] which captures every movement on the actor's face. MotionScan was created especially for this game because the developers did not believe that the current motion capture technologies did not capture people realistically enough. L.A. Noire is a violent game as you play a detective solving gruesome crimes in post-World War II Los Angeles. What makes this game a little more controversial is that the stories they use are based off of actual crimes. The original version of the game had some of the criminals and suspects real names in the game but Rockstar quickly noted that those names will be changed before the games release. If Rockstar left those names in the game, they might have faced another swarm of controversy which is something they are all too familiar with. While games like L.A. Noire are using brand new technology and improving on the already stunning graphics, simulation games have been improving as well.

[5] Tanner Higgin, "Play-Fighting: Understanding Violence in Grand Theft Auto III," in *The Meaning and Culture of Grand Theft Auto*, ed. Nate Garrelts (McFarland & Company Inc., 2006), 70.
[6] "WorldLingo." *RenderWare*, http://www.worldlingo.com/ma/enwiki/en/RenderWare (Accessed Feb. 21, 2011)
[7] "Fast Company," *Game Face: L.A. Noire Brings Actors' Full Performance to Gaming*, http://www.fastcompany.com/1724050/la-noire-brendan-mcnamara-team-bondi-rockstar-games-motionscan (Accessed Feb. 22, 2011)

Video Game Graphics and Violent Graphics

by Nicolas Mirabelli

Simulation gaming violence is a key part of the debate since they are games based on various activities in “real-life”. The two types of simulation gaming violence are games based on real events or facts and games for the Microsoft Kinect, Playstation Move, or Wii. A violent game where you shoot fictional people in a fictional world does not cause as much controversy as a game based on a real event or facts that we do not want to “re-live”. A game based on the Columbine Massacre called Super Columbine Massacre RPG was one of these games to cause major controversy. This game was not published as it was made by one person and was put on the internet for free. The game is about the actual events and uses the actual names and pictures of the two people who were responsible. Since the graphics to the game look like you’re playing Pokémon on your Game boy Advanced, the graphics were not the problem. It was the fact that the game was based on real events which made it controversial.

An article by Simon Parkin on the website EuroGamer states this nicely: “to many people, the idea of any interactive media that allows you to role-play as a real-life 'villain' recreating historical atrocities is simply taboo[8].” If this game had great graphics as well, it would of probably have been banned almost immediately and the creator might have been sued. Military games based on actual events would also create controversy. Especially if you are playing as a Nazi solider who kills American soldiers.

[8] “EuroGamer,” *Super Columbine Massacre RPG – Part 1*, http://www.eurogamer.net/articles/super-columbine-massacre-rpg-part-1-article (Accessed March. 3, 2011)

Another simulation video game type involves the Kinect as well as the Move and Wii. The Move and Wii are similar as they allow you to move the cursor on the screen with just the movement of the controller instead of using an analog stick on the controller. This allows for “point and shoot” accuracy as if you were shooting targets at a gun range. There are even gun attachment accessories for the controller which allows you to attach the controller to the gun and use the gun to shoot targets. Surprisingly enough, there has not been much controversy over these new controllers. Then again, these gun accessories have been around since arcade games. The Kinect, on the other hand, does not use any controller and instead, you use your hands and body. It got its name from Kinetics, a relationship between the motion of bodies and forces. The Kinect is family friendly and there are no violent video games out for it yet. If there ever was a violent game released for the Kinect, it would allow you slit someone’s throat in a game with just the movement of your hand. All they need to do is make a gun accessory to put in your hands with a trigger and you will be able to run around a virtual field shooting whatever that pops up. When a game like this comes out for the Kinect sometime down the road, what kind of Pandora’s Box will it open?

It was not until the late 90s and early 2000s when there was a vast improvement of video game graphics. It went from blocky animation to full 3D worlds. At that time the violence in video games controversy went full speed ahead. This brings back the question, how does the increased graphics in video games matter for the violence that is in them? The answer is simple: as the graphic technology improves so does the overall “worriness” of violence in the games. But this question does not work on fact based games as the real events overpower any

Video Game Graphics and Violent Graphics

by Nicolas Mirabelli

other part of the game in controversy. People do not worry about the realistically looking violence in those games as much as what the violence represents or simulates. If you put great looking graphics and one of the two simulation game types together, the violence in the video game debut will explode to even bigger proportions.

Video Game Propaganda: Who, What, When, Where & How?

by Travis Britt

Propaganda is a form of communication that is aimed at influencing the attitude of a community toward some cause or position. It has been hidden in our literature, played from our radios, and is even inside our televisions. This spread to advance a cause or to damage an opponent's cause in such a way as to hide negative aspects, surrounds us all in every aspect of our lives. It is unavoidable and now it is gaining ground in yet another technology. Throughout the years technology has always been used to wield propaganda. Even canvas paintings have had their hand in such a form of information with depictions of current events that resemble the style of some of today's political cartoons. The printing press provided the ability to mass-produce pamphlets supporting or putting down a cause. The radio not only allowed a message to be able to reach a wider audience in a shorter amount of time, but messages could even reach those who were illiterate. The television and movies reach a wider audience still and a visual style becomes very important to propaganda and helps immerse the viewer into the information. In all occasions of propaganda infiltrating the newest technologies the purpose is always to reach the audience the propaganda is directed towards. Video game propaganda is just as effective as past incarnations of propaganda if not more so because of its immersive nature.

In the late 1970's video games started their long relationship with the U.S. military. An arcade game entitled "Mech War" was introduced into an Army War College. This was the first of quite a few games introduced into colleges to be used as skill-enhancers. The military recognized the ability of video games to hone reflexes and hand-eye coordination. The most important military project regarding video games did not appear until 1995 when Lieutenant Scott Barnett and Sergeant Dan Snyder of the US Marines were ordered to research as many off-the-shelf retail video games as possible in order to determine which ones if any were suitable for teaching an appreciation for the art and science of war.[1] After much research the two marines settled on ID Software's "Doom II," sequel to the best-selling "Doom," which is still brought up today in video game violence debates. The game was chosen

[1] Rob Riddell, "Doom Goes to War," *WIRED Digital Inc*, © 1993-2004 <http://www.wired.com/wired/archive/5.04/ff_doom_pr.html>

because it was easily modifiable and networkable to allow co-operative or competitive multiplayer capabilities. Why would the U.S. Marines choose a game that's focus involved killing zombies and various demonic creatures to save the world from Hell using such weapons as a chain saw and a plasma rifle even be considered as a game easily used for military training and awareness?

The modification of "Doom II" by the U.S. Marines became known as "Marine Doom." As of 1997 it was on its way to being used by the entire Marine Corps for team training. Players had a life gauge that reflected damage control and enemies that would pop out and consistently run after you. "Marine Doom" has a four player co-operative mode allowing one team of a squad to train the members to work as a team and complete various orders. Of course, the conditions of the game hardly mirror reality and one team of a squad would behave a lot differently if working with the entire squad.
Clearly there were other reasons the project was explored as much as it was. Lieutenant Barnett said to Wired Magazine, "Kids who join the marines today grew up with TV, videogames, and computers. So we thought, how could we educate them, how can we engage them and make them want to learn?" "Marine Doom" is essentially the U.S. military's first step into video game propaganda. This was the first time a video game was specifically made in hopes of enticing recruitment for a faction of the U.S. military.

After the rather large publicity of "Marine Doom" the military's relationship with video games grew quiet. Other retail video games were toyed around with for use as combat simulators and quite recently has Ubi Soft Entertainment allowed the game engine for Tom Clancy's Rainbow Six: Rogue Spear to be used for training U.S. soldiers[2]. However, it was not until about the turn of the century that legitimate video game propaganda with a government backing first appeared. "America's Army: Operations" was the first game to be specifically developed by the U.S. Army. It is a first person shooter with a focus on tactical team based game play through online matches with other players over the Internet. As of May 2002, the U.S. Army had spent 6.3 million dollars on the project and money is continually poured into the project for updates to the game and to keep the gaming servers online.[3] At its surface "America's Army: Operations" seems like nothing more than a game made to take advantage of the recent success of games featuring realistic military tactics, but in looking into the matter many interesting bits of information were discovered. According to the official web site for "America's Army," Operations is actually designed to be a recruitment tool. If a player does exceptionally well at the game they may actually receive an e-mail from an army recruiter. This certainly changes how propaganda works in that it's not a one-way flow of communication. Being contacted directly as a result of using the propaganda makes the communication two-way and far more effective. This actually may have a psychological effect on certain players because encouraging army enlistment because of the person's abilities harkens back

[2] Rob Riddell, “Doom Goes to War,” *WIRED Digital Inc*, © 1993-2004 <http://www.wired.com/wired/archive/5.04/ff_doom_pr.html>
[3] “U.S. Army Spending Top Dollar,” *IGN Entertainment Games*, June 3, 2002 <http://pc.ign.com/articles/361/361291p1.html> (accessed Feb 27th, 2011)

to how guidance counselors and family may encouraged them in the past[4].

Beyond the obvious propagandistic purpose of "America's Army: Operations," the way the game works and details within provide even more examples of propaganda. When picking a team for an online match the player may wonder how no matter what side they pick they never seem to be the "enemy." Based upon standard Army force-on-force training practices, you will always perceive you are in the U.S. Army. Your comrades always appear to be in U.S. uniforms while the opposing force always appears to be in opposing force uniforms with appropriate weapons.[5]

Furthermore, enemy soldiers always appear to be of Middle Eastern decent or stereotypical terrorists. Most enemy faces feature thick facial hair and a rugged appearance because obviously enemies of America are not civilized. American soldiers on the other hand are very well kept and clean shaven. Only Caucasians and African Americans serve on the side of the U.S. Army. There were no other races or women for that matter.

Despite the game's heavy focus on realistic combat, blood is reduced to nothing more than a paintball-like red puff. Death animations are also hardly dramatic or harsh. Maybe killing just isn't as big of a deal as anyone had thought. How violence in the game is handled effectively contributes to glorifying the combat as well as making the game suitable to younger audiences than even the game's core demographic (17 and 18 year olds).

"America's Army: Operations" has been very successful. Being available for free via download from the official site or for a relatively low price of $19.99 are also no doubt reasons for how fast the game has spread into the hands of gamers all over the United States. With traditional subtle propagandistic details, a purpose of recruitment, and the fact that it has reached an extremely large audience in a small time frame make "America's Army: Operations" a viable form of propaganda and extremely important to the development of video game propaganda, something that may be far more common practice for the governments of various nations in the future.

At the moment video games are becoming a more profitable and respectable industry. Almost as big as the motion picture industry, it is no wonder that video games have finally been inspected for propaganda purposes. Furthermore, some video games are now being targeted directly towards older teens and adults in lieu of young children or everyone. The Sony Playstation, Playstation 2, and Microsoft's X-Box are specifically targeted at the former demographic. The stories of some video games are also increasing in quality and can directly compete with some pieces of literature and many motion pictures. As a result, games are becoming more and more immersive, drawing the player into their worlds and creating an experience for the player to live through. Video

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[4] Philip M. Taylor, *Propaganda and The Web War*, The World Today, Royal Institute of International Affairs, Vol. 55, No. 6 (Jun 1999) <http://www.jstor.org/stable/40476260>

[5] "America's Army: The Official U.S. Army Game." *U.S. Army*, <http://www.americasarmy.com/about/> (accessed Feb 27th, 2011)

games such as Konami's Metal Gear Solid 2: Sons of Liberty actually tackles philosophical issues within its story including the separating of video games from reality and the game's prequel even discusses the morality of nuclear weapons and cloning.

Video games are now an art form whether some would choose to agree or not. The immersive nature of some games makes them a powerful form of communication and vehicle for propaganda. The fact that majorities of people still do not take video games seriously only increases the effectiveness of the propaganda within. If the public is not looking out for propaganda they will be more susceptible to its power. The belief that people are not stupid enough to be effected by video game propaganda is the exact kind of mindset that will lead to many being affected. Those who think nothing of it may allow their children to play a game that conveys certain views and in turn those views may become the player's views[6].

As time progresses the quality of video game propaganda will only improve. The improvement of graphics will allow a visual style to have a further impact in the effectiveness of propaganda, newer innovative techniques will keep gamers entertained long enough to absorb all the propaganda within the game, and the two-way communication flow currently experimented with in "America's Army: Operations" may increase in effectiveness. Of course, video games led into the experimentation with virtual reality technology and such a technology is bound to be experimented with by the U.S. government based on its recent endeavors into video game propaganda.

This new involvement with virtual reality technology strives for further immersion of the users involved. Not only will the users feel as if they are in the game, but they will be given weapons with a realistic weight and simulated kick back when fired. The smell of gunpowder will also be simulated in much the same way that the smell of a pine forest was simulated in Soarin' Over California at Disney's California Adventure.[7] This current endeavor by the military into virtual reality is being designed for soldier training, but much like U.S. Air Force pilot training machines are available to try at amusement parks this new form of simulated combat may come to replace paintball and reach yet another audience for propaganda to target.

Video game propaganda, whether morally right or wrong, is here to stay. It is not a passing phase, but an effective way that the US government has discovered to recruit soldiers and something other nations are now beginning to experiment with as well. Many things could be stated in regards to the morality of it. After all, despite the increase of adults and older teens who play video games the majority of players are still young children to pre-teens. This is not the demographic recent video

[6] Philip M. Taylor, *Propaganda and The Web War*, The World Today, Royal Institute of International Affairs, Vol. 55, No. 6 (Jun 1999) <http://www.jstor.org/stable/40476260>

[7] "A Look at the Future of Video Games," *USA Today: Game Hunters*, Jan 05, 2010 <http://content.usatoday.com/communities/gamehunters/post/2010/01/a-look-at-the-future-of-video-games/1> (Accessed Feb 29th, 2011)

Video Game Propaganda: Who, What, When, Where & How?

by Travis Britt

game propaganda has targeted, but being a video game this form of propaganda will interest any video gamer.

As the quality of games increase the industry becomes more respectable and a more apparent vehicle for propaganda. For now, however, video game propaganda may be highly underestimated despite the industry's current acceptance as an art form by a wide range of people. It is because of this that video game propaganda will prove to be most effective.

The Kinect

by Blaine Doherty

The Microsoft Kinect sold one million units within the first ten days of its release in North America, and by January of 2011, a year and two months later, that number had increased to eight million.1 While this does not establish the device as the go-to controller in the world of video games, it does show that a significant number of gamers are now experiencing play using the motion of their bodies as a control device. This shift represents a change in the way video games have historically been played, and leads to an interesting question about how games and the player's experience are changing in response. To answer this question, it is necessary to understand what kind of interface the Kinect is, and what logic it imposes on the user. While much of the rhetoric around the Kinect focuses on increasing immersion in game worlds, the effect seems to be the opposite. Using the movement the player's body as a control mechanism actually redirects focus out of the virtual space and into real space. Every game made for the Kinect does this in its own way. Whether it is through the lack of congruency between real movement and on screen action, or by taking photos of the players and displaying them at the end of a round, the focus on 3-D game space is diminished in every case.

This quality of Kinect play makes it difficult to pin down exactly what kind of interface it is. The traditional binary between the screen and the physical world breaks down because the focus is not centered in the virtual space. This situation becomes more convoluted when augmented reality games take the stage, no longer attempting to create an illusion that the player and the physical space they inhabit are separate from the screen. In fact, the Kinect disrupts almost all traditional ways of understanding the kinds of representations generated by user interfaces.

It will first be useful to understand what the Kinect is. Wikipedia describes it as being a device that "enables users to control and interact with the Xbox 360 without the need to touch a game controller, through a natural user interface using gestures and spoken commands". The keyword here is natural user interface, or NUI. An NUI is described as being an interface that eventually becomes invisible and utilizes intuitive and natural movements or gestures. However, the Kinect never becomes invisible because it constantly reminds you of its presence for reasons that will be outlined in the

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1 Wikipedia. Web. 09 Mar. 2011. <http://www.wikipedia.org/>.

following paragraphs. As for the idea behind natural and intuitive movements, the thrusting forward and backward of ones hands in the game Joyride in order to activate your car's boost does not appear to fit this criteria. Thus, labeling the Kinect an NUI is problematic, but is currently the best descriptor available.

The previously mentioned problems that make it difficult to consider the Kinect an NUI also happen to be the main reasons why it shifts attention away from the game space onto itself, the player's movements, and real space. One way the Kinect makes its presence know in through pre-programmed actions. The experience of having to wave at the Kinect in order to sign in ensures the player's awareness of interacting with the screen via the Kinect. Another mechanic that both makes the player aware of the Kinect itself and redirects attention onto the physical movements of the player is found in the Kinect Adventures game. This involves either one or two players using body movement such as jumping, waving their arms, and ducking to dodge obstacles, cover leaks with their hands, and navigate down a river. At some point in each stage a camera icon pops up at which point the Kinect snaps a picture of the players and displays it at the end of the round alongside a score for the stage. The logic of these photos is that the movements you perform are meaningful and should be shown off just like a high score is. The excitement is not just inside the virtual space, but outside it as well. Interesting side note on this, what does it mean for the personal privacy of players to become accustomed to having the Kinect take pictures of them without actually telling it to? And who will own the rights to this data that could be mined and used in marketing?

Another characteristic of the Kinect that makes the player aware of the device is the lack of congruity between the real movement and the resulting actions on screen. A clear example of this is seen when observing someone playing the Kinect game Sonic Free Riders. In order to perform tricks the player must jump and spin. These simple movements result in the player's avatar performing insane tricks that have almost no physical resemblance to what the player has just done. This lack of correspondence between real movement and the movement of one's avatar limits a player's ability to exist inside the game space and again refocuses attention on the player's physical movement as well as the technology recording it.

Lastly, the Kinect shifts focus onto real space by allowing the player to experience their living room similarly to the game space. In his book A Casual Revolution, Jesper Juul discusses his ideas about mimetic interface games. He describes these as games as ones where the player's physical movements correspond to the actions taking place on the screen. Juul writes, "In the case of Wii Sports games, the controllers support the illusion that the player space is continuous with the 3-D space of the game, that the two spaces are one".2 While the Kinect clearly removes the controller, the result is still the same. That is, the blending of spaces results in an increased ability to ignore the game space and focus on one's own movement within real space.

The shift in focus away from the action in the virtual space contained within the screen onto the physical movements of the

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2 Juul, Jesper. A Casual Revolution: Reinventing Video Games and Their Players. Cambridge, MA: MIT, 2010. Print.

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player contained has a dual effect on gaming. Returning to Juul's idea of mimetic interface games, it appears that these games bring in new players who might have been turned off by standard game controllers. The ability to use one's preconceived notions about how to interact with the game world, such as jumping over something, allow for easier entry to new gamers. Gamers who have been playing for a while take for granted their ability to easily manipulate their Avatars using modern controllers and their SIXTEEN buttons and control sticks. The added social dimension resulting from both the ability for players to learn from each other's movements as well as game mechanics such as in game photos also increases the Kinect's appeal to new gamers. In contrast, these very same features make the Kinect alienating for many gamers. At the CGP blog Ed Chang writes, "Players who are raced, gendered, differently abled, differently sized will not find the Kinect so connecting". I am curious how hacks that enable players to swap body parts, greatly distort their image, and even swap control over each other's bodies will affect these issues.

As a result of Microsoft's insistence that the Kinect is transporting its players into this other virtual space, few Kinect games have yet to ventured into the territory of augmented reality. To do this denies the player this transportation in the way Microsoft imagines it. However, a handful of creative hacks for the Kinect have taken advantage of the Kinect's ability to accept so much information about the real environment in front of its camera. At kinecthacks.net, one can find multiple examples of people using the Kinect to create augmented reality games. Some of these hacks even go beyond using the body to interact with a virtual world by depicting the two player's bodies on screen, swapping the bodies, and then allowing players to mix and match body parts. In this way the virtual representation of a player's body becomes the center of play, as opposed to the component that needs to become invisible. Where most Kinect games attempt to transport the player into another world separate from their real bodies and environment, unsuccessfully in many cases, augmented reality games make the body, its movements, and the space within which these exist central to the experience of play. Thus a new virtual space that utilizes more information from the world outside the screen in creating itself is made, allowing for a potentially more immersive experience.

One method for obtaining some idea of what is going on with the relationship between the body and the screen is to start from Manovich's notion that "…interfaces act as 'representations' of older cultural forms of media, privileging some at the expense of others".3 Under this logic, the Kinect appears to create a type of neo-mosaic or wall painting. This is because these two pieces of art are inseparable from their architecture, thus making them immobile. This lack of mobility results the freeing up of movement on behalf of the viewer. Using this to think about the Kinect and augmented reality games, it becomes clear that there are some similarities. The virtual space is fixed in the real space because it depends of those factors to fill out its world, while at the same time it is in no way permanently fixed to this environment. One way to interpret this is to think about smart phones. These are mobile screens that give freedom of movement to the user but actually seal our connection to the world of the screen. We are not freed from the screen, it has only been freed up so we carry it with us anywhere we go. In the case of the Kinect, it acts as a

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3 Manovich, Lev. The Language of New Media. Cambridge, MA: MIT, 2002. Print.

precursor to future technology capable of representing its real surroundings, allowing the user to interact in that virtual space that is produced out of this awareness, and is not confined to a single room in someone's home.

All of this adds up to a serious disruption in what Lev Manovich calls the "viewing regime". Under the regime of the Kinect, players are now a part of the screens frame. Both our body and the space it inhabits become fused with this virtual space. Manovich characterizes the traditional effect of the screen on the body as imprisonment. He writes, "…the observer became more immobile, passive, ready to receive the constructions of a virtual reality placed in front of his or her unmoving body".4 It is true that we are still attached to the screen, i.e. we cannot go out of the view of the Kinect and must stand a certain distance away in order for it to function, but there is an important change happening in this relationship. The change arises from the newly acquired motion of the player, who is now required to move in order to interact with the screen.

Building upon Manovich's ideas about the screen, the Kinect parts from this cultural form in another significant way. He writes, "Simulation, refers to technologies that aim to immerse the viewer completely within a virtual universe". 5 It is clear from the above paragraphs that this is not what is happening with the Kinect. It might even be safe to say that this type of technology encourages a hybrid existence within virtual space and real space. From the beginning of the popular introduction of this type of technology via the Sony Eyetoy, the focus has not been about immersion in another virtual world, but rather on augmenting reality. According to Game Developer Magazine "augmented reality is the projection of an interactive graphic over a video feed of a real-world physical environment". While this is quite literally fusing real space with the game space, it is representative of what is going on when one plays games using a motion-sensing device. The lines between game space and real space begin to blur. The player now exists in a pseudo game world that incorporates an image of themselves and their environment and allowed to interact with it.

There is little doubt that new space is being created in which both gamers and game space are able to exist. An interesting and somewhat disorienting shift is occurring in our relationship to the screen that shifts focus out into real space and the player's physical movements. This shift privileges certain types of representation and interactive spaces exemplified by augmented reality games. The hacks, which continue to emerge, will most likely generate the most creative and disruptive uses of the technology as mainstream game designers seem to be set on immersing gamers in worlds separate from the one they inhabit. An exciting future lies ahead for this largely unexplored space.

4 Ibid.
5 Ibid.

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