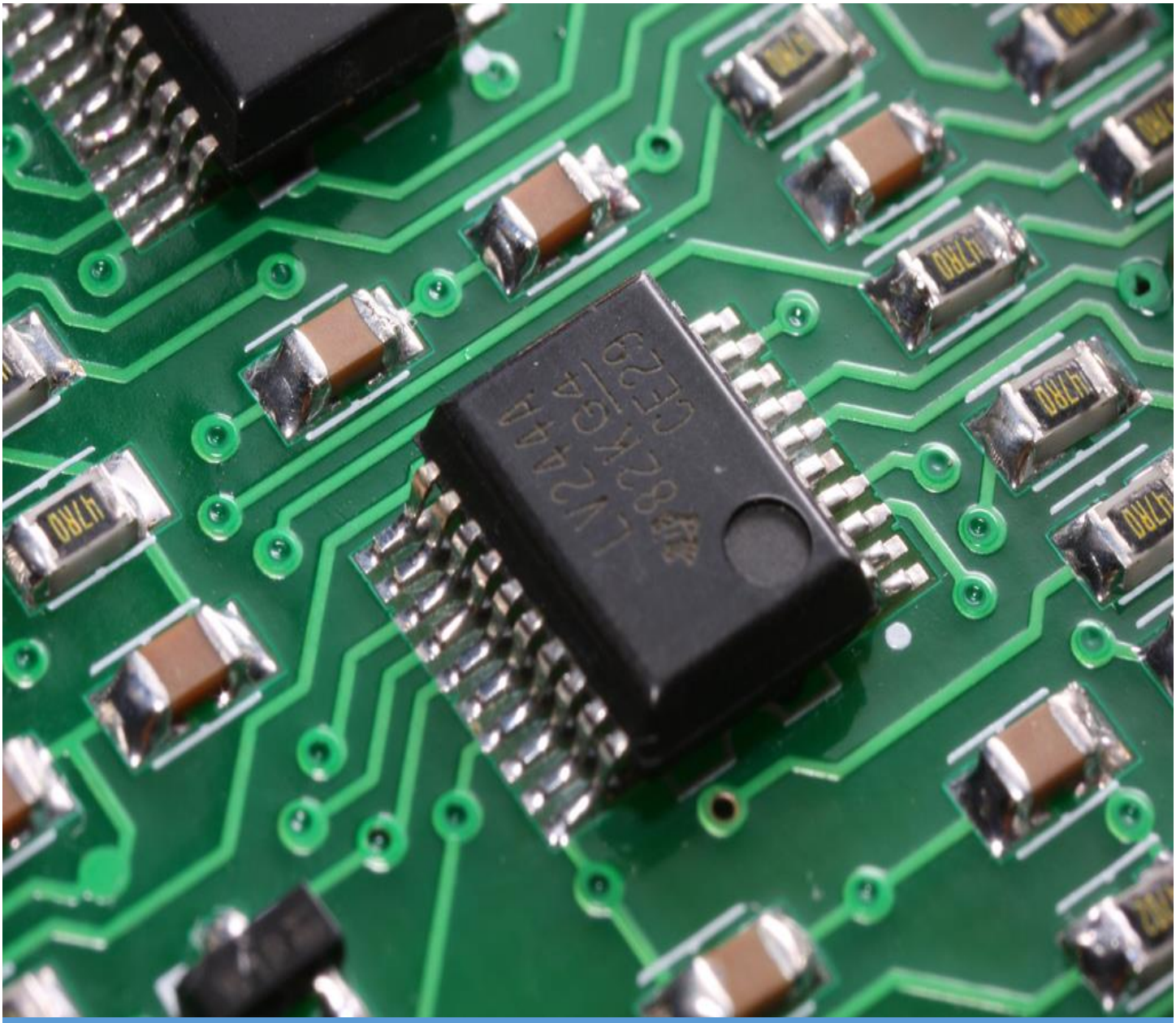

Computers for Everyone

Edited by Jamie Sharpe and Richard Self

COMPUTERS FOR EVERYONE

1ST EDITION

2014

EDITED BY JAMIE SHARPE AND RICHARD SELF

PREFACE

This book is the first of a continuing series of publications, composed of 56 articles written by first year students in the Department of Computing and Maths, in the first 6 weeks of their first semester as part of their assessed work for the Introduction to Computer Science module.

The assignment was based on "The Impact on Computers on Everyday Life". The task was to write an article analysing the impact of advances in computer technology over the last 25 to 30 years on one of the following areas:

- How people communicate with each other
- How people are entertained
- How crime is committed and how it is investigated.

These articles all achieved a mark of 60% or greater.

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Impact on computers on everyone

How people communicate with each other

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***Abstract*—A couple of decades ago; it was hard for people to believe how they would communicate with each other in the near future, and how traditional communication will be changed to take different and new styles using powerful methods of communication. Advances in computing technology have changed the way on how people communicate with each other. Today, people communicate by using VOIP, video conferencing Facebook, LinkedIn, Twitter, emails and text messages. Communications have transformed to take new methods that differ from common traditional communications.**

***Index Terms*— Computer, technology, communication.**

INTRODUCTION

Communication has become an integral part of people daily life. It "*has permeated our professional and personal lives*" (Simon, 2006, p. 349). Communication serves as channel where people are able to exchange emotions, feelings, and social attitudes. Computers in the past two decades have witnessed rapid developments in both software's and hardware's equipment. As a result, computers become more powerful with more advanced operating systems, higher memory, more disk space storage, better quality graphic card, better sound card, and microprocessor with higher performance. Advances in computer technology, and with the help of creating networks with higher bandwidth capabilities has established solid infrastructure that helped of emerging new styles of communication among people.

THE IMPORTANT ROLE OF COMMUNICATION ON PEOPLE LIFE

Communication is about establishing links and interacting with others using traditional or new methods of interactions. Communication occupies wide area of human life. It is an essential part of people daily live and a way of survival within societies. Communication "*improves people's level of social support, their sense of meaning in life, and their psychological and physical well-being*" (Kraut et al, 2002, p. 50). Human cannot live isolate from other people, it is human nature to communicate and integrate with people to exchange ideas, feelings, smile, and cry. According to (Kraut et al, 1998, p. 1017), communication plays important role of freeing people from the constraints, and to help people build better social relationships. People were and still using different types of communications to interact with each other and passing information and exchanging services. In the past and before the computer era, people used to use traditional ways of communication by using phone, letters, TV, radio and newspaper. This fulfils the people needs for socializing and satisfies their physical and practical needs.

ADVANCES IN COMPUTER TECHNOLOGY CREATES NEW STYLES OF COMMUNICATION

Communication is produced when people are able to communicate and interact with each other by transmitting messages within networked computers environment (Herring, 2001, P. 612). The past two decades has witnessed major advances in computer technology that accelerated the emerging of new network and telecommunications devices that helped building solid infrastructure for computers to use effective methods to allow people to communicate pass and share information. Using the Internet to pass, exchange information and communicating with others has become a popular tool among people. The research studies carried out by (Kraut et al, 1998) shows that the dominate use of internet in people's home is for interpersonal communications. Other researchers (Kiesler, Zubrow, & Moses, 1985) have found that the increasing number of people accessing the internet is mainly used for making communications by finding new people and keep in touch with people they know. With many computers connected to the Internet. It was there cyber world where many communications options are available. Sending and receiving emails, having voice or video chat, sending instant messages to friends within social networks. All these are type of new communications that would not be available without the advances in computer technology. Computers have the main role of making people communicate effectively at whatever place they are located and whatever time by using sound tools or visual multimedia programs.

Today, communication among people takes different styles, it can be described as an entity within relational database. Communication can occurs as one to one person, one person to many persons and many persons to many persons. Using *Skype* or *Yahoo* Messengers is an example of communication between one person and another. The communication processes occurs in cyber world by using the technology of VOIP. Another example is an online chat between a member of the customer service and a client. The member of the customer service communicates with customers and responds to their needs.

Social networks such as: *Facebook*, *Myspace*, *LinkedIn* and *Twitter* become very popular places for people to communicate with each other. These social networks are using communication for different purposes, communication between friends and family, communication between colleagues and other business contacts, and communication between businesses and potential customers. Millions of people are joining these places every month in order to share interests, experience, doing activities

and having fun. Social networks has the main role of increasing communication among people across the world by allowing users to send messages, post comments and have real time chat. This style of communication enable people to become aware of other people status by knowing what activities the person on the other side is doing.

Videoconference is an example about how one person reside in one location interacts and communicates with a group of people in different location using audio and video. This style of communication has become very popular in the business field where the manager can hold meeting with his employees to discuss and manage the business process. The manager does not need to leave the office and travel to meet the employees, the meeting can be held instantly and that can save time and money. Also this style is used to teach group of learners where the lecturer communicate with the learners by sound and vision.

CONCLUSION

Advances in computer technology have left its great impact on how people communicate with each other. As a result new styles of communication among people have emerged. People now are using internet, email, instant messaging, VOIP, social networks, blogs and video conferencing to communicate and interact with each other. The new styles of communication have made life easier for people on different aspects. Finally, communication has strong links with computer technology; the more advanced technology in the computer fields, the more of new styles of communication will be emerged. We would expect new type of communication among people in the near future and when computers become invisible in ubiquitous computing environment. '*Ubiquitous computing can be considered as the new hype in the information and communication World'* (Yahya et al, 2002).

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Development and Application of VR Technology

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I. A History of VR

Many arguments exist in how to define Virtual Reality and what does not apply to the term. The common consensus appears to be that a Virtual Reality is a computer generated space that allows users to interact with it using components. The term 'VR' (meaning Virtual Reality) has been in use since the early 1900s, but was not widely known or acknowledged until the mid-1980s when Jaron Lanier popularised it creating his Virtual Programming Language (VPL). While he, in no way, invented or even specialised in VR Technology, he was instrumental in focusing attention on the Virtual World (http://www.jaronlanier.com, 2011). Another VR entrepreneur Warren Robinett teamed up with NASA scientists in 1988 to create a Virtual Environment Workspace (VIEW) that allowed users to actually interact with a virtual world using special gloves which enabled them to pick up items in the virtual workspace. Around this era (1990s) most of the focus on VR was created by science fiction films while only small progress was made within the field.

At the dawn of the new century, focus shifted from visual media to interactive media with VR environments being created in games. In 2000, the popular game 'The Sims' was created and released, this allowed users to create houses and build families inside their personal realities. However, there is an argument that game such as this are not, in fact, Virtual Reality, they just simulate a virtual environment with no impact on reality. A Massively Multiplayer Online Role-playing Game (MMORPG) was theorised on a popular TV show before the technology existed to create it. Before World of Warcraft (WoW), however, another game called Second Life was created in 2003, allowing users to represent themselves in this Virtual World through the use of avatars. Avatars are designed by users to reflect either themselves or how they wish to appear inside the Virtual World. This was released the year before WoW which still became more popular due to it's fantasy environment, whereas Second Life just allowed users to take part in a virtual earth.

VR in Gaming

Around this time, VR devices began to appear in the gaming industry, Nintendo began the trend by releasing the Virtual Boy. This consisted of a headset allowing users to look around in the games, however also included a controller to allow interaction within the world. The helmet meant that players could become fully immersed within the game environment and play a truly first-person experience. Unfortunately for Nintendo, the Virtual Boy was expensive and unresponsive, so it quickly ran it's course and was replaced (http://io9.com, 2009).

Accessories were released that allowed the user to become more involved in the game, driving wheels, pedals, helmets. Initial arcade games (such as House of The Dead) had guns attached to them and the screen detected where you aimed. The thought was, the more involved a player is, the more likely they are to keep playing. Unfortunately, motion detection did not transition well to consoles in the 1990s.

The next attempt was the Cyber Glove and P5 glove, in an attempt to move away from controllers and turn the player into the controller. However motion tracking was difficult and the devices were too clunky to be use comfortably. This trend quickly died out, but it paved the way for technological advancement when our technology was capable. Other, much less widely publicised VR technologies were released as well, however the cost, their functionality and their size rendered them unusable.

Functional VR technology was not implemented until late 2006 when Nintendo released the Nintendo Wii. This used a motion sensor bar on the TV to detect and respond to the player's controller, but the interaction came with the Wii fit, which included a board to detect user input. This allowed the console to detect motion and position. This, in turn, allowed the player to literally become the controller.

Microsoft evolved the concept even further for gaming, with Xbox Kinect. Kinect is a video capture device that uses facial recognition software to detect who is playing and log in their account. It also detects hands and tracks their motion, allowing users to manipulate the objects on screen with their hands. It also features a microphone and voice recognition software, so the player can give commands to their team when playing a team-orientated game.

The most extensive accessory so far, however, is the Oculus Rift. Only released in Beta so far, it features a high-resolution screen, split into two, one for each eye. It straps to a head-strap that is both lightweight and unobtrusive. This makes it significantly more usable than the Virtual Boy and also much more available. It's by no means cheap, but it is affordable and for the dedicated gamer, it's the pinnacle of immersion within the gaming industry.

Virtual Simulators

At some point within this time period simulators began to emerge. They began, initially, to allow the training of budding drivers, pilots. With VR, the simulators were able to create

environments that recreated scenarios the trainees would face in real life and teach them how to react to them without the same risks. The basic level simulators (driving simulators) feature wheels and pedals, which act as the control mechanism for the simulator. This gives it a realistic feel, similar to that of an actual car. However, recently, to allow a greater depth of feedback during the creation of vehicles, much more complicated simulators have been created, which shudder, tilt and recreate exactly how the car would handle if it were to be created. This stemmed from a QA analysis that found that by the time feedback was being given, the car had already been created (and driven, which was how they got feedback) so if there were fundamental flaws, the entire model had to be dis-assembled. However, with a perfect replica simulator, feedback could be given to theoretical prototypes without the cost of actually creating them (http://www.maplesoft.com, 2012).

Simulators aren't purely for training new drivers, Formula One drivers use simulators to keep their skills sharp, practicing when they're unable to use their actual vehicles. These simulators have even been known to find faults in the track, detectable by how the simulator shifts on the virtual representation of that part of track (http://www.jamesallenonf1.com, 2010).

Medical Uses

Virtual Reality is not just for fun, though, it has a real life medical application in centres that specialise in anxiety disorders. With head-mounted gear, patients are able to overcome phobias or deal with trauma and, in the cases of the military, prepare them for stressful environments (http://www.vrphobia.eu/, 2011). The application involves, in terms of people suffering claustrophobia, steadily decreasing the size of the virtual environment, whilst monitoring the patient's response. The same level is repeated until the patient becomes accustomed to it, and then the size is reduced by a level. If the patient becomes overwhelmed, they can go to an earlier level where they're more comfortable or even take the headgear off, leaving the reality altogether.

As stated, VR can be used to treat Post-Traumatic Stress Disorder. This is accomplished by a patient being put into a non-specific environment and tailoring it to match/ re-create a particularly traumatic or stressful event and deal with it step-by-step. Researchers believe that this method is more useful for the younger generation of veterans, as they grew up on war games and as such could relate more to a digital representation of an environment than just a talking session with a therapist.

The number of potential disorders that can be solved or even salved is constantly rising. With the use of both sound and visual technology, it can even affect the fear of thunderstorms or social interaction. VR technology is constantly expanding and the amount of disorders that can be treated expands as more senses are utilised in the machine.

Uses within the military

VR is useful within the military for more than just dealing with ailments, it also has training purposes. With parachute simulators and warfare scenarios, a trooper can experience an entire operation without the risk of death and gain valuable field experience. All variants of the military use it, Air Force, Navy and Army, and for a variety of different reasons (http://www.hitl.washington.edu, 2013). Within the Air Force, pilots use it to practice with the Heads Up Display (HUD) which displays readings from all of their instruments. Without practice, pilots can become disorientated and confused by the level of information, so the training allows them to filter what they see and focus only on the important aspects of their visor.

By practicing combat scenarios in a Virtual world, the army allows it's troops to practice stealth as well as learn to react accordingly to an ever changing environment. One of the more curious uses is to practice controlling a drone or a remotely-operated vehicle. This is made curios by the fact that they use a Virtual World to replicate using a Virtual Environment to control a drone in the real world, but without the proper training, any accidents caused by crashing these drones could cost potentially millions.

Uses in Engineering

Architects and Engineers are able to use Virtual Representations of their designs to assess them from a 3-Dimensional perspective. This allows them to see flaws, structural weaknesses and changes that they can make to the structure to enhance it (http://www.vrs.org.uk, 2009).

Car Manufacturers use this not only to simulate crash tests, but also to maximise the parts that they use. With VR they're able to create several working models of prototype vehicles and change parts without the cost or hassle of disassembly.

In Summary

This is by no means the limit of Virtual Reality. Almost every aspect of it impacts our lives, whether we know it or not. Training done by drivers, our favourite sports personalities, almost all of them are shaped by Virtual Reality, and this is only what we've done so far. As our technology expands and more things become capable, more options become available to us. It is possible to speculate that with the evolution of medical science, even more senses will become open to Virtual Reality Technology, able to simulate taste or feel, to fully immerse a player in a game, or to prepare a soldier for all aspects of a warfront. However, until such a time, VR is still prevalent throughout our society, treating ills, training trainees and furthering the development of our societies. Even as notable as it is now, I have no doubt that as technology progresses, so to will our usage of the Virtual Environment.

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How Technology Has Changed How We Watch TV and Film

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I. Introduction

This essay will tell you how the media industry is changing with applications such as YouTube, social, catch-up television, games and film streaming sites changing the way we watch television and films.

Smart television

The way people watch television has been changing in the past years, with the introduction of DVD's and internet streaming, big changes are coming to the media industry. People are now watching television online, watching whole series at the weekends with catch up television, such as BBC iplayer etc. (Gillmore, D 2013). Internet televisions are now combining these two together instead of you having to go on your computer to watch catch up television you can now use your television as they can be connected to the internet, these televisions include access to things such as BBC iplayer, Twitter and YouTube. (BBC, 2011). Internet Televisions don't have a big market at the moment, with 51% of their sales coming from people who just wanted to update to a new television and not because of the fact you can access the internet, YouGov has found that they are not being used to their full potential however the opportunities to use this hardware is there and will be a great tool in the future of television. (Farmer A, 2013) Handheld devices such as tablets and mobile smart phones, are being used to watch programs

JohnLewis (2013)

now, with YouTube, BBC iplayer and many other streaming sites, also with the introduction of 3G and 4G watching TV on mobile devices on the move has become much faster, with high definition streaming becoming a big possibility. 4G is better than some household internet speeds. (Davies T, 2012).

Social Media

Social media is also having a big impact on the media industry; Social media such as twitter and Facebook have had a big impact on television and film, now that everyone is connected there is more ways of sharing information about what you have watched, which is a great way for the content producers to spread their content without having to use advertisements, word of mouth is also a much better type of advertisement, with 31% of people talking about television programs they've watched to people on the internet they don't even know. (YouGov, 2012). Television shows are using social media to their advantage now by including tweets from fans in certain shows, like dancing with the stars in America. In the UK, The show "The million pound drop" you can play along with the contestant online, and see if you can beat the player on the live TV show, which you can then post to twitter and Facebook and boast to your friends how far you got. (Laughlin, A 2010)

Game interconnection

Recently a television program called defiance released itself along with a MMORPG with the same name, the game and the television show are interconnected with the game giving you chance to change the show, however apparently there isn't much of that at the moment, but in the future series this will be more apparent. 75% has nothing to do with the game; meaning only 25% of the game can be interconnected, this isn't the best connection between a game and a television show, but it shows us what we can do in the future and possibly this could a great interactive media, it just needs a lot of work. (Harman, S 2013)

Film purchase

The way people buy films now has changed we used to buy our films, with streaming services such as Netflix and Lovefilm are taking the lead, Leading to DVD player sales lowering, and many predict that DVD's will eventually stop being sold. The DVD player market reduced from £720 million in 2005 to £610 million in 2009 they predict the market will have reduced to £475 million by 2014. (Dailymail, 2010) Things like this aren't going to happen though until everyone has a decent internet connection that can download and stream films at a fast speed with high quality and without buffering. Services such as Netflix are now starting to produce their own exclusive programs for their customers only meaning to watch the program that they

have created you will have to sign up for a subscription to Netflix, they have signed a deal for an exclusive marvel series, which might see a lot of customers come to Netflix. (Lews H, 2013)

YouTube

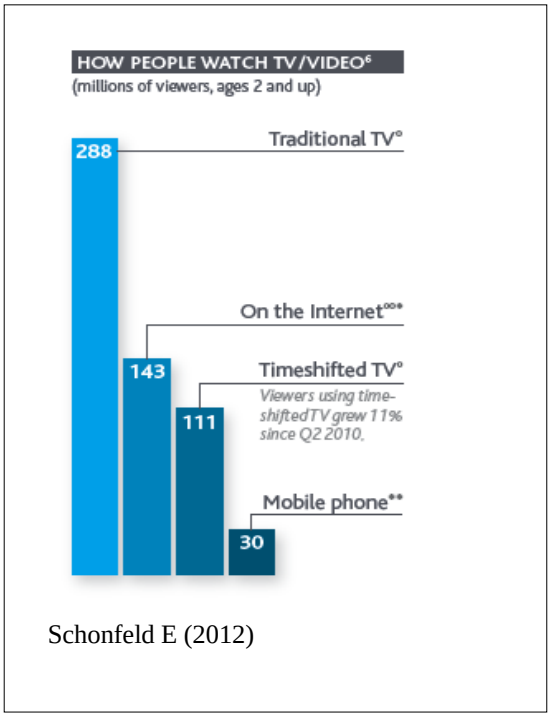
YouTube is now becoming one of the most visit websites on the internet; People have found fame from uploading to this site, such as PSY. His song "Gangnam Style" currently has 1.8 billion views the video has the most views of any video on YouTube currently. He is the first Korean solo artist to get a top us single. (Gould, J 2012) YouTube is also a big place for video game "Lets-Plays" with many people uploading footage of them playing games and commentating over them, the most popular person doing this type of videos is PewDiePie a Swedish gaming vlogger with more than 50million weekly views, and 14 million plus subscribers. YouTube attracts more than 1 billion unique users a month making it a massive place for you to show your content to thousands of people; content creators make their money from advertisements that are placed around their videos on the site with YouTube's partner program. (Dredge S, 2013) YouTube has also introduced their own film rental service allowing for the payment of certain films the renting service was first introduced but since then now has plenty of films in there library to rent. (Helft M, 2010) YouTube has also been a great tool for games developers in the recent years allowing developers to advertise their games with players recording there footage of them playing them uploading for their subscribers to watch and possible for them to buy the game if they think it's worth buying the best example of this is minecraft. Minecraft has spent no advertising money on their game and simply relied on word of mouth, the game has sold 12 million plus copies and continues to sell daily, with iphone, xbox, ps3 versions of the game, these sales look to continue in the long run. (Johnson B 2011) (2PlayerProductions, 2013).

Piracy

With all this technology advancements along comes new way to get these programs for free and not having to pay a thing, you can now watch TV without having a TV license you can't watch programs live but, once the program has been broadcasted live and then uploaded to the company's online streaming service such as BBC iplayer you can watch the programs that usually you needed a TV license for, This is completely legal however and the BBC don't seem to have a problem with it. (BBC, 2010). Along with the internet comes piracy, there a lot of problems with piracy on the internet and this is no different for the film and TV industry the worldwide motion picture industry estimated that they had lost $18.2 billion in 2005 around the world (LEK, 2005) It's not just downloading that's the problem, websites host movies that anyone can load and stream to their computer just like YouTube however the film that is being streamed is usually from an illegal source. All types of piracy are on the rise according to a report by Ofcom, 18% of users have accessed content illegally up from 16% last time a report was published (NME, 2013)

Conclusion

I would have to say that the industry is going through a massive change currently they are facing many changes so quickly, with smart TV's, Mobile devices, YouTube and piracy, they are having to change a lot of things about their, they will have to find a way of dealing with piracy to keep the profits and the industry growing, or they will face hard times ahead. (Williams, M 2008). Consumers are still mainly watching their television with their televisions, however the shift has started as you can see in the picture below, and people are starting to use other hardware to watch their television programs usually for ease of access reasons.



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The Evolution of Virtual Reality

How virtual reality has developed into the form of entertainment we use today.

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***Abstract*— a brief look at how virtual reality devices from the 1960s onwards influenced the creation of Virtual Reality devices in the current day.**

***Index Terms*—Virtual Reality, Head Mounted Device, Flight Simulation, Surgery, Military, Haptic Technology.**

I. A BRIEF OUTLINE OF VIRTUAL REALITY

As many of us know, Virtual Reality is the combination of computers with a simulated environment. It has been prevalent in computing for a number of years, though it is just recently that it has become a viable source of entertainment. Previously, the cost of virtual reality devices was too great to meet consumer needs, and so was only suitable in companies who were able to spend money perfecting the technology.

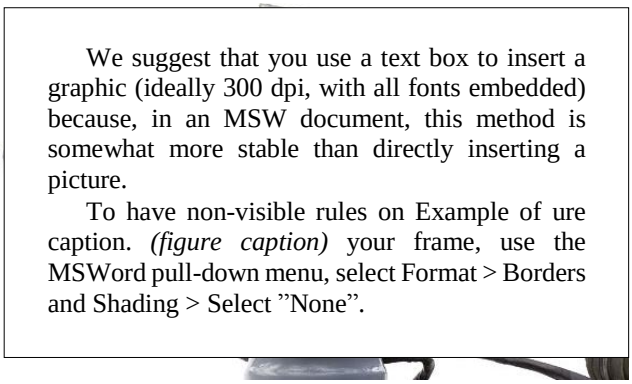
THE CREATION OF VIRTUAL REALITY

The first appearance of virtual reality in the computing world is highly debated. One of the more popular names that are heard is Morton Heilig. Morton Heilig was the sole creator of the 'Sensorama', a device that was patented in the 1960's (Shore, 2012). The key function of the device was to entertain people in the style of an interactive cinema, as Heilig was originally a cinematographer (Tate, 2004). The device provided simulation by stimulating the sight, sound and touch senses. Be that as it may, the device was very basic in its implementation; it used a fan to provide the wind, and photographic images projected onto a screen. Nevertheless, it held up to the title of a virtual reality machine and lay down the foundations for future generations. Sadly, Morton Heilig ran into financial difficulties, and could not continue in his development of the 'Sensorama'.

Ivan Sutherland picked up where Heilig left off, and is considered to have created one of the first head mounted virtual reality system in the 1960's (Virtual Reality Consulting, 2013). This device was held up by a robotic arm and a series of cables, which contributed to its name: 'The Sword of Damocles'. This name refers to the Greek stories of Damocles, in which a large sword was suspended from the ceiling, directly above a throne.

The need for the machine to be attached to the ceiling was due to the immense weight of the device. This made it too heavy for a single person to hold up unaided. Thankfully, the immersion was not to be negatively affected, as the head of the demonstrator could easily be moved (Tobias, 2008). The image by Richards (1968) to the bottom is an example of how the device would fit on a person.

Fig. 1. 'The Sword Of Damocles' on a model



The difference between 'The Sword of Damocles' and other head mounted devices that were appearing in the 60's was significant, and was one of the main improvements on the previous 'Sensorama'. This new device no longer required input from a camera, as all other devices did. Instead, the device was linked up to a computer, which generated the graphical display.(Strickland, 2007a) As the display was no longer a static photograph, the head movements that were tracked resulted in a change in the field of view, allowing for a more dynamic experience. This technology would go on to shape most, if not all, future virtual reality systems, and is prevalent in the 21st century.

VIRTUAL REALITY AS A TRAINING AID

During the creation of virtual reality, many of the devices were used to provide a form of entertainment. However, as the potential behind real life simulations was realised, the non-entertainment side of virtual reality was created.

One of the main areas that benefit from virtual reality is the military, who often use these devices as training aids. This is an alternative to experiencing the dangers of real life training (which could cause injury, or on a rare occasion, death). There are many types of Virtual Military training. One of which is a flight simulator (Strickland, 2007b).

Military flight simulators are used in a variety of training situations; learning how to fly in battle, how to recover in emergencies, and how to co-ordinate air support. They also

assist a pilot in transferring his skills in one aircraft into another, such as from the Boeing 747 to the 767 (Vince, 1995). In order for the simulator to work accurately enough for these skills to be obtained, much advancement had to be made on the previous virtual reality systems. By the 1980's, these flight simulators had advanced enough to provide a physical environment to increase the immersion. The environment often consisted of a cockpit, identical to those used it real flight. However, the most significant improvement made was the addition of haptic feedback. Haptic feedback is a physical response to stimuli in the Virtual World, and it was implemented in the flight simulators to mimic the feeling of flying and then landing a plane on the runway. The feedback is achieved through a set of hydraulic rams (a pump controlled by the flow of water), which allows the aircraft to move higher and lower to imitate the motion of a real aircraft. This still follows the basics defined in the Sensorama, by affecting the touch senses, but in a much more sophisticated manor.

Similarly, virtual reality has entered the health field, surgery, in particular. Previously surgery could be practiced on mechanical models, though they do not accurately represent the human anatomy. The models used are often transparent, giving users an advantage in viewing that they would not have in a real life surgery. This prompted the development of a virtual reality surgery simulator.

Simbionix are one of the companies that saw the need for this simulator, and so created the GI mentor, to aid in both the upper and lower GI Endoscopy (Simbionix, 2011). This device is required to be as close to the real experience as possible, so is used along with an endoscope. An endoscope is a long device with a camera attached to it, and is used to check inside the body. Much like the flight simulator, the 'GI mentor' also provides haptic feedback to the surgeons.

Likewise, Satava (1993) saw the use that a virtual reality system could have on surgery training. However, unlike Simbionix's creation, this relied on the use of a head mounted device, and a 'Dataglove' - which was used instead of a surgery specific instrument. The 'Dataglove' works by tracking the movement of a person's hand. It is able to then display these movements through the head mounted device, and provide haptic feedback to the hands when needed. The user will then not only see the environment created for them through the head mounted device, but will also see a scalpel in their hands. This device allows the training in specialist roles, without the need for specialist equipment.

Virtual Reality in the Present-Day

Over the more recent years, virtual reality has continued to advance, though this time back in the entertainment sector. One of the most well-known devices – the 'Oculus Rift' – started development in 2012, and still holds many of the core values that virtual reality machines in the past did, albeit in a much more refined manor.

For example, similar to 'The Sword of Damocles', the head mounted display is connected to a computer in order to generate the environment. However, while the previous attempt was heavy and bulky, the 'Oculus Rift' has managed to restructure the device to give a lesser weight of around 0.22kg (Kickstarter, 2012). This means the device could be held up by the user without the use of extra wiring, increasing movement and therefore immersion.

The software capabilities of the 'Oculus Rift' are also a technological advancement. While the previous devices were limited to one idea (such as the bike riding simulation in the Sensorama), or a certain function (such as training in different types of surgery), the 'Oculus Rift' is adaptable and has many developers backing the hardware. This, combined with the $2,437,429 pledged to the company by regular people in a kickstarter campaign, shows the readiness for virtual reality in the 21st century.

The 'Omni' is yet another present-day advancement in the field of Virtual Reality. It was created by Virtuix (2013) and was intended to work alongside other virtual reality devices. The 'Omni' was designed as a movement device in simulations. It consists of a type of treadmill that is made of a low friction surface, allowing users to run and jump naturally through simulations. This device is revolutionary for the public, as it allows an entirely different experience when used. It provides a type of immersion never quite reached before, as every foot movement is tracked using the hardware, meaning simulations may no longer need to be stationary.

A further increase in immersion can be added by using the 'As Real As It Gets' suit (ARAIG). This is a full body suit that tackles one of the biggest problems in virtual reality: feedback. Over the years there have been simulations that included haptic feedback, but many of these have just been feedback to one specific body part, or in the case of the flying machine – to the environment. The ARAIG suit is completely different to these feedback mechanisms, as it provides full body feedback.

The ARAIG suit is able to provide full body feedback due to the 48 different vibration points across the suit. The different points are also able to give different feedback, dependent on the cause. For example if bullets are fired and hit a person in the simulation, then one of the vibration points will give off vibration feedback individually. Yet if an explosion or large impact takes place in the simulation, many of the vibration points will simulate pressure at once, causing the person to feel weighed down.

With the technologies of these current advancements combined, a virtual reality can be created that is almost true to real life. But the implications of this are currently unknown. The active side of virtual reality could increase activity in those who would otherwise be sitting, and the training side of virtual reality could remove the need for real life training all together. Or, the increases in technology could cause people to retreat into a virtual life, and neglect their real lives. We therefore need to keep this in mind when looking into advances in virtual reality, both future and present, in order to determine what the affects would be.

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Thirty Years from Now

And Thirty Years Ago

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***Abstract*—This article talks about the technological advancements over the last thirty years, how those advancements have effected society and the economy. The new technologies that exist in the modern era are also discussed. These areas of interest were researched and extrapolated upon. Using this research predictions of the future were set out.**

***Index Terms*—Augmented reality, DynaTAC, Google Glass, internet, laptop, mobile technology, mobile telephone, Smartphone, SMS, tablet.**

I. All those Years Ago

The year is 1983 and the text message has yet to be invented, Shannon (2006). Corporations, the general public and even specialist scientists are barely prepared for the arrival of the first handheld mobile telephone; a marvel of the modern age. Its name; the Motorola DynaTAC x8000.

With a weight of a mere 2.2 pounds it was by far the lightest commercial telephone ever made. It came fully equipped with a powerful 8 hours of standby and an impressive 30 minutes of charge, as well as a cutting-edge LED display. The public could hardly ask for more. With all of these features it might be expected that such a device would be expensive but no. The DynaTAC was a mere $3,995. Retro-Brick (2010)

Figure 1. Motorola DynaTAX x8000

Thirty years ago it cost almost four thousand dollars to get a piece of technology which by today's standards would be unlikely to sell in a toy shop for more than ten pounds. It begs the question; what could you get for $4,000 in 2013?

The Impact to Society and Economics

The impact of the mobile telephone on communication across the globe has been massive. In 1985, according to the World Development Indicators Database (1983), only two years after the DynaTAC x8000 was released, the UK had only 50,000 mobile subscribers. Twenty years later, in 2005, that number had skyrocketed to 65,600,000, an increase of over 1000 percent. To put that into perspective, the population of the UK in 2005 was only 60,226,500. That means that even then there were over five million more subscriptions then there were people.

This technological leap is indicative of a huge change across the world's economy and big business. Mobile communication was first researched heavily by the same group who are ultimately responsible for the inception of the internet: the military.

During World War II it was speculated that the capacity to communicate on the go, without the use of bulky radio equipment, could be invaluable and indeed critical to the war effort. From this original investment came car-phones and then, finally Mobile Telephones.

In their early years these devise were cumbersome, lacked ergonomic designs and more importantly incredibly expensive. This led to them being used primarily by the very wealthy and by those who required there use for their profession.

Despite these drawbacks the mobile telephone caused a fever for faster, smoother and more immediate communication across the business world. This opened the way for the high-speed economy we experience today; in which instant decision making and business instinct become critical and every action can have far reaching consequences.

It has become almost impossible to image big business taking place in the modern era without such things as video conferences, e-mailing smart-phones and sophisticated tablet and laptop technology.

Within a decade the development of mobiles, especially those developments which allowed them to be produced on a mass scale for less, they had moved away from a specialised market and more toward the use of the general public.

The thirst for faster, more constant communication moved like a contagion from the business world to the rest of society. It would take until the mid to late 00s for this trend to reach its pinnacle with the near-total dominance of social media sights and emerging smart-phones.

The Current State of Affairs

The year is 2013 and the use of conventional SMS services has become almost redundant in the face of continual internet connectivity. The public and big companies have become so saturated with each new advancement that they snatch at the newest marvels of science as if they were theirs by rights.

From the perspective of someone from just a couple of hundred years ago modern technology would be miraculous and almost magical in scale. Yet most people take for it for granted. Mobile telephone technology is a good example of this.

The latest smartphones are incredibly versatile and powerful computers, with screen clarity comparable to that of high-definition televisions, greater connectivity to the internet and greater memory capacity than most 1980s organisations. As highlighted by a Consumer Report (2009), modern mobile phones demonstrate more computing power then that used in the NASA: Apollo space missions, now implemented in little more than basic web searches and playing application games.

Figure 2.Google Glass. A view into the future?

In past decades the issue of having to be connected to a phone line was removed with mobiles and the internet, creating a situation where the only thing required to communicate globally was a spare hand.

Recent developments have removed even the need for that spare hand.

Smart-glasses, the primary example being the current experimental and unreleased product Google Glass, may be the next step in mobile communications, requiring only voice input. At the current time smartphones are still required to really drive this technology, but the next step, of actually transforming smart-phones into reality-augmentation devices, has intriguing implications for the future.

When trying to realise just how much things have changed we only need to see what a consumer could get for four thousand dollars we need look no further than a top fifteen list of smartphones found in a PC advisor article by C. Martin (2013).

According to the list it would be possible to not only buy the best smartphone on the market for much less than four thousand dollars, but that it would even be possible to buy the top five mobile phones, with a few hundred pounds left over. This is a clear example that technology is not only evolving rapidly but that it is also getting cheaper and cheaper.

The Future

As highlighted by cartoons and films from the late twentieth century depicting a near future full of flying cars and miraculous technology the ability to predict the future is still out of reach. However, by extrapolating upon the impact of telecommunication technology over the last three decades it may be possible to gain some impressions of the impact that same technology might have over the next thirty years.

One of the first things to note is that the aforementioned advancement of technology (and therefor the social changes stemming from that advancement) has not slowed or even levelled out with time, but rather is excelling even to the present day.

Changes in affordability allowed most people in developed countries to own mobiles by the turn of the century. Likewise, the creation of social networking websites has engendered a twenty first century society in which constant communication is not only encouraged but is almost a necessity.

One expression of this is the increased connectivity society is experiencing. In developed countries around the globe people are able to connect their smart devices and computers to the world wide web in their places of work or education, in coffee shops and shopping centres. The internet has been a massive collection of data-sources for a long time, but only recently has the world become a massive collection of internet-sources.

Taking this expansion into account it can safely be extrapolated that the technology that exists now will only get more and more advanced as time goes on. If past experiences repeat then we can expect exists pieces of hardware and existing pieces of software to be interbred, and spliced, and specialised. An example with this could potentially be Google Glass combined with applications to translate dialog and script which are foreign to the user, as is already possible as reported by the BBC (2013). In this way different technological advancements shall compliment and amplify one another, as they have been doing over the last thirty years.

If trends continue then it can also be deduced that by the year 2043 mass-production costs will have fallen in the same way they have in the last thirty years, potentially resulting in a situation where four thousand dollars could buy five times as many of the top mobile communication devises as you can now. Or, if you do not need that many, just the best one for around a fifth as much again. That is around one hundred pounds.

It must be underlined once again that prophesising the future is almost impossible, and that all of these ideas must be looked at with a basic scepticism. If the future is anything close to these predictions, however, even in the smallest ways, then the future is going to be an incredible place, were reality-augmentation, constant connectivity, low-budget high-power technology, and a plethora of other things hitherto unimagined will all be a day to day occurrence in thirty years.

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Should We Trust The Businesses of Today?

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***Abstract*— In this article I will be talking about the changes in technology over the past 25 years, focusing on the trust issues consumers face when dealing with online businesses and organizations that require the consumer to give up personal and financial information.**

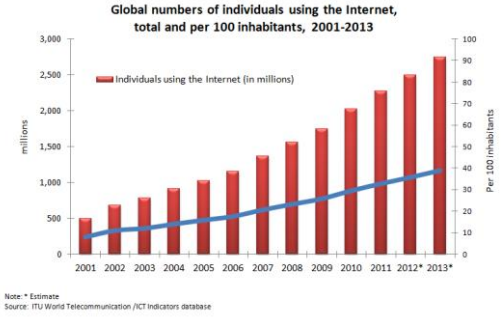
I. Introduction

Over the past 25 years, technology and our dependency on it has changed dramatically. This has had a huge impact on how we go about our day to day lives. One of the biggest changes in technology over the past 25 years is the Internet. It has changed everything we do from how we communicate and socialise with one another to how we pay bills.

How has technology changed our day to day lives?

- Introduction of online movie and TV streaming services such as Netflix, LoveFilm and Hulu. These services are becoming much more popular due to their low prices compared to cable television subscriptions, wide variety of content and the ability to stream them over the internet instantly from a wide selection of devices. Customers also have the option to request titles to be sent to them through the post on DVD/Blu-ray formats. These streaming services are available on a variety of devices including computers, tablets, smartphones and games consoles.
- Introduction of music streaming services such as Spotify and music download services such as iTunes.
- Books, newspapers and magazines are being digitised so that they can be accessed from anywhere at any time.
- High street stores are closing their doors due to competition from online businesses and consumer-to-consumer services such as eBay.
- People are now working from home instead of in an office somewhere.
- People have also been affected socially, people are meeting one another in online chat rooms and on dating websites rather than going out and socialising.
- Learning materials are digitised and available at all times from anywhere in the world with an internet connection.

All of the technology changes listed above have one thing in common, the Internet. Without it, they would not exist and our lives would be extremely different than they are currently.



Source: International Telecommunication Union

In 2005, there were 1,024 million individuals accessing the internet which accounted for 220 million broadband internet subscriptions. Just eight years later (2013), those numbers have increased to 2,749 million individuals (168% increase) and 696 million broadband internet subscriptions (216% increase). (International Telecommunication Union, 2013).

Due to all of the information and content accessible via the Internet, cyber-crimes are extremely popular and cause a great deal of stress for businesses/organisations that have computers/servers connected to the internet. Cyber-crimes are illegal activities which range from identity theft to cyber-terrorism. These crimes are carried out using a computer and an internet connection. The people who carry out these crimes are known as hackers. In the United Kingdom and United States, the primary motivation for cyber criminals is to commit financial fraud, followed by theft of customer data and then disruption of operations. (Ponemon Institute, 2012)

Hackers use a variety of techniques (some of which are more complex than others) to get personal information from either yourself or a business.

Hacking Techniques – Phishing/Spoofing

Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of

pagination anywhere in the paper. Do not number text heads—the template will do that for you. This is a technique hackers use to send an email to somebody pretending to be a business or organisation that asks you to go to a website and enter your login credentials. The website you're taken to is made to look exactly like the legitimate website of the business but it's really a fake website that has no functionality other than the logging of credentials users input. Sometimes phishing websites are also infected with malware which downloads onto the users' computer without their knowledge. Phishing emails almost always try to use scare the user into thinking that there is a problem with their account or personal information and that it needs resolving immediately by logging into the website.

With the information gained from this, the hacker can then access the real website using the credentials and download a copy of the personal information which can then be used to steal money from the victim's bank account or to commit identity theft.

Businesses can't prevent phishing from happening as it is out of their control; they can only educate clients about the risks of clicking one of the links.

HACKING TECHNIQUES - HACKING

This is a technique that is used to break into the computer/server where the information is stored by taking advantage of vulnerabilities in the hardware or software being used on the target machine. Hackers can take advantages of weak passwords, little or no encryption, poor programming that leaves holes for hackers to input malicious code (for example a website with an SQL database behind it needs the user input to be sanitised before being ran against the SQL server, without the input being sanitised correctly a hacker can enter a query and copy all information from the database or even delete it all from a vulnerable form field) and servers that aren't protected with a firewall (which can prevent things like brute forcing passwords, interception of data packets).

In 2007, the wireless network of the retail store TK Maxx was accessed by hackers who then went on to steal 45 million customer records including millions of credit card numbers. The hackers did this by taking advantage of the weak encryption TK Maxx was using on its wireless network known as Wired Equivalent Privacy (WEP). This breach in security ended up costing TK Maxx £500m excluding legal costs. (BBC, 2007)

Businesses can minimise the chances of getting hacked by keeping all of the software up to date, using the secure version of the http protocol (https://) and only enabling functions that are necessary for the website to function as required.

HACKING TECHNIQUES – DISTRIBUTED DENIAL OF SERVICE ATTACKS

A Distributed Denial of Service attack, also known as DDoS attack is a technique that hackers can use to deny access to a server or resource by flooding it with more information than it can handle. It does this by sending lots of packets to the server with a spoofed originating IP so the server does not know where to respond to, causing packets to build up and eventually flooding the server. DDoS attacks can also be used to distract server administrators from a breach elsewhere, which is what Sony experienced in 2011 when the online vigilante group Anonymous performed a DDoS attack on them. (BBC, 2011)

Businesses can minimise the risk of being attacked using this technique by installing and configuring a good hardware and software firewall to detect malicious traffic.

HOW DOES THIS AFFECT ME?

The trust that we put into online businesses is much different than the trust we put into a business that has a physical store you visit. When making an online purchase, we're asked for personal and financial information but when we make the same purchase in-store, we're only asked for personal or financial information if we're paying using a credit or debit card. So not only are we trusting the business to deliver the product which we're purchasing, we are trusting them to keep our data secure and confidential from those who are not authorised to access it to protect us against cyber crimes such as identity theft and fraud. By giving criminals access to another person's stolen identity, the criminal can then use this as if it was their own to carry out their illegal activities. If somebody has access to your personal information, they can gain access to your bank accounts, create new ones in your name, take out finance/credit cards and obtain genuine identity documents such as a driving license or passport.

We also trust the business/organisation to not take advantage of having this information and sharing it with third parties or using it to manipulate internet search results.

This does not mean that you should stop using the internet altogether (as some of your personal information is currently being stored on at least one server somewhere such as a bank, service or utility provider), you should just be careful with what you do with your information and be careful who you trust with it – that means staying away from websites offering products for prices that are too good to be true!

HOW TO STAY SAFE ONLINE

If you are going to be using the internet, you should follow these steps to try and reduce the risk of exposing your personal information to strangers online.

- Use Anti-virus software and set it up to scan your computer regularly.
- Keep all software and drivers up-to date.
- Don't open or download any attachments sent from somebody you don't know without scanning them with anti-virus software first.
- Don't click on links from somebody you don't know.
- Only enter personal details into reputable business/organisations websites. If you're unsure whether a website is legitimate, search for the name using a search engine (such as Google) – the correct link will be displayed near to the top of the list of results.

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How Games have Changed Us

A look into gaming in society

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***Abstract*— Video games is a very expansive subject, with a very vivid history, a variety of genres and a limitless future for video games. Games have helped shape our culture and our culture has influenced the game industry with gamers ranging from the casual gamer to the serious gamer each with desired tastes in game pressing the industry to produce the best game. This article explorers how games have changed, as well as their effect on us.**

I. Growth of games on society

In order to understand how far games have come in our society – it is good to have at least some idea of the history of gaming. Video gaming originally used to be very specialized hobby reserved for only the most serious gamers. Female gamers were quite a rarity compared to the consumer demographics today! While there is still a difference in the demographics between male and female gamers in the 21st century. (Meloni, 2010). An interesting article by Wanda Meloni explores the topic of the proportion of female and male gamers who play game consoles. Out of the 45 million people who play on games consoles, 26% are female gamers according to Nintendo's estimate. However, women tend to prefer the Nintendo WII console with 80% of female gamers being on the WII. This gives an indicator that women, compared to men, are more casual gamers playing a console which advertises itself as more of a family console with arcade style games. PC gaming between men and women is actually more equal; having 130 million women and 140 million men. The question is? What genre of games do women prefer? Well, the gender audience for Big Fish Games: A developer of casual internet games with micromanagement as the gameplay, is around 75% towards female gamers. So female gamers even on a PC will still prefer casual games. This could that females tend to prefer the social element with casual games as they typically to have a lot of engagement with other gamers online, a prime example being Farmville.

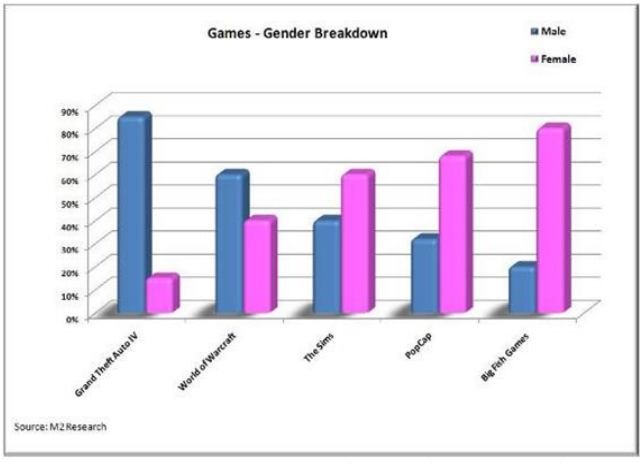

Fig. 1:A table showing percentage of male to female players for a selection of games (Meloni 2010b)

Although not the first game ever created – people mistakenly believe it is: the game pong (1972) is where the player controls a paddle which is nothing more than a white rectangle. Back then developers relied more on the players' imaginations as they didn't had the technology to create anything realistic with a 2 – 8 colour pallet. The player would bat a ball between the two paddles on the screen. More advanced games to be release were games such as Space Invaders (1978) and Pac man (1980). Pac man was a big influence on our culture that most people remember what Pac man sounded like when he moved, even if they never played the game before.

There are also the games that revolutionized the industry. Wolfenstine 3D was one of the first 2.5D first person shooters released by ID. I call it 2.5D because it wasn't 'true' 3D. Instead the graphics of a game were sprites with the use of coding to make it appear 3D (explained below). However, the impact was small compared to DOOM. A game which revolutionized the FPS shooter genre. When DOOM was released it distributed more games than any other FPS on its illegal downloads alone. It was something new and different, players found themselves immersed in a world with terrifying (at the time) demons trying to kill them.

One game around that Era which I enjoyed a lot, even though I played it for the first time about 25 years after it was actually released, was X-COM. The game was a tactical squad command, and was a difficult one at that although the sequel was worse having all your squad killed by a grenade before the game even started. It was good because you had to think strategically compared to other games of its genre which required clicking and no thinking. The difficulty was something that stuck with people, and the B-movie feel of the game, something that wasn't replicated with the remake of the game.

As the consoles became more and more complex and powerful, did these consoles have an effect on society itself? During the era that these consoles were being released – there was intense competition between the console developers to bring out the best console or the most effective console at handling graphics, commonly referred to as the 'bit wars'. (English!Info, 2010)

The reason this is so significant about this bit war is that the actual 'battle' was fought between the actual gamers in society. A gamer would tend to build loyalty to a particular brand of console and would debate with supporters of other consoles on the effectiveness of the console, even before the actual console was released. It's interesting to

see this kind of rival between consoles today almost akin to sporting activities where a consumer will only support one console and strictly play that console with disregard to the rest. Like a sports fan who will only be interested in the team he supports and openly oppose that team's rival.

EXPANSION IN GAMES HARDWARE TECHNOLOGY

Firstly, we can look at how the technology in the games themselves have changed. One way we can do this is by looking at the engine that games are built upon. Engine is a term for the assets that built up a game including the collision detection, renderer, loading and sometimes may be built of multiple engines for each particular role. Back 30 years ago – games still used a game engine.

The first major game engine was the DOOM engine, this engine wasn't actually 3D, instead it just looked 3D, instead the engine used raycasting. Raycasting is used to project a space as 3D using a 2D floor plan. This had some limitations such as not being able to have more than one floor and the player not having the ability to look up or down.

Other engines included the Quake II and the Quake III engine which gave birth to a modified version called the Unreal Engine 1998. The

Fig. 2: Visual example of the differences in the renders for all three Unreal Engine versions (Macfarlane 2012)

Unreal engine was used for all the unreal tournament games which were the best looking games of their time. The Unreal Engine is still releasing new editions and the most recent version is Unreal Engine 4. So here's an overview of the evolution of the Unreal Engine: (Tkacheff, 2009a)

Unreal Engine 1 – relied on simple collision detection methods. The engine also has Artificial intelligence, visibility such as fog of war and networking.

Unreal Engine 2 – An improvement on the previous version. UE2 had support for consoles such as the PS2, GameCube and XBOX. It also saw improvements on the rending engine and physics which allowed for ragdoll effects. Ragdoll effect were fun to play with as models in the game would be catapulted around and move in the most unusual ways

Unreal Engine 3 – (Tkacheff, 2009b) a vast improvement to the engine including physics: Rigid Body, where the player can interact with physical game objects such as vehicles, and destructive environments. All objects have physics properties such as friction and acceleration.

What makes a game isn't just the game itself, it's also the console it's played on. Most of you will be aware of the consoles today: PlayStation 3 (soon to be PS4) the Xbox 360 and the Nintendo WII. Consoles weren't always this advanced and in fact let's take a look at the earlier gaming platforms:

Atari 2600: (NoCash, 2012) released 1977 – This machine had an 8bit system 1.19MHz processor and 128 megabytes of RAM(temporary memory) and displayed a resolution of 160x192 and a total of 128 colours. This is really on of the grandfathers of the gaming consoles. (Game-Machines, 2013a) Although as a fun fact, Magnavox received royalties for the Atari 2600, due to Atari creating the Atari Pong console as the game Pong was too close to their tennis game.

Sega Genesis: 1989 – (Game-Machines, 2013b) this console claimed to have the same processing power as the first Macintosh computer with a 16 bit system as well as a 16 bit graphics card. (During the time of its release; video game companies were competing in 'bit wars' in order to have the best graphics.) In 1991, Sega released the game Sonic which shot the sales of the Sega Genesis from 1.6 million in 1990 to 7.5 million in 1991.

Super Nintendo: 1991 – (Almossawi, 2009) this console had a 16-bit 3.58 MHz processor and 125KB RAM. It became a serious competitor to the Sega Genesis.

CONCLUSION

The expansion of technology in the 21st century has seen the games market move further into the spotlight. The consoles that are available for retail; currently the Xbox 360, PS3, and WII. (Sony, 2013) These gaming consoles are powerful machines with 12GB RAM, internet capability, 500GB Memory, and a 3.2GHz processor that is unlike a CPU found in a household PC. The processor in a games console from the early 20th to the 21st century have increased in power from 1.19MHz to 3.2GHz, a GHz equaling 1000MHz. This type of increase of processing power affects our society, as an example: This hardware has been used to develop real world physics for training pilots and racing drivers. The technology has also been used for science, scientists are able to build models of atoms, molecules and even of the human body which bolsters our ability to our medicine (Woollaston, 2013). An example of this is the virtual human body on ikonet.com. (QAI, 2011)

With technology such as this; less of the immersion in a game is left to the imagination. More people are able to become engaged with the game with intense and incredibly detailed graphical rendering. A reason that more people play games in the 21st century however, is that they are simply easier to play: Recent operating systems are focused more towards the none technical user using apps and user friendly visual displays, users can now play a game without mounting a drive and using a command prompt to navigate to the game on a PC.

The demand for game developers has also increased, (Pitts, 2013) in 2013: Bungie hire over 300 employees and is one of the AAA game developers in the industry and have released titles such as Halo. Universities and colleges are providing courses in the last 5 years that teach the subject of game development at the basic and advanced level which then feeds the games industry with prospecting game developers. There are even masters' degrees for the field of game development. (SHU. 2013)

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How Technology has affected the Music Industry

How the impact of technology in the past 25-30 years has affected the way we are entertained.

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The music industry in the United Kingdom is big business. The total UK music industry revenue is stable at £3.8 billion pounds. This seems like a decent sum compared to other industries such as film. The truth however is that the music industry is suffering massively from online piracy, accounting for a £180 million loss in 2008. According to the BPI (British Phonographic Industry) Piracy costs the UK approximately £200 million per year.

Online Piracy is a relatively new practice. It began in 1999 with the help from an American program named 'Napster'. Napster was the first application that allowed the distribution of music online. When American authorities heard about this they immediately tried to shut it down and yielding no results. Big record labels filed lawsuits in a bid to stop the online distribution of music. Certain websites have been shut down in result of lawsuits, but on the whole there is no end in sight for pirating music. This is partly due to the fact that there is always going to be another website or a piece of software to fill the place of the one that's been shut down. This causes massive concerns for the record labels and artists who are losing money through music piracy. It would appear however online music piracy is decreasing. Last year peer-to-peer illegally downloaded music decreased by 17%, There are many theories for why this is. The first and most agreed upon is the newly available legal streaming services such as 'Spotify' providing people with unlimited music for free. There are currently 71 legal digital music services in the UK. This is a lot more than what there was when online piracy had just emerged. Around 80% of people in the UK are aware of streaming services. This figure seems to suggest the services are gaining popularity. Music revenues have increased in the first time since 1999. This comes as a surprise because of the advancements in music pirating software in the last 15 years. Many assume that new technologies are harming the music industry.

Artists have different views on music piracy such as Jessie-J who believes "you can't make music for free, you can't live for free. If people illegally download your music its very likely you won't make another one." It's clear that this artist disagrees with the illegally piracy of music and it personally affects her work. On the other hand artists such as Ed Sheeran believe there is a happy median with selling music and illegally downloading it. Ed Sheeran's debut album was the most illegally downloaded album on the popular site BitTorrent. He said: "There's a decent balance between – you can live off your sales and you can allow people to illegally download it and come to your gigs. My gig tickets are £18 and my album is £8, so it's all relative." A lot of artists also argue that piracy is a great form of promotion. Not only are people getting into your music they are sharing it with their friends. Studies have also found interesting trends in music piracy. The top countries for illegal downloading and the most illegally downloaded artists are shown in the graph below.

The music industry has dealt with advancements in technology incredibly well. Music leads the charge in digital innovation. The UK is the most competitive digital music market. Quarter one of 2012 was a ground-breaking moment for the music industry when revenues from streaming and downloads accounted for more than 50% of record label income for the first time in digital music's history. Cloud computing being a relatively new concept has already had an impact on the music industry. Companies such as Amazon, Google and apple have all incorporated cloud technology. Cloud computing offers the opportunity for users to remotely access digital purchases. Technological advancements have helped digital sales a lot and have helped slow down music piracy. The music industry can also be seen as a driver of social media engagement. Relatively new websites have helped artists gain more followers and in turn have helped the websites gain popularity. In this day and age social media plays an integral role in our lives. Almost every day we engage with social media, whether it's on our computers or on our smartphones. We constantly see people promoting artists and songs. On popular sites such as twitter artists have gained massive popularity and "followers" for example lady gaga has

32.859 million followers which have no doubt helped increase her sales. This form of engagement allows the artists to promote herself easily and to such a broad audience. Artists have also begun to realise the true power of social media in helping them become popular overseas. Bands such as One Direction have really harnessed the power of social media. They used their social media skills in helping their debut album hit the charts in the USA, Australia and Italy. They used a clever marketing campaign which featured a virtual character looking for a missing laptop. This went viral across Europe and America. One direction were rewarding fans for the completion of challenges with an online listening party. Within 50 days of the campaign launch they managed to double the traffic to their website attracting 200,000 participants who completed 20 separate challenges. This in turn created 12 separate twitter trends and created more than 2.5 million YouTube views. Other artists have created similar campaigns such as industrial hip-hop group Death Grips. For their third mix tape they created a clever marketing campaign. For the campaign they hid tiny clues in files buried in sub-public levels of the internet. This level of the internet is often referred to as the "deep-web" These files were tracked like an Easter egg hunt. At the end of the hunt was a file with their new mix tape in. New software allows the public easy access to this level of the web with proxy servers that hide your identity and grant you access you wouldn't otherwise have with regular web browsers. Without these advancements in technology the public wouldn't have been able to access and follow this campaign. The band gave this album away as an act of rebellion against the record label. But later went on to sell it. This shows that with the right knowledge you can use social media to your advantage and help boost your sales. This kind of thing was previously unavailable to artists.

What's next for the music industry? Technology is always improving and the music industry has to continue moving with it. Mobile music streaming is already an important part of the industry. However it is about to be an even more important part with the move from 3G to 4G, this move means music can be streamed and downloaded a lot faster. This will benefit music streaming services such as Spotify because users have complained about the download speeds and it has put them off using Spotify mobile. The speeds are estimated to be 10 times quicker on 4G than 3G. Mobile phone company Everything Everywhere were given permission to upgrade to 4G in 10 cities. This is a big step in introducing better connectivity for people. For most people their mobile phones will now be the primary device for streaming digital music. Mobile phones have come a long way in the past 25 years with huge advancements in technology. New technology has helped integrate speakers, audio-compression and mobile internet connectivity. Tablets are also a relatively new product that has helped the music industry become more mobile-centric. Most experts agree on the fact that music streaming services in the future will rely on music discovery. This is important because with new technology it will become easier to discover music that you wouldn't otherwise heard of. There are new mobile apps such as Shazam that utilise new technology to accurately identify a track. All you need to do is let the phone hear the song and it produces results based on that alone. Mark Foster is the managing director at Deezer, an online music streaming service. He believes that integration will also play a massive role in the advancements in streaming services. He says "We are starting to see streaming truly embedded into every aspect of our day-to-day lives. Whether it's integration with the speakers in our living rooms, TV's, cars, games consoles, as well as newly designed apps.

Looking into the future we predict much more connectivity in our daily lives. The way we listen to music will change forever. No longer will we have only one or two devices that we can listen to music on. It's no surprise that a lot of the focus of digital music has been on mobiles. Technological trends however seem to suggest that the connected home is where things will move next. In the near future you can expect your TV to be the media hub of the house with it being able to recognise songs from adverts. Also your TV will be able to play music through the speakers in your house. This kind of connectivity was previously unavailable. However with the recent advancements in technology and the introduction of smart TV's this kind of connectivity is more readily available. You will start to see some of this connectivity transfer over to your car as well. As companies such as Seat and BMW are making deals with streaming services such as Spotify. As the number of cars with CD players being the media hub decrease, the new connected cars will replace them keeping the media at the centre of in-car entertainment. An interesting study found that 47% of car owners over 17 listened to music more in their cars than at home. This shows that there is definitely opportunity to expand in this market. These new levels of connectivity are an exciting prospect not only for the consumer but for the music industry as artists will be helped by increased music discovery and gain popularity from social media. For better and for worse, the advancements in technology in the past 25 years have played a massive role in the way the music industry has evolved and the way we enjoy music. There is however a level of uncertainty as technology advances, so does detrimental software such as pirating software. In the future it is possible we will see extremely advanced and sophisticated pirating software. Another issue is the gaining popularity of browsers that can access the aforementioned deep web. At this level of the internet you are much harder to trace which makes illegal transactions much easier. As technology advances so does the software that helps stop piracy. The BPI is a small unit that tackles piracy against the UK's music industry. They don't focus on people downloading music at home but the people profiting from it. They routinely shut down apps by making cases to the companies that it's harmful to the industry. A lot of their work is focused on removing piracy websites from search results. In total they have requested the removal of 35,401,959 URLs so far this year. But with the more sophisticated proxy servers and browser users are getting around these blocks. These are the problems that we will be facing in the future.

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FIGURE LIST

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Social Media's Effect on Community Ties

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***Abstract*- Social media can play both a vital and detrimental role in localities, helping to build social events and networking in some occurrences, while also detaching some social groups from the ties in their community which are so vital to local members' trust, relationships and interaction. Does an increased use of social media exacerbate existing misconceptions between generations? Or can networking online provide a gateway to safe and trusting communications between different cultures and age groups.**

I. CHANGES AND EFFECTS OF SOCIAL INTERACTION

To set the scene, looking back ten to twenty years ago, social media was barely a part of everyday life. Perhaps messaging or calling friends through mobile phones, but the likelihood was that face to face interaction with neighbours, and people in your local community was a much bigger part of day to day happenings.

Fast forward to the present day, and now more than ever social media is taking over in many instances, with one in every seven minutes online spent on social networking sites (iab, 2013). For example, whereas years ago people were far more likely to take part in events or a get together with friends within their local community network, in the present day this interaction is far more likely to be organised through social media sites and formats, resulting in people easily arranging time with friends further afield. This is presenting a form of community detachment, reduction in participation and commitment to the community (Mesch G.S, and Levanon Y, 2003) and ultimately can lead to social distrust between separate age groups and cultures in society.

Looking at the other side of this, is social media bringing a degree more involvement in local communities? The ease that it provides to arrange events and meet ups can surely be of benefit.

THE IMPORTANCE OF COMMUNITY TIES

Looking at how relationships are developed into strong, long lasting ties between individuals can help us to understand how social media is affecting (positively and negatively) the way communities work. Wu presents the argument that social networks require some form of community, and interaction on a personal face to face level to develop initial acquaintances into long standing relationships (Wu M, 2010). If this idea is applied to a local community, with the ever growing presence of social networking as opposed to face to face interaction, these initial acquaintances may never develop into strong and close bonds, something that inherently builds a strong local group. Social detachment due to an addiction to social media is something very real, and can in fact lead to alienation of an individual from their outside world (Digital Fire, 2012).

However, a great benefit of social networking through various social media platforms is that common interests and views can easily be shared and developed. The way groups, pages and likes have become a part of interaction through social media in the past decade means that members in local communities can group together with common views and ideas much more easily. This factor presents an opportunity for new relationships and ties to build, based upon a great common ground – something that holds local communities together much more strongly than before such formats as Facebook, LinkedIn or Twitter existed. For example, if there is a charity or organization in your locality, it is now much more simple to be a part of their cause – clicking on a like icon, or retweeting information can involve you in the development of your community and actually, make a real difference to things you may collectively believe in as a whole community, ultimately resulting in strong bonds and ties between local members.

SOCIAL DISTRUST AND DETACHMENT

Different age groups or cultures may have very contrasting levels of involvement in social media, which can lead to a form of distrust building up within a group. Because interaction in this way is a relatively recent and modern concept, many older members of a community may not engage with these formats. With over five million users of Facebook being under the age of ten (Scott M, 2013), it is easy to see how a vast chasm can result between age groups at each end of the spectrum, and detachment from day to day interactions within a local community.

On the one hand, social media users are becoming younger and ever more involved in their digital lives, whereas on the other hand, older generations are becoming, in some cases, ever more disconnected from modern forms of communication. This separation between different groups can cause distrust between members in a local community. It is human nature to gauge trust in an individual or group by reading the way they behave, their body language and how they present themselves.

For example, the younger generation may organize a meet up or event in the community through social networks, which may be of interest to an older generation who may not have access to social media. Although this is unintentional in a lot of

cases, the result is that different generations do not feel included in certain local events. Different generations may then base their feelings on each other from information presented in the news or through collaboration in their particular generation, leading to huge misconceptions and generalisations about any particular generation set.

Previous to the heavy use of social networking, ties and bonds between community members may have been initially stronger due to face to face interaction, whether in passing or through organized socializing. This would naturally lead to increased communication, a breakdown in such misconceptions and presumptions, and inclusion for all members in any events or ideas in a locality.

BENEFITS OF SOCIAL NETWORKS IN COMMUNITIES

There are however great benefits that have come in the advancement of online communications and social networks over the past few decades. As previously touched on in this article, social media facilitates the creation of groups and networks for common interests in a much more dynamic and attractive way than ever before. Neighbours can easily create events online within this media, making socializing and enforcement of relationships within a locality much easier to maintain. This can encompass all age groups and cultures, reaching out to more members of a community, and much further afield to extended communities. It is not only easier to identify an individual's personal interests through their likes and relate to them, but allows less forthcoming members of a group to still have an impact and share ideas online, something which they may find much more difficult in face to face situations.

Further to this, communities have a great opportunity to share and solve problems in their locality through social media groups and pages. The benefit of this being done online, is more members are likely to share honest views, as opposed to feeling a sense of having to behave in a certain manner when in an intimate, close quarters social situation. Relating back to how strong ties build and how this is essential for a strong community (Wu M, 2012), sharing ideas in this way will enable relationships to build, as the subject matter will be common and people may be more inclined to show their true feelings, and indeed their true colours.

WORKING IN EVERYONE'S BEST INTERESTS

Modern day society can often run at such a fast pace, time allocated for participation within your locality can soon run away from you. Speaking to older relatives or friends, you may experience anecdotes of time spent with neighbours, huge social events that spanned an entire neighbourhood, and how every person knew every person.

With the pace of modern day life increasing, especially for certain professions and career paths, divides and separations are bound to become apparent within any given social group. Certainly, social networking can be a much faster, easier way of staying in contact with anyone, whether that is in your locality, or friends in other countries. Used correctly without preconceptions across cultures or generations, social media can be an excellent tool for keeping in contact with individuals and families in your local area, and beyond.

Although some may not engage with what is a relatively new method of communication, a balance of social networking and face to face interaction is a healthy way to develop strong ties.

CONCLUSIONS, IMPACTS ON MODERN DAY SOCIETY

There are both positive and negative views and opinions towards the increase in social networking over the last twenty years, resulting in an impact on community life, and ties between members within that.

Firstly, social networks may not be a shortcut to an easier community life. People respond much better to engaging in conversation at a personal level, especially when it comes to generating involvement between residents in a local area, and higher community participation (Hothi M, 2012). Ultimately, as human beings, nothing can reinforce a relationship than correspondence in a real face to face environment. Another point which is evident is that whether or not interaction is online, of offline, community participation is pushed forward and driven by a select few committed members. Social networking does not have a huge impact in many cases, this may have always been the case, and it may never change.

Contrasting to this, especially within younger generations where social networking and an online presence is a massive part of everyday life, a real connection to neighbours and residents close by can be much more easily established online. This is simply due to the nature of how this generation interacts with one another; it is habit, normal practice and a way of life. Although participation may indeed still be driven by a small proportion of committed residents, through the use of social media a younger generation are much more capable of joining discussions, presenting feelings and ideas, and ultimately participating in a community throughout their progression into adults.

If used productively, social media outlets can benefit existing ties and relationships within a community. It does not matter whether weak existing ties between residents has come about through a casual greeting of a morning, participation in a community event such as a fundraiser or even a summer barbeque. Such relationships can be built upon through networking online. Opportunities to create further such events, with the vast array of social media available to us today, are endless and at our fingertips on a daily basis - something that has not been a possibility without face to face contact in previous decades.

Ultimately the same question of commitment to a cause, similarly present before the likes of Facebook and Twitter, is raised. Cultural or generational differences can play a part, but if the people in your local area do not engage and participate in a desire to build a robust community, social media is a tool which will not be used to full effect.

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The Impact on Computers on Everyday Life

How crime is committed and how it is investigated

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This Article covers the Impact and influence on the subject matter, surveillance and how it has been used to stop crime as well as create it, its techniques, how methods have been innovated over a 30 year span and the idea of the national trust between the public and government.

Fig. 1.

I. Surveillance Techniques thwarting crime

There has been a growing focus for law enforcement and intelligence agencies to use surveillance techniques ranging from Directed surveillance (subject being watched and followed), Intrusive surveillance (electronic devices in property of the person being surveyed that enable agencies to see and hear what is going on) and Covert Human Intelligence (informants and under-cover officers). Within each of these brackets comes with its own array of methods of surveillance. Surveillance is possibly as old as recorded history and has grown over the years with the ever changing and innovation of technological devices. One of the first types of surveillance came into being with the invention of the telephone just before the 1890's. By the 1950's almost 1 in 3 households had a telephone and thus 'wiretapping' was born, Kaplan et al (2012). This is a method used to eavesdrop on phone calls by gaining access to the physical wiring that link phones together. This method has been used to convict many criminals taking part in illegal activities ranging from the selling of alcohol in the U.S. prohibition years to illegal gambling operations and terrorism threats. Wiretapping has broadened its range in recent years since new technologies such as the internet have boomed our need for connectivity. This invention of optical wires using light to communicate in faster ways have led to 'internet tapping' and recently appeared in newspapers, the allegations that intelligence agencies have been tapping large internet companies to gain access to information. Due to the very obvious point that physical wires were easy to tap into, the creation of WiFi was the next 'big thing' that was used early on by the military to be able to communicate so that enemies couldn't intercept messages.

Visual systems have been innovated over the years from having operatives having to follow and physically be around the subjects to gain evidence for convicting them to CCTV cameras that we see very frequently now. The BBC reports that there are an estimated 4.2 million units ('The technology of surveillance', 2009), CCTV has been enabled police and other agencies to capture crime events over wide scales and has reduced the need to have personnel constantly on the alert. In crime hot spots CCTV can visually record anything suspicious and allow it to be played back at a later date and be used as evidence for convictions. This system can be commonly seen in shops, supermarkets, and almost everywhere city centres. CCTV cameras have been innovated from firstly only being connected to nearby video recording systems that used 'tape' to log the information on to but now have been digitised so that they now store data on computers and do not have the need to be near their source and can be directly fed into police control centres. CCTV cameras have also been enabled to track people over the whole of the network of cameras that the subjects pass as reported by the BBC, ("Smart CCTV could track rioters', 2001), This has enabled police officers to follow subjects after crime has been committed. This was a great tool in the case of the London riots in 2011. According to reports by the Standard around 3000 people have been arrested in connection with these events due

to CCTV support. ('Three thousand arrests made over London riots offences', 7 October 2011)

The advancements of computers also brought into light new a new wave and types of crime in 'cyber space'. Crimes are now being committed over the internet and computers have produced a new type of criminal that can gain access to personal files and information of almost anyone connected to it that use it to store or communicate information. Crimes ranging from identity fraud to malicious natured coding that we know as viruses and worms that disrupt our everyday usage of the technology. New Laws such as that in 1990 'The Computer Misuse Act (1990) came into effect and in 1998 The Data Protection Act (1998) became live which give law enforcement the ability to convict people that commit such acts of crime. With this new innovations in computer coding, programs and cyber police can use computers to monitor subjects in their internet activity. In the cases of paedophilia, law enforcement monitor subjects in order to investigate them and convict them by analysing subject's computer files and usage of their computers. Computer intrusion is a growing concern and methods for gaining access to information is readily available. Crackers known as 'Black Hats' regularly claim responsibility after launching these attacks.

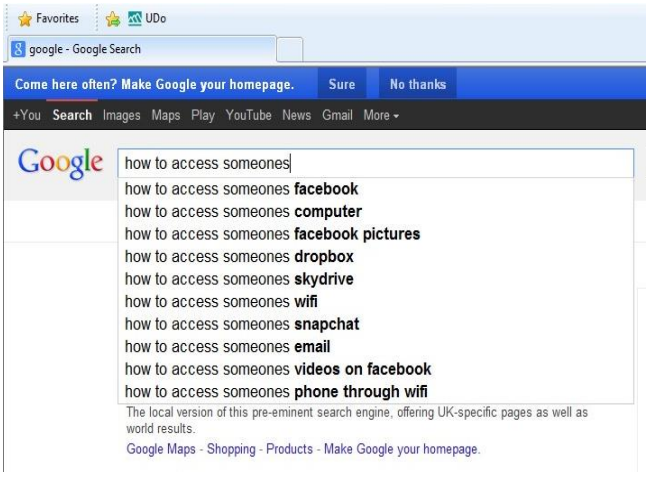

Fig. 2. (THE MOST POPULAR SEARCHES WHEN YOU TYPE INTO GOOGLE)

GPS (global positioning systems) are innovations in technology that law enforcement use in tracking criminals. GPS was developed in the 60's and uses satellites that can track signals that intelligence officers can attach to suspects giving them the ability to watch their movements without being seen and causing suspicion.

Databases have been created to reduce crime and make it easier to catch up with criminals who have already committed crimes. DNA and Biometrics were an advancement from finger printing and is usually used in many television programs we see today as a means of identifying and connecting suspects to crime scenes. Biometric devices are becoming frequent in large airports to help security detecting illegal immigrants and criminals. Regular press releases show how this technology is productive in the fight against international criminals, as reported by Biometrics.gov ('Biometrics Help Identify, Apprehend and Deter Illegal Migrants', (15 May 2007).

Forensic Computer Analysis is another way that law enforcement and intelligence agencies have used technological innovation to stop crime and convict criminals. By accessing what would thought to have been damaged and ruined computers or electronic equipment capable of holding critical information, criminals, terrorists and of the like can be prosecuted.

II. OUR TRUST IN THE POWERS THAT BE AND THE PANOPTICON IDEA

The 'Big Brother' effect was explored by a researcher name Michael Foucault. It is a theoretical construct that was first discussed by an English Philosopher Jeremy Bentham. The Panopticon was a building design (namely prisons) where a system was devised that the prisoners were kept in cells that circulated a centralised watch tower where the guards could see everything in a short space of time and the inmates couldn't see who was watching them (Lyon, 2001: 114). This institution can be applied to today's cyberspace surveillance. The idea being that intelligence agencies can watch us without us knowing we're being watched and access data to which we may not want to have accessed. There is an argument that being able to detect crime and prevent it must be supported by surveillance. Gary Marx (1992: 225) (in McCahill, 2002: 186) says, 'new surveillance technologies have been presented as silver bullets which can provide utopian solutions to complex social problems surrounding crime and disorder'.

III. WHO ARE THE BAD GUYS AND THE GOOD GUYS?

A lot of new techniques in surveillance have sprung in recent years from anti terrorism agencies and become more 'known' to us through media. Second World War and Cold Wars are examples of times where surveillance has been mostly portrayed in the news as a useful tool. In recent days since the case of the 'whistleblower' Edward Snowden surveillance has been shown to be more sinister in its usage and cases brought forward in Birmingham against the Police force in their usage of Closed Circuit Cameras (CCTV) as reported by The Guardian ('Birmingham's spy-cam scheme has had it's cover blown', (23 June 2010). The advancement of computers and society must go hand in hand. There are Sociological and Psychological matters to consider with the changing and advancement of technologies. The future of crime prevention relies heavily on surveillance, even when looking at government websites on crime prevention, CCTV being mentioned very frequently. As this method has been proven to prevent a lot of crime there becomes a trade off between how much 'we' as a society care for being watched and how much we want crime to be thwarted. Generally it seems that the problem of surveillance comes down to intentions and motives of the 'watcher' and that the trust involved is a two way street.

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How Hardware Has Improved Our Media Experience:

From the age of analogue to the dawn of digital

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***Abstract*—In this article I will talk to you about how the leaps and bounds made in hardware development have affected our everyday lives for the better. Improving not only the quality that we can experience from our media but also how we can experience it with the development of multimedia capable technologies**

***Index Terms*—Formats, analogue, digital, video, sound, games, hardware.**

I. Introduction

Today we take multimedia for granted, and it has become an integral part of our everyday lives, especially for us who have grown up with these developing technologies. From services like YouTube or Spotify that allow us to stream media on the fly or with the vast amount of electronic media readily available for download for us to watch or listen to later it is something we pretty much all use at one point or another and something that a lot of us may be lost without. In this article I am going to cover some of the ways we used to have to store media and how different it is in terms of not only quality but accessibility as well and how that has impacted our lives and how we watch media in the 21st century.

Sound

A brief look into the pre-digital era: Compact Cassette:

The classic cassette tape format that some of you may know and others may be not so much. The compact cassette was an analogue storage format invented by Philips that utilised magnetic tape and has been most commonly used to store audio for play back at any time. There was also the DC International format that was in direct competition with the compact cassette, however the format was dropped when after Philips and Grundig both proposed creating a standardised format to Sony; Philips was chosen. With this technology standardised portable audio was widely possible as cassette players were fitted into cars and Sony Walkman players made it possible to play cassettes on the go. The cassette lasted a long time since its first emergence thanks to improvements in the technology but quickly went into decline when the CD format came to be. (Author unknown, 1998)

The digital age:

The move to the digital format saw the creation of the widely popular CD format. Co-invented by Philips and Sony it used a revolutionary new technology. A laser reading mechanism that meant the disc could be read with no physical contact giving the medium a theoretical infinite lifespan (Philips, 2009). This laser system meant the technology was much smaller and therefore much more could be stored on a disc. A standard disc contains 650-700MB of data however discs that can store more and less data do exist but do not conform to the standard (Bennett H, 2003). This was a vast improvement over the capabilities of cassettes in terms of capacity and quality meaning people could store more in less space making it even more portable and the experience even more enjoyable as the quality was superior. CD players were quickly adopted to replace Walkman's and once shock absorption technologies had improved they were adopted for vehicles too; making CD the way forward and leaving cassette behind. Notably like cassette the CD has seen use outside audio and in computing it has been used as an electronic and software distribution media, especially when floppy disc was the only other competitor in this format which it massively out shined. (Conrad B, 2011).

CD was the dominant format for a while for portable media but when the internet grew in popularity the digital format went a step further. With the internet really taking hold during the 1990's and the mp3 format being released around the same time peer-to-peer file sharing boomed. Websites could host mp3 content uploaded by members for anyone to download. The biggest and most notorious example of this is Napster. They hosted huge amounts of free mp3 format music from many major music labels and as such were shut down for what is now come to be known as piracy, in this case music piracy. This file sharing boom started a new era of music sharing and affected how we listened to music (Riedel S, 2006). After developments with computer technology this sort of behaviour has led to compact mp3 players that are the size of a USB stick but can contain thousands of songs. Making our favourite songs ultra-portable and with even fewer limitations, as long as you don't mind slightly off sound quality every so often. Coming right into the modern technology (as things got more compact or more complex from the mp3 players on) (Verma S, 2011) we can now simply use our phones as music players with micro SD (or similar formats) as a method of storage and the phones having built in media capabilities as they have become more advanced. Making playing music whenever you like as convenient as you could imagine.

VIDEO

Video also has its origins in the analogue format with VHS being the most popular before the dawn of digital technology. Since VHS also utilises magnetic tape making it similar to cassette in that regard and was also sent into decline by its respective digital competitor (DVD) so I will not go into much detail about this and I believe many of you will know of the format as it was widely popular.

Digital Age of Video:

Video did go digital with specialised formats being released for the CD. One of the first ones was VCD (or Video CD). VCD was a CD compliant format and could be played in nearly any CD player as long as the playing device had a VCD format decoder (Author Unknown, 2013). The VCD format has comparable quality to VHS but the format was not hugely popular in western countries where as in eastern countries where the VHS format had not made a strong foot hold the VCD shined and this was where it was most popular. (Meyer, S, 2001). This format served well as an introduction to digital video. Being a CD format it also didn't suffer from wear and tear like the VHS did and from personal experience old VHS tapes do degrade, quite easily in some cases causing blurring and static (for lack of a better word) to appear on the screen. SVCD (or Super Video CD) was the follow up to the VCD format and was a great improvement. It had superior video quality due to slightly reduced play time and improved compression techniques. It too is compatible with most CD players. The format was mostly popular in the Far East (Aho, J, 2001) whereas the DVD format was preferred in the western world. DVD is a pretty standard format these days thanks to its reasonable 4.37 gibibyte capacity which can be approximately doubled or quadrupled using dual layered (where two layers of data are stored on one side) and/or dual sided technology (the two are used together to get the 4x capacity). The DVD format became popular as it allowed much better quality video and audio thanks to its massively improved storage size. Our media experience had taken a new leap forward in terms of quality but the optical media format had more for us yet.

The optical format wars: HD-DVD vs. Blu-Ray:

After DVD two 4th generation optical formats came to the table in the form of HD-DVD and Blu-Ray. They were both competing for the same market, the next generation of high quality entertainment. Blu-Ray won out though. It short both technologies had made vast improvements to the optical format by using a blue laser instead of a red one (I'll not get too technical but the blue laser is smaller than the red one used on DVDs) however the HD-DVD format was just not as good as the Blu-Ray competitor. HD-DVD had a lower bit rate and much smaller capacity (15GB vs. 25GB for HD-DVD and Blu-Ray respectively) which only extrapolates when dual layering or dual siding is brought into the equation. These factors meant that overall Blu-Ray was superior and therefore won out in the end (Author Unknown, 2007).

MODERN TECHNOLOGY AND ITS IMPACT

So far I have covered the technical aspects of hardware over the years. I've covered how they've been improved and how this has improved the quality that we can enjoy from our media. However what I have covered is just the formats on their own and the various things that they allow. The technology that these things can be played on that has really progressed in the years I have covered and this has had a big impact as well. I briefly covered this with the peer-to-peer file sharing in my sound section but now I am going to delve into the way we experience these vastly improved media technologies. Let me quickly revisit what I have covered. Sound had made leaps and bounds in quality and portability with each new technology and this was more amazing each time. It impacted us by letting us take our music on the go, people enjoyed that freedom and the Walkman's success can prove that. In video the quality vastly improved as media storage technologies did and whilst this may not have impacted the way we watched it, it affected the quality and what we expected from our media experience. However video has done its best to go portable with DVD and in car players are around so you can watch videos when travelling and this has made our video experience a more portable thing and enriched our travel time with media. In the end though, nothing compares to the dawn of the smart phone. All you could need in the palm of your hand, a true multimedia device that can play music, video and even games in a seamless experience that has enriched our lives with its capability. Don't get me wrong I've owned a smart phone back when they cost £500 and ran Windows Mobile 6.1 and it was a slow device but they have come so far so quickly that it's revolutionised our media experience. We have all the media we could ever need in the palm of our hands with services like YouTube that let us stream videos instantly and similar music services as well, such as Spotify to name one. We no longer have to go out and buy media, we have it all, all the time, and all we have to do is look. This has impacted us greatly as we don't have to go and buy a video or "hit song" we can just find it on our phone and we can watch or listen to anything we want any time. This has made our lives easier by increasing portability and opening up what media we can see with the use of the internet. We share what we watch and listen to over social networking sites as they are also on our smart phones. This impacts us as not only can we view whatever we like we can share it with all our friends as well. Get them in on the next big thing and enjoy it with them. This has come to be known as "trending" and is possibly one of the biggest impacts of modern media. Things can become instant hits in a matter of hours, e.g. Gangnam Style, Harlem Shake, YOLO, etc. thanks to internet sharing of media. Overall the improvements in media technology and the advent of the smartphone have made our media a smoother, faster and more portable experience. Enriching our everyday lives with all the media we could want and more in the palm of our hands. It also allows us to find media we may never get exposed to such as small bands and other small time companies or people with media we may have a great interest in. Like games from less well-known companies as well. Technology has helped improve our media experience and how we chose to experience it. It has made it a more flexible experience, a higher quality experience and a more sharable one too.

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The Evolution of Digital Media and how it has changed our Lives

A look into how the distribution of media has evolved in the past 30 years and how it has changed how we consume information and entertainment

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***Abstract*— Music, television, video games, books, the news, all of these have existed for a long time, but how have these mediums survived? I have decided to look at how these mediums have used constantly evolving technology to survive and prosper into an age where we are constantly bombarded with media at the touch of a button.**

***Index Terms*— Digital Media, Distribution, Piracy, Privacy, Social**

30 odd years ago if I wanted to get Metallica's newest album I would have to wake up, get dressed, wait for my friend and go into town, find a shop that sold records, check to see if they carried the label, the genre and finally the band, then I would have to lug a foot long, heavy record all the way home, and this would be to listen to 10 songs. 20 years ago, I would have to do the same, except this time I'd only have to carry home a tiny cassette, but still, this could only hold an hour's worth of music, or around 10 songs on it. 10 years ago, the story is pretty much the same, I'd have to leave the house and get to town, but there is a good chance my local supermarket will now carry the album, which is now on a paper thin device called a CD and if I'm really up to date, I could listen to it on the way home on my way home on my portable CD player, I don't even really need to bring a friend at this point, because they're only going to stop me from listening to my new CD. Today, I don't even need to leave my bed when I wake up to buy Metallica's latest album, I can wake up, grab my laptop go on Amazon and buy their entire song collection and then store them all in a device that fits them into my pocket. I can then broadcast it to my 300 friends on Facebook and discuss what I like about it with them without ever actually exchanging a verbal response once, how has this happened?

Figure A, the evolution of musical media

To tell the truth, this evolution shouldn't come as a surprise to anyone who knows their history knows that since we as humans have always looked for ways to distract ourselves and make tasks easier; we domesticated dogs to help us hunt, the wheel to make transportation quicker, we started banging on hollowed out logs because the sound made us dance and we invented the internet so we didn't have to wait to receive information. People do like to receive information, so it shouldn't surprise us that we have integrated ways to get it into nearly every aspect of our lives. We are living in the future and the future lives on the internet.

How did we get like this you ask? Well it probably started with the invention of peer to peer shearing networks between research facilities in the early 1960's. This allowed researchers of computing technology to swap data faster than ever before through computers. Next came the idea of connecting facilities across countries and even continents. Soon most research, educational and military facilities were all connected to one network and this lead to the eventual proliferation of the technology to the masses, this is what we call the internet and everything is on the internet these days.

Smartphone's are the perfect "Star Trek" device they allow us to call our mothers, text our friends what time we're meeting for drinks, browse the internet for that perfect present for our significant others, let everyone know my opinion on the latest scandals, you name it! And they've done this in 7 only. Following the Smartphone is Microsoft's Xbox One, which is basically the same thing, but designed for the whole family to use, this is all good right? Maybe, but as with every good thing, there has to be negative aspects to something.

As we no longer need to go to the shops to buy what we desire, shops are either going out of business or becoming warehouses for items to be delivered, either way, this means that businesses need to employ as many people, as machines can process and package an order quicker than any human, this is leaving us with a record amount of people unemployed. This is a bad thing, very bad. But we can make these people useful; we can teach them how to make their own websites in which they can make and potentially sell things that people want. We can teach them to work for the big companies that drove them out of their original jobs. Either way, we are pushing them more into the digital workspace.

Figure B, Apple's iPhone 5, the embodiment of the future?

Another potential risk of becoming invested in a digital company; payments. With traditional sources, you can go into a shop, pay with money directly and the only risk would be you've forgot your wallet at home, which would lead to you running home to get your wallet. With an online culture, if you forget your wallet in some place, it could take up to 2 weeks to get your only source of payment, your credit and/or debit card, by which time your family could go hungry and your bills may go unpaid and that's only if your card is missing and not stolen, which is a very bad situation to be in.

Whilst the internet is now a mostly safe place and there are some very easy ways to know if a website is safe to give your details to, there will always be people out there who, if they really wanted to, be able to get your details and spend every single one of your hard earned pennies, inform all your friends of your recent change of sexuality on Facebook, read every personal e-mail you have ever wrote and more. Thankfully this can be avoided by keeping your passwords to yourself, but sometimes the fault isn't yours, such as in 2011 when Sony's Playstation division reported massive breaches in security which lead to hackers being able to get the names, passwords and credit card details of over 2 million subscribers. This caused the service to shut down for nearly a month. Thankfully the users were warned immediately and most people were able to change their passwords and cancel their cards before anything could be done with the information.

Figure C, anyone can be a digital hacker, be safe

Another way people are letting digital change their lives is through the medium of video games, unlike most other mediums, video games have always been digital and what makes them special is that they seem to have evolved perfectly into this new digital age we find ourselves in. Now most games will be released with an online component which allows a player to test their skills with other players across the globe, we now have games that forego a single player, offline element entirely in favour of making online play the focus. With the advent of Smartphones, developers are now able to create games that can be played anywhere at any time. However, an unforeseen threat comes from these games in the form of micro transactions. Micro transactions basically allow a player to pay to cheat and appear better than everyone else, which on a stage where everyone is your opponent, is a very tempting offer, but is paying £3 really worth that sword that offers a slight increase? What if you knew you could get the sword later on without paying? Still worth it? This is an argument that is still going on today and if it carries out much longer, it is looking like governments may have to intervene, which is something that developers are trying to avoid

With the advent in digital distribution has come about a wave in piracy that exists on the internet. This piracy is expected to have lost industries, especially the music industry a loss that is totalling in the billions. It is undetermined if this is true, due to the fact that many people argue that they would have never bought the music in the first place. Many people also argue the fact that you cannot own a digital item, thus pirating is not something to be frowned upon and should be embraced, with the people who enjoy a product being willing to pay for an song/game/movie after consuming them.

To counter piracy, some companies such as Netflix have made it their aim to service the consumer with easily to find movies and television programs for a cheap subscription fee. This has been largely effective with many companies attempting their own versions of online streaming, such as the BBC iPlayer and Hulu plus.

In conclusion, digital media has changed our lives for both the better and the worse. In many ways, it has made our lives so much easier, with our ability to communicate with anyone on the planet in an instant, or shopping for that elusive must have Christmas toy now being at the tips of our finger. On the flipside though, it has been made much worse, now anyone with the right training can infiltrate any aspect of our lives and we may not know until it is much too late, is this risk worth the trade off? Maybe and many people seem to think so too with around 1/3 of the world now connected on a daily basis to the World Wide Web.

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Has Computer Technology Enhanced International Cricket?

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I. Introduction

When Sir Ian Botham started his England cricket career, he would not have imagined how the game was to change over the last thirty years. When Botham started playing for England, the game consisted of two teams, two umpires and a few cameras to record the action. Now in 2013, we have a third umpire, stump cameras, microphones and a decision review system including Hawk-Eye and Hotspot. All of these new additions, have only been made possible because of the significant improvements in computing technology.

The Third Umpire

During the 1980's, the most hi-tech equipment used, were cameras to record action for a television audience. It was not until the 1990's that technology started to improve the game of cricket. The third umpire was first used in 1992 due to the introduction of slow motion replays which started to highlight the on field umpires mistakes. At this stage it was clear that in order for cricket to progress, these errors must be eradicated (www.espncricinfo.com). Third umpires would sit in a room and be called for when an umpire wasn't sure of a decision such as if a batsman was run out, stumped or the ball had carried to the fielder. The third umpire would watch slow motion replays of the action and inform the on field umpire of what he has seen and what decision should be made.

Although many people agree with the third umpires, there have been issues with the technology being used. When the cameras are used to magnify the replay the new image seem to cause controversy. When reviewing a catch and the replay is distorted, the new picture makes it look like the ball has bounced even if it hasn't. This causes problems for the third umpire as he has to make a decision without being completely sure.

Hawk-eye

In 2001 further improvements in technology meant that hawk-eye could be introduced into cricket (www.hawkeyeinnovations.co.uk). Hawk-Eye works by using six specially placed cameras around the ground to track the ball from the bowler releasing it, to when the ball becomes dead. The image that is captured by the cameras is changed into a 3D image by a computer to show how the ball would travel (www.news.bbc.co.uk). Since 2001 Hawk-Eye has continued to improve in line with computer technology developments.
Hawk-Eye is 99.9% accurate in cricket which means that it is a reliable system for making decisions (www.news.bbc.co.uk). Hawk-Eye can now not only trace the ball on an computer created image, but help in the decision review system (DRS). It can also provide a wagon wheel of a batsman's scoring areas, a pitch map of where the bower has pitched the ball, a way to measure reaction times as well as other features such as balls speeds, rail cameras and beehives (www.hawkeyeinnovations.co.uk).

Most coaches and players are fans of Hawk-Eye as it has been used in the decision review system since it was introduced in 2011 (www.news.bbc.co.uk).

Some individuals though, do not agree with the use of the decision review system. Former umpire, Dickie Bird said that he thought that it took away the authority of the on field umpires and that the system was more trouble than necessary (www.espncricinfo.com). The Indian cricket team are the main adversaries who do not agree with the decision review system. The BCCI will not agree to use DRS as they believe the system is "not fool proof" (www.theguardian.com). The creator of Hawk-Eye Paul Hawkins said that cricket might have embraced the technology too quickly and that they didn't test the system before using it (www.theguardian.com). Although there are doubters of the Hawk-Eye system it remains an important part of the game for players, coaches and spectators. Players and coaches can now use Hawk-Eye to help them in a variety of ways. Coaches can look back at where players had hit the ball and then work on ways to make the player be able to hit the gaps that he hadn't hit before. Coaches can also use it with bowlers to show them where they are pitching the ball. Spectators are now in a position where they can watch a ball and see definitively if it was going on to hit the stumps. Hawk-Eye has helped enhance the game of cricket as it has improved the reliability of the decisions as the tracking device is known to be 99.9% accurate.

Hot spot

Another innovation used in DRS is Hot Spot. Hot Spot was first used in international cricket in 2006 during the first Ashes test in Australia (www.web.archive.org). Hot Spot works by using infra-red cameras recording the energy transfer from the ball to the bat due to the friction created (www.camerculture.media.mit.edu).

Figure 1

Hot Spot is not used in all countries due to the cost of using the system. Another problem with Hot Spot is that the company who use it only have a limited amount of cameras. If a country wants to have Hot Spot at their ground it costs $6000 Australian dollars per day for two cameras or $10000 to use four cameras on the ground. With the International Cricket Council (ICC) not willing to help fund Hot Spot we may find that it won't be used by any country for much longer (www.espncricinfo.com).

During the 2013 Ashes series in England Hot Spot came under a lot of fire for providing non-accurate results. During the series there were doubtful decisions made by Hot Spot that called into question its reliability. Warren Brennan who is the chief executive of the firm that use Hot Spot in Australia has said that there are problems with the system when the ball hits the gloves and in certain lighting conditions late in the day (www.articles.timesofindia.indiatimes.com). Statistics show that there is a problem with the Hot Spot system as Warren Brennan believes that the system is only "90% to 95%" reliable. There have also been claims that people have been using silicone tape on their bats as a way to "fool" the system. As Hot Spot works by the camera detecting the friction between the bat and ball, the silicone tape can reduce the friction and a mark will not appear on the bat (www.theweek.co.uk).

Although we can see that there are clear problems with Hot Spot, there are still people who support the system. David Saker, England's bowling coach has said that he would welcome the system if it is used in the next Ashes series and that we need to get as many correct decisions as possible as it is good for the game (www.eurosport.yahoo.com).

DECISION REVIEW SYSTEM

The decision review system (DRS) is a system where the on field player can review a decision to the third umpire if they believe the original decision was wrong. DRS is made up of Hawk-Eye, Hot Spot and using microphones in the stumps to record sounds. DRS has improved the game of cricket in relation to spectating the sport. This has happened because when a player refers a decision to the third umpire the wait for a decision creates a buzz and anticipation amongst the spectators in the ground. Recently at the 1st Ashes test match at Trent Bridge in Nottingham, the atmosphere that surrounded the ground when the decision was reviewed was uncanny. From personal experience, DRS creates a talking point amongst fans and does add to the spectacle. DRS has also helped players and umpires as it eradicates any wrong decisions made by umpires which leads to an overall fairer game.

SNICKOMETER

Snickometer was another innovation in the cricket world that was established due to improvements in computing technology. Snickometer was first used in 1999 by Channel 4 in the UK. The system works by having a sensitive microphone in the stumps which is connected to an oscilloscope that measures the sound waves. These sound clips are recorded at the same time as a high speed camera records the ball passing the bat, to see if any contact was made. The picture and sound are played at the same time to produce a picture that has a sound clip to see if the noise came at the correct time (www.topendsports.com). "Snicko" is only used by television broadcasters as a tool to show the spectators if the ball hit the bat. The system cannot be used at the minute as the system takes too long to relay the pictures and requires a technician to overlap the sound and picture which could lead to inconsistencies in the results (www.espncricinfo.com). A real time "Snicko" is being developed at the moment and may be ready for the start of the Ashes test in Australia on the 20th November 2013. The new version of "Snicko" may be able to be used because it is a fully automated system which means that there is no possibility for human error (www.espncricinfo.com).

CONCLUSION

Overall cricket has been renovated by the changes in technology over the years. Hawk-Eye, Hot Spot and the Snickometer would never have been possible without these advancements in technology. Most groups of people are pleased with these improvements and believe that it expands the game as a whole. Spectators are now more involved in the games, as the review system creates an excitement for them. Coaches now have new ways to view data which means that they can improve their coaching and players have more knowledge available to them about the game. There is always going to be people who are against changing a game with new technology but most people have now started to embrace these changes. Enhancements in the game of cricket through the medium of technology show that the sport has progressed immensely in the past thirty years. In years to come, one can foresee steps that cricketing boards will take to endeavour that the game continues to progress at the same rate. This will be done by trialling new methods and extensively testing new enhancements created by lovers of the game.

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The Oculus Rift:

Can Virtual Reality become Reality?

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Have you ever been sat down on your couch or chair, playing a game and wondered "What would it be like if I was actually inside the game?". It's something you can only dream of, being inside this virtual reality where the worries of the real world are blocked out by a beautiful environment full with explosions and action. This article shall go through some of the pros and cons of virtual reality and focus on the Oculus Rift and other products that just might be able to change that Virtual Reality into Reality.

I. History of VR

One of the first Virtual Reality systems that was created was done by Ivan Sutherland in 1968. With the help of his assistant he was able to create a mounted augment reality display system which would then later on be known as a VR helmet. Due to its sheer size and weight, the helmet would have to be suspended by cables for the user to wear it. Due to the fact that this technology was so expensive and technical it was only used for scientific purposes.

As reported by Jacobson, E.(2009) Virtual Reality did not become popular from games, but from films. Films such as Tron in the early 1980's got people imagining what it would be like to be inside a game with realistic interactions with the virtual environment. The same goes with the Matrix in 1999.

The video game market has tried and failed to get VR systems to become mainstream in the past, such as Nintendo's virtual boy, due to technology being too expensive, equipment being too bulky and graphics and game play being subpar. It couldn't produce that sense of immersion that was needed for it to feel like it was reality.

II. The Oculus Rift

The Oculus Rift is one of the first VR systems that will produce a realistic sense of immersion at an affordable price. Thanks to a successful Kickstarter campaign in 2012, where they managed to raise 974% of the original funding price, the Development kit has been released to the public. The Dev kit is not the final product, but is a way for people who are interested in the Oculus Rift to develop their own games or try out other peoples games by downloading them for free from the vast community sharing their content. The Dev kit uses 720p resolution while the final product will be using 1080p.

Fig. 1. The Oculus Rift.

What the Oculus Rift offers that other head mounted displays don't is immersion. This is due to a couple of reasons.

The first major factor would be the Field of View the Oculus rift provides. Most consumer head mounted displays have a FoV of around 30° - 40°, this produces a small image way off into the distance with little else to see. Most games you play on your monitors or TV screens at home use 60° - 90° depending on what games you are playing. The Oculus Rift provides a diagonal view of 110°, this makes it feel like you are not looking into a screen any more. You feel like you are inside the world.

The next factor would be Latency. Again, most consumer head mounted displays would have some form of latency when you move your head. The display will normally follow with some form of time lag. "The Oculus Rift uses gyros, accelerometers and magnetometers to work out the position of your head, and can adjust the display depending on how you tilt or pitch your head. The Oculus Rift measures the head's orientation change 1000 times a second for precise and quick feedback which produces minimal latency." (Cornell, D. 2013)

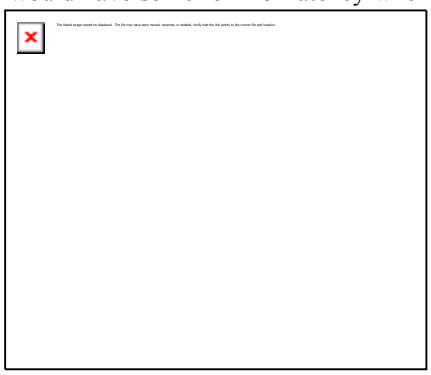

Fig. 2. Example of Tilt, Pitch and Roll

Another factor would be the weight of the Oculus Rift. The entire system weighs around 450g on your head. It is very well balanced and doesn't cause any stress or pain to your neck when wearing it for long periods of time.

III. Games Available on the Oculus Rift

The games that are being developed on the Oculus Rift are mostly being done by the community, where they are coming up with new ideas and ways of making games more immiscible. A lot of games are simulation games of going into space and exploring, but some developers are taking older games and tweaking them so they are Oculus Rift compatible. Some examples of this would include Doom 3 BFG edition, Team Fortress 2, Half Life 2, Hawken and many other games. There

are some games that are being built specificity with the Oculus Rift in mind such as Eve: Valkyrie that will allow you to become the pilot of your very own space ship and will include combat and exploration.

Currently there is around 20 games available on the Oculus Rift. The developments for games on the Oculus Rift is expanding greatly with more epic titles to come in the future.

Fig. 3. Eve: Valkyrie in Action

IV. Social issues and Health risks

Now comes some of the downsides to the Oculus Rift.

Social issues will always be linked with games as in some people's eyes, time spent playing games is time spent not outside playing with friends and socialising. With the Oculus Rift, this could be seen to have a worse effect on the younger audiences. Normally, if a child gets addicted to gaming at a young age, they don't spend enough time interacting with other children and do not develop the social skills needed later on in life. With the Oculus Rift being more addictive than regular games due to its immersion, and can be seen as a way of escaping reality, a whole generation could be lost because they would rather spend time in the virtual world rather than the real one. "People who are addicted to gaming encounter situations like this all the time; situations in which they have to choose whether to interact with the real world or continue living in their virtual one. Sadly, the real world rarely wins. (Video Game Addiction, 2013)

The Oculus Rift won't be the cause of any serious illnesses or the cause of any accidents (As long as you sit down while using it), but there are still some problems that need discussing. The main problem and has been a problem with VR systems in the past is that the system can cause the user to feel nauseous. This is due to motion sickness and how the brain reacts to latency. With the brain not being used to how the Oculus Rift works, it may cause motion sickness when moving around at fast speeds inside games such as racing games or even being the scout in TF2. The game tries to trick you into feeling like you are moving quickly while the brain and inner ear refuse to believe it. This results in a physical reaction, e.g. stomach cramps or just feeling sick.

Latency can also cause discomfort as it causes you to experience disorientation as frames slow down and then speed up again to try to catch up to where the game should be. It causes disbelief and breaks the immersion. The developers have tried to tackle this issue using "Predictive Tracking" which involves the game giving audio or visual clues to where something is happening and can then keep the visual to a standard where no motion blur occurs. An example used by Cornell, D. (2013), if the game is about to have something important happen to the left, there might be a visual or audio clue in that direction. A sensor in the headset may signal that the clue was successful and turn the viewpoint in the direction the game is attempting to grab your attention.

V. The Future

With the success of the Oculus Rift's Kickstarter campaign, there are many other products that are now being made to enhance the experience, to push immersion to the next level. The first gadget that has been made to work with the Oculus Rift in mind would be the Razer Hydra.

The Razer Hydra uses dual analogue stick that can be detected by a glowing desk orb. The dual analogue sticks allow you to mimic precise hand movements in first person games. e.g. Picking up objects and throwing them, such as a ball.

The next gadget to have been made is the Mag II motion controller. This is pretty much a gun powered by gyroscopes to provide an accurate way of aiming realistically in a first person shooter. The gyroscopes help track positioning and aim of the gun, this can be output into the game to make it look and feel like you are holding and shooting a real gun.

The last gadget would be the Virtuix Omni. Thanks to a successful Kickstarter campaign after the Oculus Rift, they were able to produce a 360° treadmill which can be used to control your movements inside a game by actually walking around.

With these products used with the Oculus Rift, 2 out of your 5 senses (Sight and Touch) will be completely fooled into thinking that this virtual reality is actually a reality. With hearing being pretty easy to conquer using ambient sound effects and a good headset, that just leaves smell and taste to be fooled. Sadly the technology to create smells and tastes out of thin air isn't quite up to scratch so having 3 senses fooled is most likely the closest thing we will ever experience in the near future. With news of the Consumer version of the Oculus Rift (Which uses 1080p resolution) being "months not years away" said by the Oculus Rift CEO Brendan Iribe, the future is looking very interesting indeed. How will the upgrade from 720p resolution to 1080p translate to the eyes of the users? Only time can tell.

The Article shall end on a quote from when Smith, G. (2013) from PC Gamer asked Ed Stern (from Splash Damage) about where gaming was going in the next 20 years.

"An Oculus Rift, but with smells and textures; AI-enabled lemon-scented ergonomic wrist-rests that lick your face when you do well. Heat sinks that knit handkerchiefs. RAM made of meat that makes more RAM.

Not all of this will happen first on PC. But it'll all end up on PC, open-sourced (one way or another), shareable and explorable. That's rather exciting."

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The Impact of Computers on Everyday Life

Has the development of mobile technology changed the way people interact?

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***Abstract*— Mobile devices have been one of the fastest developing computer technologies over the last 40 years. The impact of allowing people to interact whilst remaining in isolation can be both good and bad for society. This article will focus on what impact, good or bad, mobile technology has had on society.**

***Index Terms*—Mobile, technology, communication, society.**

I. Introduction

Despite the first true mobile phone being created in 1973 it wasn't until the late 1990s that mobile phones were getting into the hands of the public. 1997 saw the release of the Nokia 6110, a small pocket-able mobile phone which was affordable to be bought by the average working class person. With each new mobile phone release more and more people were being able to afford a mobile device. Research done by Ofcom (2013), the UK's communications regulator, states that 94% of adults owned or used a mobile phone in 2012, compared to just half of adults in 2000.

To consider if the way people interact has changed due to the increasing influence of mobile devices social norms from before and after the introduction of mobile phones needs to be considered. The rest of the article will focus on comparing changes to the social norm and linking them to different advances in mobile technology.

Before the mobile

The first commercial mobile was released in the 1990s, so how did people interact and socialise in the 1980s? There was no Facebook or Twitter, no texting or wireless telephones available. The obvious answer is "they went out and met people." This is true, but people still go out and meet friends/colleagues today. The difference is how people planned these meet-ups, or even, didn't plan them. In 1980 people would have to either pre-plan a meet-up with a group of friends or just turn up to people' houses. Businesses largely operated in a single building, allowing for meetings to be pre-scheduled in certain rooms. Dating in the 1980s was largely done via going out to dances and clubs/bars to meet new people.

Socialising with people was harder the further the person was in the 1980s, talking to somebody who did not live in the same town as you was done via a landline telephone. Speaking with multiple people was not possible. In general, socialising in the 1980s was almost entirely face to face, whether it be going to a dance, a meeting or just talking to friends.

Introduction of the mobile

Mobile phones have changed a lot over the years; the original brick-like phones have gone through many different stages. Over the past 30 years there have been 3 or 4 different mobile shapes/form factors. The earliest mobile form factor was the 'brick'; later mobile phones introduced the 'flip' and 'swivel' form factor. Modern touchscreen mobiles returned to the original brick form factor but with just a large screen on the front instead of a keyboard.

The earliest mobile phones introduced text messaging, a message service which could send small messages to other mobiles almost instantly. With text messages friends could chat any time of the day, organise meet-ups or just have general banter. Text messages weren't so prominent during the early stages of mobile phones, but when the target audience for the mobile phone lowered into the teenage years. Being able to talk to friends all of time meant that people may have been less inclined to meet up with friends regularly.

Mobile phones uses remained largely the same for a while until faster mobile communications were developed and used. 3rd generation mobile standards (3g) was introduced to mobile phones in Japan on October of 2001 although mass market penetration was a while later, 3g arrived in Britain in 2003. 3g allowed for much faster downloads and uploads wirelessly from mobile devices. HSDPA (High Speed Downlink Packet Access) allows for connections of up to 42.2 mega-bits per second. This faster standard for mobile phones paved the way to a new generation of mobiles, smartphones.

Smartphones

One of the most prominent smartphones to be introduced was the Apple IPhone, the IPhone was more of a computer than regular mobile phones. The IPhone used a touchscreen interface and applications (apps) to run different utilities. The different apps ranged from phone like functions to various games to office and business apps. With the growing popularity of social networking sites like MySpace and

Facebook, and the access of online services anywhere, people could now talk to anybody at all times.

One such use of new smartphone was the ability to have group calls with multiple other people. Being able to talk and have a conversation with multiple other people at once changed how business employees interact. Meetings could now be held over the phone which allowed for much more freedom to be given to employers. Working at home and still being able to talk to others in an office was made a possibility.

With 94% of adults having smartphones in 2012 it's obvious that smartphones have become an integral part of a person's daily life. Research done by SOASTA (Fox 2013) shows that 84% of people use an app on their smartphone during their morning routine, 67% use an E-mail application and 45% of people check the weather.

In 2013 a report found that 60% of people use social networking apps on their smartphone. (Eddy 2013)

The ability to talk to anybody at any time using a smartphone means that people would speak face to face less than in the 1980s. Research by PewInternet (2013) shows us that the typical teenager on Facebook has an average of 300 friends which is much more than teenagers would have had in the 1980s. In retrospect, Robin Dunbar, an evolutionary anthropologist says that people cannot have more than 150 friends at once due to our brains not being big enough to cope. (Krotoski 2010)

Social change

The social change which mobile phones have brought upon people has affected the teenage population the most. Teenagers are no longer going out all of the time to see their friends or to meet new people; they no longer need to go out to meet new people. Instead, teenagers are spending more time on the internet either on their phones or on a computer or laptop using social networks to talk and meet people. Some argue that social networks aren't social at all and are actually causing shyness in teenagers. In 2010 studies by psychologists found that shyness correlated with the amount of time spent online for 100 first year college students. (Mckinney 2010) Another study found that those who access Facebook without contributing were more likely to feel worse off after browsing. This is due to seeing friends (or rather, Facebook friends) enjoying a seemingly happy life and the user will become envious of this. (Hall 2013) In 2012 research by PewGlobal, shows that on average more than 50% of social networking takes place on mobile devices. This statistic is most likely on the rise.

Social networks on mobile devices are not the only thing causing a change in the way people interact in society. Longer battery life and ease of music playback means that people can listen to music when alone at all times of the day, completely blocking out any exterior sounds. When this happens people are essentially blocking out any social interactions they may otherwise have had.

In a study by Scott Campbell it was found that people who frequently talk on mobile phones were less likely to communicate in public. (Goscicki 2011) In the same study, it was also found that mobile users who used their devices for news applications were more likely to engage with people around them, contradicting a popular belief that mobile phones is making people less social.

Conclusion

It's clear that mobiles have had an impact on how people interact with each other. Evidence shows that people are interacting with a wider range of people, social networks online allow for worldwide friendships to happen. With people having an average of 300 friends and Dunbar's number of maximum friends one person can have at a time being 150; it goes to show that people are not actually making friends with about half of the people they add on social networks.

With more people having mobiles than ever before, people in general are spending more time using their phone and isolating themselves from others, who are also doing the same. Whether or not this is a good or bad thing is to be argued, some say that mobiles have helped people socialise on a larger scale than ever before, meeting new people from other cities that they would not have met in the 1980s. On the other hand people are interacting less with the people closer to them, in the same town or club who they may have spoken to in the 1980s.

It seems that mobile phones have simply expanded our range of interaction with other people. We still use mobile phones to call and text our parents and family, and we still have close friends which we contact regularly and meet up with in person a lot. But the ability to meet new people while walking alone in town or a bar seems to be affected most by having a mobile phone. Instead of talking to strangers while alone, we can instead talk to our family, or friends. In fact, we are never alone when carrying a mobile phone around.

The impacts of never being alone while carrying a mobile phone could be the cause of increased anxiety in teenagers and lead to depression, along with the possibility of people feeling worse off after looking at other people's Facebook lives, mobile phones may be having a negative impact on our lives also. Ultimately it's up to the person who uses the mobile phone to think about how they use their mobile phone, and whether or not it's having a good or bad impact on their social life.

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Cybercrime

The Impact of Cybercrime on Society

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***Abstract* – This article will discuss the impact that cybercrime has on our lives, how it could develop in the future and whether it can be considered good or bad overall.**

I. What Is Cybercrime?

"The single biggest existential threat that's out there, I think, is cyber." – Michael Mullen, 17th Chairman of the Joint Chiefs of Staff, 2011 (Weisgerber, M., 2011).

This quote provides a short opinion on cybercrime. Put simply, cybercrime is any form of illegal activity involving a computer as its primary means of commission (Rouse, M., 2010). Cybercrime typically involves theft of information, such as bank account details and email addresses, that computer users hold dear in order for criminals to gain access to various personal goods. Due to the prominence of computers in the modern world cybercrime has now become more common and threatening than ever before. There's no denying that criminal activity is serious business, but have you ever asked yourself "How did cybercrime first begin" or "How does it affect my life"? That's exactly what this article is all about.

II. A Brief History

The origin of cybercrime is up for debate as there is no definitive evidence as to when cybercriminals first began operating, but there is a recognised beginning of 'hacking'. Hacking is the activity of accessing data without permission and is known to have commenced in the 1960s when United States citizens learned to hack into telephone systems. These citizens were primarily hacking in order to expand their own knowledge out of curiosity, but hacking developed notoriety in the 1970s after a particularly skilled hacker named John Draper was arrested. Draper then taught his secrets to criminals he met in prison who began hacking illegally for personal gain (Warren, P. & Streeter, M., 2013, p.12 – 13).

In the early 1980s the world also saw the genesis of computer viruses. A virus is a piece of software created with the intention of harming or stealing data on a computer. One of the earliest computer viruses was the Elk Cloner virus which was created as a joke to merely annoy others (Warren, P. & Streeter, M., 2013, p.25), (Rouse, M., 2005). However, viruses soon became recognised as a serious offence. In 1988 university student Robert Tappan Morris found a weakness in the security system used by the communication networks at the time and released a virus into the network to test the vulnerability. The code went haywire and unexpectedly spread across several local networks, infecting around 6000 computers (Warren, P. & Streeter, M., 2013, p.26 - 30). This incident was accidental, but since then viruses have become tools of criminals that intentionally manufacture them for evil in an attempt to obtain personal data. This brings us to the present where these initially small issues have spiralled far out of control.

III. Impact On Businesses

Cybercrime has taken its toll on many businesses over the years, with a common target being banks. By gaining access to customer accounts criminals can get away with gargantuan amounts of money. For example, in September of 2013 a gang of hackers took control of the computer network at a branch of Barclays and managed to steal £1.3 million from bank customers. Although the gang in question was caught some stolen money was not recovered, which shows how difficult it can be to recover from an attack (Davenport, J., 2013). Other banks have resorted to taking precautions against issues like this. Early in 2013 the HSBC hired former MI5 chief Sir Jonathan Evans as a director of the bank's board in the hopes that he could help them to improve their security. Douglas Flint, the chairman of HSBC, said that Evans' experience would be of "considerable value to the Board" (Cameron, G., 2013). The desire for the help of such a high-profile expert in the field shows how serious the issue is. Such expertise and experience would not be required for a lesser problem, so HSBC's actions make it clear that banks need all the help they can get in order to keep cybercriminals at bay.

Medical institutions have also been hit hard by cybercrime. There have been several large-scale hacking incidents regarding hospitals, with the largest of these incidents occurring in 2011 in Virginia in which the institution of TRICARE Management Activity (TMA) had their computers breached and 4,901,432 individuals were affected by data loss (Schultz, D., 2012). To make matters worse this kind of event isn't uncommon. Former executive eWeek editor Lisa Vaas reported in 2013 that 94% of hospitals in the United States have suffered at least one security breach in recent years according to a study from the Ponemon Institute (Vaas, L., 2013). Ponemon is an organization that regularly conducts research on cybercrime and security, which makes them a very reliable source and backs up their evidence on the amount of affected institutions. The sheer numbers of affected patients show how serious the situation is. Without medical information on how to treat patients millions of lives could be endangered, so hacking can potentially lead to passive murder.

IV. Impact On Individuals

There is a reason that cybercrime is running rampant: Vulnerability. Nobody is 100% safe from cybercrime and the knowledge of this is constantly changing society. Many individuals have become afraid of using computers because of cybercrime. In fact, according to a survey conducted in 2012 89% of European citizens have admitted to being afraid of giving away information over the internet, with 12% already having fallen victim to malevolent schemes (Saran, C., 2012). But why are so many individuals afraid of cybercrime? How does it actually affect them?

One aspect of crime that typically affects individuals is cyber-bullying in which abuse is conducted through cyberspace. Cyber-bullying usually involves pointlessly hateful comments being targeted towards random bystanders. Behind a keyboard bullies can remain anonymous, giving them a sense of power and the desire to continue attacking others. Ignoring these comments may seem like an obvious solution, but the effects can actually be very serious. There are many negative effects associated with cyber-bullying, such as low self-esteem and severe depression, but there have also been many extreme cases of cyber-bullying victims committing suicide. A study conducted in 2005 showed that 20% of United States middle school students had considered suicide due to cyber-bullying while another 19% admitted to actually attempting it (Hinduja, S. & Patchin, J., 2005, P.1).

Another way that cybercrime affects people is through identity theft, typically conducted by 'phishing'. Phishing is the activity of obtaining someone else's credentials for personal use and is usually committed using emails that trick people into giving up information, with these scams making up more than 70% of all emails sent over the internet (Wagner, K., 2013). If hackers gain access to any personal accounts they can commit offences and avoid punishment. A hacker with access to someone's financial life can freely compile huge credit card bills and put victims in debt. Criminals can also abuse social security to gain medical benefits and victims can be blamed for a crime that a criminal commits under their name. Even if a victim is recognised as not being responsible for a crime their criminal record can still be affected, leading to the inability to secure a job. The worst part of identity theft is the fact that it can take time before a victim even realises that it's happening. By this point it could be too late to prevent any serious damage and a victim's life would be ruined (www.yourscoreandmore.com, 2013).

V. Catching Cybercriminals

You may think that an obvious solution to cybercrime is much like that of the real world: Simply track a cybercriminal down and have them arrested. However, it's not nearly that easy. Chasing a criminal through cyberspace is actually a herculean task.

Meir Hayoun, a Police Superintendent in Israel, has previously explained why cybercriminals are hard to combat. If the police find a source of criminal activity it can be difficult to determine if the user is actually to blame. There's always the possibility that their computer was hacked and used as a pawn, so much investigation is needed. Even if a criminal is caught they must be put on trial first and explaining the situation to a judge can be problematic if they are inexperienced with cybercrime. Plus, in order to prosecute a criminal the police must explain how they were caught. This provides a warning to other criminals who can then evade the police by avoiding making the mistakes that others have made. With every case that's solved the problem continues to grow more complex. Hayoun described the whole process as follows: "As soon as they know how we work, they develop methods to achieve their goals in other ways, and we have to start the next investigation from scratch. It's a cat-and-mouse game, in which we are constantly playing catch-up" (Shamah, D., 2013). This quote helps to summarise why catching criminals is troublesome and makes it clear that cybercrime is difficult to combat. The information that is presented can also be considered accurate as Hayoun works with the police and will have experience in order to provide a reliable report. Overall, the information provided on catching cybercriminals is particularly reliable thanks to Hayoun's expertise.

VI. The Future of Cybercrime

So far we've seen how cybercrime began, with the rise of hackers and viruses, as well as how cybercrime affects us. However, one question remains: What does the future hold? What could cybercrime have in store for society over the coming years?

The way that people are harmed by cybercrime could change drastically. At the moment cybercrime affects us only passively as the goal of criminals is not necessarily human pain but this situation could change for the worse. For example, cyber security expert Winn Schwartau predicts that future humans could have chips embedded in their anatomy to allow them to send texts through thought and such. If hackers were to interfere with these chips they could cause serious damage to the humans they would be wired into (Brandon, J., 2013). This theory further proves how cybercrime can lead to suffering and how devastating it can be. Being an expert in the field Schwartau will no doubt have a good idea as to what to expect in the future of cybercrime, so this theory is not only frightening but also plausible as it is from a reliable source.

Cybercrime could also merge into international warfare. According to Sean Bodmer, a chief researcher for CounterTack Endpoint Security, countries that are running their infrastructures (technical connections) over large communication networks such as the internet could be putting themselves in danger. These infrastructures hold valuable data, such as profiles on criminals and tax collection information, which makes them prime targets for other countries waging war. Other potential large-scale attacks could come in the form of power loss for entire areas. Hackers could learn to hack into power grids (the electrical distribution system for a large area) and countless citizens would lose the ability to make use of various appliances that we rely on, making life a struggle (Brandon, J., 2013). As a chief researcher of cyber security it is very likely that Bodmer's ideas are reasonable and could possibly occur in real life. Therefore, Bodmer is a credible source of information and his ideas should be taken into account.

VII. Conclusion

In conclusion, cybercrime is undoubtedly a monstrous activity. It harms bystanders in extreme ways and is difficult to recover from. Since its genesis it has grown far beyond anyone's expectations. To make matters worse one cannot just avoid computer use altogether as a means of evasion as technology is almost a necessity for modern survival. When survival is threatened it becomes evident how horrifying cybercrime truly is.

However, cybercrime may not be as entirely awful as it seems as it does have redeeming factors. Hacking, for example, can potentially be used for good. In the 1990s Brad Willman used a virus to catch many paedophiles that were holding child-porn on their computers. Willman's actions were illegal, but he felt that the ends justified the means (Gohring, N., 2007). This shows that hacking can be ethical in a way. In fact, many large organisations such as Northumbria University encourage ethical hacking to help identify security weaknesses (www.northumbria.ac.uk, 2013). Even the intentionally bad parts of cybercrime can have positive effects. Viruses and hackers are keeping large security companies in business. Without cybercrime many people would be out of a job.

Cybercrime is definitely a bad thing if someone wants it to be so. It's earned its notoriety, but it's possible to use illegal activity for a good cause or for it to provide a living for others. Whether cybercrime actually impacts society for the worse is all up to you.

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The Impact on Computers on Everyday Life

Communication through the median of the internet

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I. Introduction

There can be little argument to the fact that computers and the internet has changed so many of our lives and how and most importantly who we communicate with; the inventor of the World Wide Web Sir Time Berners-Lee said in 2009 "The Web does not just connect machines, it connects people". There are now many ways to communicate with people all over the globe using the World Wide Web, this can be done through social networking, videos and video calling; which means we are slowly seeing the art of sitting down with a pen and paper to send a message slowing becoming obsolete.

Social Networking

Social Networking has been a great contributor to the art of linking people together with people from all over the world now able to share their lives with one another. This opens so many avenues for people, with new friendships, interests and cultures being just some of the things people get from this. In addition to this social networks are a great example of free speech it allows people to express their views and opinions to any topic and allows the people who are not that confident with speaking to large audiences have their views read by potentially thousands or millions of people.

Social Networking is not just good for the individual they are also good for businesses, like never before businesses can interact with their customers all over the world and reach markets which would have seemed unlikely just a few decades ago. Businesses can tell potential customers about their new promotions and advertise their products; some social networking sites allow preferences to be made to who they want their advertisement to be displayed to, which further helps businesses target their preferred audience.

Businesses and Governments can also use social media to keep people up to date on important things, such as train operators telling people whether their train on time, late or cancelled. More importantly social media allows organisations to inform people of upcoming or on-going events of importance which could affect them; a great example of this is a weather warning which tells people about incoming storms and adverse weather so they can take precautions. This can truly save lives, by having warning messages sent out by organisations or Governments this can limit the damage to human life. Social media also allows discussions with other people including people of authority; for example many politicians, music stars and comedians have social media and this allows people to see their opinions on new subjects and give them a chance to speak to their idols.

Social Networking isn't all good though; there are many things which keep people on edge when using social media. Firstly privacy is a huge issue of social network sites, although sites have privacy settings some people argue that they are not comprehensive enough and leave people vulnerable to many people seeing their accounts. In addition to this businesses which advertise on the sites can target certain groups of people which means you could be targeted because of what you have clicked on and looked at; this raises the problem of privacy and whether the website should be noting down this information. On the contrary this can be great for individuals also as they can get their favourite businesses and offers displayed at the side of the webpage; also they may see new businesses which they find they are interested with.

Another disadvantage of social media is cyber bullying, for years people have been using the platform to have arguments with each other as well as using the platform to make fun of people for many different reasons including their looks and lifestyle; when sitting behind a computer, people cannot as clearly see the effect that their words are having on the individuals they are attacking; this has, in the past led to providers taking a serious look on their policy towards threatening behaviour, but Facebook have in the past relaxed their privacy settings. Social media can also show popular you are, and as a child this can be quite degrading to see someone that has a lot more followers than you and a lot more retweets.

Video Calls

There have been advancements over the past few decades have been video calls, these have enhanced our experience in talking to each other. Before the invention of video calling there weren't many things which would allow the callers to feel so intimately connected, there were only mobile phone calls which limited the scope of what could be done; now several people can talk simultaneously in far places and it can have the same effect as a face-to-face encounter.

Video calls can be used for a range of reasons this includes by deaf people so they can use it to communicate via a phone independently, and they can now speak using sign language when before they would have only been able to send a text

message. Another great use of video calling is it allows people that are all over the world to connect to each other and see their faces; so even if a loved one is away on a business trip they can still feel a little bit together by seeing each other.

Another great use for video calling is in businesses; companies can use this method of communication between each branch of their company and therefore have daily meeting without the expense of traveling long distances. In addition to this they can also show their business partners' products or graphs over the phone which before they would not have been able to do in a normal phone call.

A disadvantage of this is if a person has a weak internet connection then the whole call and its effectiveness would be diminished and either individual calls would have to take place which loses the impact of many people at once or people would have to meet up in person, adding to expense and time travelling.

VIDEO GAMES CONSOLE

Video game consoles have been a great leap forward for communication not only in gaming but also for general use. Now users of game consoles can log on and talk to friends, teammates and opponents all over the world with little delay and great clarity.

An advantage of this is that people can now interact with their friends while playing on their console which improves their overall experience of playing on their devise. In addition to this they can connect with people all around the world and make friendships with common interests at heart.

A disadvantage of this is the use of this for negative reasons; for example people use it to "trash talk" other people; although it creates a sense of competitiveness, it also creates a lot of hostility during in game situations which many people may not want to be subjected to.

Online gaming can be argued to be a cause of less face to face communication with each other as people would now prefer to just talk over their games console; whether this has improved communication is an interesting thing and it could be argued that it has only made people less able to speak in social interactions as they are used to just talking behind a microphone and TV. Also there are claims that games such as GTA V have a negative effect on people that play video games and can lead them to do violent acts.

BLOGS

Another great form of speech on the internet is Blogs; they can range from people's opinions on the latest fashion trend to an opinion on a football game at the weekend. They allow people to express their view to their friends and the internet on a subject of their choice. There are a range of platforms where video calls can be made now; these include on tablets where 3G can be used to make calls.

This is an example of what someone can use to talk on a games console.

The free range which blogs allow create a sense of communication which can be considered unique, despite some social networking sites allowing people to have unlimited characters, Blogs are viewed by people sometimes looking for an opinion on a subject and therefore the Blogs are viewed a lot more openly. This has changed communication as people now can portray their opinion through large pieces of text and it can be viewed by thousands of people, this can be a very attractive thought for people who are opinionated and would like to share their view. Also Blogs allow people who aren't that confident to have a voice, a voice on a topic which they find interesting and sometimes personal towards.

Blogs are usually viewed by people that are interested in the topic they have searched for and therefore it connects many people together who have an opinion on the same topic, this can be great to find people with similar interests to you and also people that can provide you with a sense of reasoning where you may not share the same view but you become open to new ideas and other peoples opinion on the topic.

A disadvantage of Blogs are that they can be made very provocatively or as they are just text on a page they can be misconstrued easily and therefore people can be very hostile towards the writer if there is a comments section.

CONCLUSION

The medians that are spoke about during this article have changed the way people can communicate with each other, people can now stay in touch almost instantly with friends and family on the other side of the globe. Over the past few decades changes in internet speeds and the more comprehensive platforms which can be used, communication has been transformed and now instead of sitting for days to receive reply's to important questions they can now be done immediately and with more clarity and a personal touch. Whether changes in communication has improved clarity can be argued; now there are many ways of talking to one another with varying amounts of preferences, on the contrary it can be argued that with the text based medians that it can just create uncertainties of the vein of which it has been written for example it could be said sarcastically, seriously or jokingly, but by using a text method it is not clear. This has and will continue to affect us all, changing the way we communicate and express our views; it can also leave us open to negative and threatening behaviour which need to be combatted by the companies providing the platforms and also by schools, colleges and the media to educate people that the words that they type behind a computer do have effects on people in real life.

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A History on the Advancement of Games Consoles

And their respective Games

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***Abstract* — computer games consoles, i.e. their inner workings or hardware are forever improving as witnessed throughout the past few years of technological advancements in regards to gaming technology. As are the games for these new advanced technologies, developers are continually improving how the games can utilize the technologies hardware to better the performance etc… Within this article I will be looking into these advancements over the years and how these improvements are impacting on society in general.**

I. Introduction

Within this article I'll be talking about the technological advancements that computer games technologies have made over the years, this will range from things such as the first released home computer games entertainment system, the Magnavox Odyssey released in 1972 and the first hit computer game Atari's Pong spanning up to today's modern consoles such as the Xbox One, the PS4 and their respective games.

After I have spoken about the advancements of these said technologies I will give an overview of the effects they're having on society in general, i.e. how computer games console advancements can aide in the advancements of other technologies and how computer games can have an adverse effect on children

The Advancement of games consoles

Games consoles have been continually advancing in terms of development since their early conceptualisation; this goes back to the mid-1960s, the US military wanted some sort of tool or device to develop the reflexes of military personnel. This need seeded the idea of video games and the concept of a 'television gaming apparatus' came up. This notion later led Ralph Baer an employee of a US defence contractor, Sanders Associates to manufacturer a device that was capable of playing said games. This device came with two games, a chase game and a video tennis game, where these games are considered incredibly basic today, in their respective time of creation these games were considered modern marvels of human creation and helped to lay down the necessary framework for the creation of today's gaming consoles, and computer games.

A few years down the line of the initial conceptualisation of video games systems the very first commercial home gaming system was created and released to the market for the entire world to then purchase. This system was known as the Magnavox Odyssey, where this games system was pioneering at the time and would have surely met to great success, the product ultimately failed due to poor marketing and was eventually overshadowed by the release of Atari's Pong. The overwhelming reception to the two of these products helped to affirm the public's interest in gaming systems, thus pushing the manufacturers to strive for more ways in which they could develop their consoles and console specific games.

More so down the line of the advancements of computer games consoles we reach what is known as 'the golden age' of gaming. Due to the efforts of manufacturers and the public's inherent need for better graphics and higher quality systems a pinnacle was reached, we were now capable of programming games, allowing us to create higher quality console specific games. Manufacturers across the globe were now releasing consoles, such as, the Bally Professional Arcade, the Magnavox Odyssey2, the Atari 2600, the Vectrex and the Mattel Intellivision. These consoles were very successful and the public were relishing their new systems.

After the apparent 'golden age' of gaming came the 'dark age' due to current technological inadequacies gaming systems could no longer be advanced any further. And the sales of video games also saw a huge decrease as the lack of advancements in hardware left the development of games at a standstill. Multiple games development companies also had to drop out of the market, as at the time there were far too many competitors. There was a glimmer of hope during this 'dark age' though, that was the Colecovision and the Atari 5200, which led onto the later development of more advanced Atari systems.

Out of the 'dark age' and into a newly birthed period of gaming came new systems that were driven by two technological innovations: lower-cost memory chips and higher-power 8-bit microprocessors. These new assets allowed manufacturers to develop consoles and their respective games to a much higher quality. This generation saw the release of multiple of the greats that are still well known to this very day, for example, the Nintendo Entertainment System, the Atari 7800, the Sega Master System and later released was the Nintendo Gameboy, which holds the title of being the all-time best-selling video game system in the world.

A few more years down the line we reach the release of computer games systems featuring 16-bit processors and much more graphically advanced games. With this new hardware at hand developers of games could then have much more freedom with the creation of their games, i.e. games could be much more complex compared to prior games, such as, the Sonic the Hedgehog series released for the Sega Megadrive in 1991. This

brief period was dominated by Sega and Nintendo each becoming household names.

Along came an era of gaming which focused on high-powered microprocessors and dedicated graphics processors, allowing for systems to house games with realistic graphics and intricate game play. The systems of this age often outperformed the much more expensive personal computers of the time. Sega Saturn, Sony PlayStation and the Nintendo 64 were amongst the big names to have been released. Many developers were releasing games for these consoles and games were much more immersive and graphic oriented unlike other generations.

Now we reach the present, we've greatly advanced from the first model of the Sony PlayStation, and we are continually striving to improve the overall reliability of the systems we use today, for example, improving the level of the graphics, the performance of said system and the overall gameplay. With all in mind our hardware has improved greatly from the time of the first games systems, we have much more room to create our game now than we did back in the day of Pong etc… We have multiple different methods to create our games i.e. different programming languages; we have faster processors and much more available RAM to work with within our systems. The technological advancements of today may not have been made if it wasn't for the development of computer games consoles continually pushing manufacturers to strive for higher quality hardware.

THE ADVANCEMENT OF COMPUTER GAMES

Computer games have developed by the side of their respective consoles; initially we were limited to basic systems that could only display very limiting graphics, such as Pong. But later due to continual upgrades to the gaming systems hardware we were able to have more freedom with the creation of our games in regards to graphics and the complexities of the games themselves, i.e. the story, gameplay and game mechanics, shaders, time cycles, AI etc… The below image demonstrates the improvements we have made in graphics from the first initial games to modern gaming graphics, you can clearly see how we have progressed from traditional vector graphics, to 8 bit graphics to finally reach the 3D graphics we use today. This improvement in graphics would never have been reached if it wasn't for the standard of hardware we have today, so if computer games consoles were to have not been pursued in the 1960's then 3D graphics would have likely reached its current level at a much later date in time.

Impact on society

Through the development of computer games systems we have been able to create things such as simulators that allow people to then gain experience in things that would ordinarily be too dangerous to have test runs and such, for example, the army have simulators for their pilots to allow them to test out fighter jets prior to actually flying the plane itself. These simulators would have not been entirely possible if it wasn't for today's modern gaming systems as they allow you to fully immerse yourself within them due to their realistic environments, graphics and overall system i.e. the pad can be made into a steering wheel adding to the realism of the simulator.

Games consoles have also impacted society in how they drove the advancement of technology for a portion of time; there has always been a huge consumer base for computer games consoles and computer games, and when this consumer base was first recognized it helped to push forward the development of new hardware as there were more people funding the endeavour and there was more incentive for manufacturers to develop new hardware etc… as that was what the consumer wanted, better graphics etc… So if computer games consoles had initially been pitched then technology as we know it may not be at its current level of technological advancement. In retrospect of the above in modern times computer games consoles are the cause of a standstill in terms of technological advancement as more and more people are settling for consoles as opposed to PCs and consoles being home entertainment systems lack the upgradability that a PC does limiting its hardware, meaning in turn that computer games developers then have to cater to the consoles hardware. Games then released for the console are of much lower quality than they could be, if they were to have the most recent hardware.

Computer games have impacted society in multiple ways, but primarily computer games consoles and their games in the present focus on sociability. This aspect is good as it allows for people to socialise with one and other from across the globe, or play with friends etc… But whereas this may be viewed as good, but in large doses this may have an adverse effect on children. For example, children growing up with computer games systems are likely to shut themselves off from the outside world due to playing online with friends rather than playing outdoors and interacting with each other through normal means. This severely stunts a child's growth from a social standpoint, and may lead to the child having a warped outlook of reality, social conventions may puzzle them and in general face to face socialisation may be an arduous or frightening task for them. Computer games are a great piece of work but as recommended they should only be played in short bursts, shutting yourself off from the outside world and gaming for prolonged amounts of time should be avoided at all times.

Figure 1: The Advancement of videogames (Source: Ryan Somma 2012)

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Computer Games Entertainment

The Effects on Games, Gamers and the Economy

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***Abstract*—The effects on the computer games industry is often overlooked, the gamers and games have changed dramatically over the last 30 years, and so is the economic stability.**

I. Introduction

The public perception, economic state and the actual type and age of gamers has greatly changed over the last twenty years, and appears to be undergoing massive change today.

Gaming has become increasingly more relevant in pop culture, to the extent where people from all age groups recognise mascot such as Super Mario, buy video game relevant merchandise and play games in the home and outside. Computer games are a powerful source of entertainment, grossing more money than film the last year; this makes the industry investable, profitable and an exciting prospective career path. Non-gamers are now more receptive to playing casual games, for example a title like Wii Sports. This market has managed to be a very important part of this console generation. The rise of mobile gaming is also a relevant part of the industry and our lives today, entertaining us whilst we're on the move. This article explores how each of these factors is driving the industry through an unpredictable course, but keeping the customer very entertained.

The 'Casual' Gamer

The general perception of gamers in the 80s and onwards was that gaming was exclusionary. The coin operated arcades often were dimly lighted and looked rather dingy. This perception has often plagued gaming and the gamers themselves. This view has been carried for years, mainly by non-gamers. However, in recent years there has been a huge change in the general view of gaming, primarily due to the introduction of 'casual' gaming. Casual games are far more welcoming to larger groups to play together, and this completely suits the current sitting room experience introduced by games consoles. The huge increase in the popularity in causal gaming was in 2006 indicated by the release of the Nintendo Wii. The Nintendo console was primarily controlled through motion technology. This created a far more interactive experience for the user, for 'hardcore' or casual gamers alike. The Nintendo Wii appealed to both types of gamer, and its immense popularity was shown best by its sales figures, in which just over 100 million consoles have been sold worldwide as of 30th September 2013. (Nintendo Co., Ltd, 2013)

The Nintendo Wii is also popular for the opportunity to gain physical benefits because to its motion control and Wii Fit accessory. Research held within Goldsmiths University of London suggests that the motion controls can help children that suffer with DCD (developmental co-ordination disorder). (Daily Mail, 2013) The motion controls used by the console are also beneficial for users that are trying to lose weight. Studies were held at the University of Derby to discover if the Nintendo Wii could help tackle child obesity. Likewise, Dr Michael Duncan of the University of Derby presents the point that "there is a lot of discussion that video games are bad for your health and we hope that this research will help determine if playing on this equipment could actually have physical benefits for children". (University of Derby, 2008) The Wii Fit accessory has also brought people whom might have never played computer games extensively to gaming. Gym and fitness fanatics have heavily praised the equipment, and the accessory has also appealed to more elderly users that are looking to keep active at an older age. The growing family exercise sitting room gaming experience has brought huge amounts of money to the games industry's shown by the sale of 250,000 copies of Wii Fit in its first week on sale, and given gaming and better perception overall. (Gaming Angels, 2008)

Mobile Gaming

Undoubtedly, the development of smart phones is a technological feat of this decade. Ten years ago mobiles were compact with a clamshell or slide design, but weren't technologically advanced, as many had a phone, text and if more advanced, an internet browsing feature. Smart phones of today perform tasks which would probably seem ridiculous in 2003, ten years later and all of it is taken for granted. A key smartphone feature is app development. Apple's App Store is enormously popular, as well as the Android (Play) and Windows stores. Due to the powerful technology with smartphones it is now a commonly used platform for games, which many indie studios

solely take advantage of and many triple-A games studios use as an additional platform for users to play their games.

The largest reason for its popularity is due to the simplicity of the game controls and ease of downloading. Games such as Angry Birds and Temple Run are very popular mostly due to the quick 'restart' gameplay, making it freakishly addictive as it provides a challenge of reaching a highscore to compare with mates. There is an evident societal change as many people can be seen on public transport, walking around town centres or just casually sitting in waiting rooms, using the game as a pastime,

Fig. 1. Current smartphones on the market.

which was only achievable before through the rather limited selection of portable consoles. By the 5th May 2012 (Buchanan L, 2010), just under three years after its original release, the original Angry Birds game had been downloaded over 1 billion times. By 3rd November 2013, (Rovio, 2012) Angry Birds downloads have risen to a believed 1.7 billion (Gaudiosi J, 2013) This just shows the power of downloadable content and how games companies can make tremendous amounts of money from just relatively inexpensive games.

Console gaming has actually taken from this method of thought and now uses apps too and also allows downloadable games instead of the traditional physical disk. These apps allow the user to view movies via their games console, for instance through the Netflix app. However, watching films through a television has been common practice for a long time, streaming films through your mobile is new and certainly a more accessible way for people to have their favourite pastime.

KICKSTARTER, INDIE, AND TRIPLE-A GAME DEVELOPMENT

Although everyday life has been assisted by the products of the games industry, many lives have been affected negatively. Many large game studios have fallen by the wayside meaning many, if not all staff is made redundant. Most namely of recent is THQ whom had been making redundancies prior to folding completely and selling off their assets. (VG24/7, 2012) (Coming Soon , 2013) However, despite the failure of some of these studios, many indie developers have been very successful in recent years; shown by award winning games such as Minecraft.

The games industry has seen a new focus on smaller studios; many of which are making mobile games. Many of these studios have managed to gain an almost cult following; considering the amount of supporters and advertisement through memorabilia. These fans also built extra content for the games they follow and have a much closer link to the developer (via updates over twitter) than you can be with the larger games studios and developers.

Many of these developments were started through the "Kickstarter" website. Kickstarter allows favoured projects to gain investment by fans of the specific project. In 2012, a total

Fig. 2. Minecraft logo

of 2796 were launched; 911 of these have become "successful" projects. It has been heavily stated in many articles online and on forums that a large reason for huge studios closing is because of the amount of money spent on advertisement. Arguably, many of the largest triple-A studios still remain, such as Activision despite the huge amounts of advertisement, so this indicates that it could be due to the inability to compete with monetary elite studios in gaming unless you are a low cost indie studio which appeals to gamers in a different way. However, the profound effect these closures are having on workers is certainly apparent and is an example of how economic turns in the industry can be for the worst. (Kickstarter, 2013)

CONCLUSION

The games industry has undergone much change in recent years, now entertaining a larger audience in recent years by making gaming more accessible, through the ever growing amount of platforms to play games on, from mobiles to Kickstarter console projects such as Ouya (Kickstarter, 2012). As a result of this, many negative views of gaming have changed, as gaming is no longer just for entertainment, it's a tool for work and maintaining health, exhibited by the Nintendo Wii. Gaming is no longer from frowned upon as it was in the 80s. Game culture has been popularised in television shows and is seen as a very popular and enjoyable pastime. This change in attitude has made many people choose to have a career in the industry, as gruelling and great as it can be.

The future state of the games industry is unpredictable, as there are studios closing and new great prospective projects announced every day. However, what is certain is that we are going to be thoroughly entertained by the software and hardware introduced in the coming years.

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The Rise of Piracy

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***Abstract*—Technologies have altered many different things as time progresses. One of the things that altered is how easily it is to pirate files. This piece goes over why it is and mentions how things have gotten progressively worse as time goes by, and how more is happening to stop it as time goes by.**

***Index Terms*—Piracy, History, Copyright**

I. Introduction

Over the course of the past few years, technologies have altered how people pirate copyrighted material, how it affects businesses and what those businesses are doing about it. Copyrighted material can range from books, to pictures, to films and to software.

This article aims to answer questions surrounding this subject, and it will show how time has altered things.

Pre-Internet Piracy

Before services such as iTunes, which offer users an easy way of buying music, virtually all music was being disturbed physically. One medium for physical music was the cassette. The cassette had various advantages over its predecessor (vinyl); one of these advantages was that anyone could easily put a cassette into a cassette recorder and record anything, including music. Music was easy to record, if it was not on the radio, you could easily record from other cassettes or vinyl. This did result in backlash from the industry, they were scared of reduced sales, and as a result, they launched the 'Home Taping Is Killing Music' anti-piracy campaign. Despite the industries best efforts, this campaign was met with ridicule and more often than not, it was ignored (Peel, 2008).

Napster Crisis

Circa 2000, Mp3 files where a gift from the heavens. They were a new way of listening to music; a new way of storing albums and a new way steal copyrighted material. This new file type allowed piracy via the internet. Despite being around for a few years prior to 2000, a service known as Napster was making them more desirable, for all the wrong reasons.

Napster was originally a piece of software that offered a peer-to-peer (p2p) way of sharing music. P2p software is software that allows a user to share files, in this case copyrighted music, with other people. As you would expect the industry was not happy about this. It was a similar scenario to the tape recording crisis.

However, this time it was on a much larger scale and it was even easier to do. Waves of copyright complaints where sent Napster's way. Different artists and organizations, including the Recording Industry Association of America, wanted to sue the company. They had enough of people taking their work for nothing (Borland, 2000). The pirates could even do malicious things, such as burning pirated MP3s onto blank CDs (which were actually selling more than normal albums at the time) and sell them onto other people for profit. By 2001, the p2p Napster was dead. Although this was the end for Napster, it was the beginning for other p2p applications; it was not long before other Napster-inspired services, such as KaZaa started crawling out the woodwork (Wade, 2004).

iTunes & the Aftermath

Enter iTunes. Apple's answer to digital music was iTunes. This was an extremely successful product, which offered a legal way of obtaining MP3s. Individual song where priced at 99 cents (or the equivalent price in a different currency), and most albums were $9.99 (or the equivalent price in a different currency). Along with the help of the iPod (Apple's portable music player), Apple had 25 million song downloads on iTunes, in 2003 alone. Although the music industry knows, stopping every music pirate is impossible but alternatives such as iTunes where a step in the right direction. Despite the success iTunes had the RIAA are insisting that piracy is still on the rise, with claims of 2.6 billion files (some of which are not music files) being downloaded monthly.

Additionally the file sharing service KaZaa managed to make over 230,309,616 downloads as of 2003 in its short life. Although this is over its lifetime so the number of music downloads per year will be smaller than the number of total downloads, and not everything downloaded on the site is music. Despite this, this program dwarfs the amount of downloads iTunes got, and with the other Napster incarnations it was clear that music piracy is not going anywhere (Wade, 2004).

However, the RIAA was not happy and began suing people over music piracy 216 people were being charged with copyright infringement (Wade, 2004). Some people (1.4 million) deleted all their pirated files because they were scared of being charged. Oppositely, the RIAA are implying on their FAQ page, that music piracy is still a serious issue. They claim that since Napster emerged (and started the p2p fiasco) music sales have dropped by 47% (from $14.6 to $7.7). They also claim that between 2004 and 2009, 30 billion songs where

illegally downloaded and all together 24% of bandwidth is consumed downloading copyrighted material, including all types of copyrighted material (RIAA, 2013).

Despite the success of iTunes, there are many reasons why people rather pirate, the obvious one is that it is free but another would be DRM. One aspect of buying off iTunes is digital rights management (DRM). DRM exists in order to try to prevent piracy. It offers a set of limitations, which exist to prevent copying music. These limitations can be so tight, that if you were to try making multiple copies for back up or move your digital collection from a Windows computer, to a Linux computer those files are no longer yours and if you keep them, you are breaking the law in the same way illegally downloading breaks the law. There is also some controversy with some types of DRM, which monitor the usage of files possibly breaching privacy (Sinha, R. & Machado, F. & Sellman, 2010).

The Pirate Bay

Circa 2010, online piracy is still a thing. The RIAA are still angry and there are oceans of websites full of copyrighted material and different software designed to download it. The Pirate Bay (TPB) is one of the most notorious websites in the scene. TPB surfaced in 2003 as a website, which offers a p2p way of sharing torrents. Torrents are files, which contain other files (usually copyrighted files). A program called BitTorrent allows people to transfer files from one person to another.

This website has been around for more than ten years and is more than happy to flaunt about what it does, its logo even pays homage to the 'Home Taping Is Killing Music' campaign. More recently, there has been a lot of action to try to stop it. The action taken to stop it includes trying to pass bills to kill it (and other piracy sites), ISPs blocking access to it and a torrent of copyright complaints against it.

SOPA

There are already laws in place to prevent copyright infringement and as you can tell by this article, they are doing a tremendous job of not stopping online piracy. Because of this, the American government had an incredible idea of introducing a new legislation. The Stop Online Piracy Act or SOPA for short was the bill in question (Masnick, 2011).

In theory, SOPA should be a brilliant idea; its name alone suggests something that should happen to put an end to all the drama surrounding the distribution of copyrighted material. However, if the bill did pass, the internet would have faced mass censorship, changing what many websites are like now. Concisely, what the bill is actually allowing is complete internet censorship as collateral damage because the bill is vague. The US government even tried introducing a similar bill known as PIPA. PIPA also caused outrage. Among many other things, one of the things the bill allows is websites that host or embed any sort of copyrighted material risk closure. This means sites that are predominantly user run, big or small, are at risk. If a user of a certain website were to upload, any copyrighted material that said website faces closure. In a parallel universe, where the bill passed, websites like Google, Facebook, Wikipedia and YouTube (among thousands of other sites and blogs) would cease to exist (Masnick, 2011).

The bill received a plentiful amount of backlash, many websites and organizations that rely on the internet where against the bill. They persuaded and users (and as many people as possible) to US congress to stop. Websites involved even went as far as to hold a blackout in protest (Mozilla, 2011). Eventually the US government saw that the vast majority of the internet was in disapproval of the scheme. Because of this, the bill never passed (Newman, 2012).

ISPs

Another thing that tried to combat TPB and other file sharing sites was to block access to them. ISPs in the UK where ordered to block the TPB, rendering the site completely inaccessible (unless you use a proxy to bypass the block). The whole fiasco surrounding TPB even gave them a publicity boost, from users whose ISP is not blocked (TorrentFreak, 2012). Eventually other, smaller, sites offering illegal file sharing were on death row. IsoHunt was one of them and the founders of that site where issued with a colossal fine (Lee, D. 2013). It was not long before other sites where eventually blocked as well, an additional 21 sites where facing the curtain as well (BBC News, 2013). This is a sign that eventually every site dedicated to piracy may end up being blocked. Although sites like TPB are not that easy to get rid of. Recently TPB launched their own proxy browser for its users, to bypass the ISP block. (Dredge, S. 2013).

Streaming

One last point to note is the rise of streaming services. These services have had an indirect effect on decreasing piracy. For some people an alternative to pirating media has come about in recent years. These include services like Spotify, Deezer and Napster (which was reborn as a music streaming service). There are also services for other types of media; Netflix is a service that offers films and TV programs. These services have the use pay a monthly subscription. Spotify is the most renowned of the bunch. There have been claims that Spotify actually helps in the battle against piracy (TorrentFreak, 2011).

Conclusion

To conclude, music piracy has been around for multiple decades, people pirate music for many reasons with the primary one, being that it is free to copy music (illegally) and this has always been true. People use a variety of different methods for obtaining illegal music; you used to have to record it yourself and as time progressed more and more sites offering illegal downloads showed up, prompting more things to stop it. It used to be campaigns with little to no impact, then it went to lawsuits and DRM, and now it's even more lawsuits, DRM, ISPs blocking access to the sites, sites being taken down, services offering a cheap (and sometimes free) legal alternative and government bills threatening to try and end it all.

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Computing for Everyone

How has the evolution of gaming and technology been able to contribute to improving the healthcare of people in the 21st century?

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Over the past 30 years, games consoles have evolved to suit the ever changing needs of the general public, whether it be the needs of children or adults, but how has this evolutionary path changed the way that people learn new skills? How has the technology evolved over the years to allow people to use the games in specific ways? This article will be looking into the progression of the games console and how they can be used to train medical staff to perform difficult operations and how games in general can improve the general health and wellbeing of any regular participant, along with some speculation around the field of gaming and how far we still have to go before video games can be fully trusted to be a valuable teaching tool.

I. Introduction to video games

Before getting into how games have changed the way we look at training today, and how it is used, we first need to look at how video games originated. Many of the timelines that exist only document the release of the first 'real' games console, the Magnavox Odyssey which was released in the autumn months of 1972, however other timelines do mention the man who is considered to be the father of the video games industry, Ralph Baer. Kent (2001) writes about Baer, an engineer from Germany who in 1966 was on a business trip to New York when he was 'thinking about what you can do with a TV set other than tuning in channels you don't want'. This simple thought is how the concept of the games console was born, 6 years before what is considered to be the first home gaming unit was created.

In his book, Kent also writes about how all the first video games were in fact two player games, this was due to the fact that Baer's games console was not 'powerful enough' to be able to run any sort of artificial intelligence, therefore single player games could not be created, as each instance of the game had to be controlled by a human. In 1967, Bill Rusch joined Baer's team, and was originally thought to be a lazy and unmotivated worker but was in fact extremely imaginative. Through the combined efforts of Baer's game machine and Rusch's creativity, they were able to create a hard-wired logic circuit (which directs the operation of the unit by providing signals for timing and control) and create the first virtual game of ping pong.

Over time the consoles and the games evolved dramatically, and in the present day we now have devices such as the Xbox Kinect which can follow a person's movements and body to control what is happening within a game, the PlayStation Move controllers and the Wii WiiMotes which use a motion sensor controller to navigate around menu screens and games themselves, and this is just in the past 30 years, what kind of attachments could we be seeing in another 20 years?

One example that could be used is the Xbox 'IllumiRoom' prototype that was revealed in 2013. 'It augments the area surrounding a television screen with projected visualizations to enhance the traditional living room entertainment experience' (Microsoft, 2013) which means that using the Kinect 2.0 sensor, it projects an image on to the walls around the player which is related to the game that the user is playing, usually an extension of the HUD (Heads Up Display), which allows a greater in game experience for the user. However, this technology is only prototyped and does not have a date for release, Tom Warren (2013) states that 'it's clear that Microsoft's projector system is a long way from reality' due to the fact that in its current state the set up for IllumiRoom would cost the buyer several thousands of pounds, but this is just a prototype, in the next 5 years we could see this device available for purchase. The technology that is available now can still do amazing things, and can be used for a huge variety of activities.

Practical uses for gaming

Before we can talk about the practical uses of video games, such as use in the medical field, we need to discuss the stigma that surrounds the gaming industry and what some people think about people who play video games regularly. Games can be played together, or alone, with both people in the same room or using the Internet to play with thousands of people from around the globe, but how does this affect the way that people interact with each other in the real world? Some online multiplayer games demand interaction between players to complete objectives, whereas some multiplayer games can strangely be played without any communication between the players at all (even though this might hinder the progress of the game). Gaming has evolved throughout the years, from being a two player experience, to when the consoles developed the ability to run AI and create a single player experience, but gaming largely withdrew from the public arcades and family living rooms into the bedrooms of children and teenagers as soon as the release of online multiplayer came around. Some people see this is a negative part of the industry, as there are a few extreme cases that have given video games a bad name.

There are negative comments made about the gaming community, and what impact excessive play time has on the players. Anonymous (2013) writes on his blog about the many different negatives and also the positives surrounding this particular subject. The writer does in fact admit that a majority of the negative stigma relating to gaming and games consoles is in fact only present in 'extreme cases', some examples being students neglecting study times to play video games and also the general 'separation from reality' that some gamers might experience.

However, what the general public sometimes fails to realise is that there is a positive side to playing video games, and that the negative implications are more obvious but less common. For example, gaming has advanced that much that certain games are now so realistic the virtual environments they have created are now used to train pilots and drivers.

An article written by Julia Layton (2008) talks about the way video games are used in the medical industry, particularly for surgeons who specialise in Laparoscopic surgery. Laparoscopic surgeons never actually come into contact with the patient with their own hands, they use a joystick controlled robot to make the small incisions required to operate on various parts of the human body such as the colon and the gall bladder, and while they are doing this, they can see what they are doing on a screen in front of them. A study was conducted in 2008 on the surgeons where they played 3 'non-medical' games for 25 minutes, then went on to complete a selection of virtual laparoscopic surgery simulations. The accuracy and completion time of each task was measured and after their level of training, years of experience and total surgeries performed over their course of service were analysed as well, the results produced from the test were very surprising.

'The surgeons who had a history of playing video games for more than three hours a week made 37 percent fewer mistakes and completed tasks 27 percent faster than the surgeons who had no history of playing video games' and 'The surgeons who scored in the top third of the video-game portion of the study made 47 percent fewer errors and completed tasks 39 percent faster than those who scored in the bottom third' (ScienceDaily, 2007).

THE FUTURE OF TECHNOLOGY AND HEALTHCARE

We now know that gaming technology is used in certain fields to aid training and can have an effect on how those people perform in their careers, but what is proposed for the future in the medical field? What healthcare applications are being developed and what might they look like? Michael Cooney (2011) looked at and analysed a study from IBM which envisioned the possible technology that will be available in the near future to monitor different aspects of a person's health. Apps such as diet monitors and fitness trackers are already available on current smart phones, but this diet device takes it one step further. 'A new generation of devices for dieting will also measure movement, speed and intensity. These devices will engage users if they aren't moving enough or provide a movement task to accomplish' (Cooney, 2011). These devices will be able to monitor blood pressure and weight alongside this and should help motivate people who struggle to lose weight. Another aspect that IBM researched into was care for the elderly generation, particularly patients with Alzheimer's disease. '...devices for establishing location and compliance with medication regimes, connected to a digital pill box will be commonly used.' (Cooney, 2011). This will hopefully give peace of mind to the care givers and the patients alike, as it can pinpoint the location of the caregiver so the patient does not get distressed if anything should happen, it also provides medication reminders and an emergency line to the caregiver if any assistance is needed.

There are many different applications that IBM also did research on such as mobility and devices that are implanted into your head and tap into brain waves where even patients that are not capable of expressing emotions, are able to respond to treatments they are given and request medical attention. All of these ground breaking technological devices are based around PC's, tablets, smart phones and even games consoles, and this is a great leap forward in the technology industry.

Along with the amazing technological advances there are also some downsides to such intricate technology. Dr. Bertalan Meskó (2013) wrote an article on the potential technology that could advance medicine in the future, and states that new disease categories may be discovered due to excessive use of virtual reality systems such as the Oculus Rift. According to this article, 'virtual post-traumatic stress disorder (v-PTSD)' could be used as a diagnosis for the gamers who play games such as Call of Duty and Battlefield using virtual reality systems, and in turn come out experiencing similar symptoms as soldiers who have actually experienced the horrors of war.

In conclusion, the past 30 years have allowed technology to advance so far that the devices available now can save people's lives, automate procedures, make operations and surgeons more accurate and perform surgery causing as little damage as possible. These are just a few of the things that make the advancement of technology important and vital to the wellbeing of society in the 21st century. Hopefully, researchers come up with new ways to help people live their lives in comfort, and help people with disabilities be able to cope with their conditions and live a normal life. The progression of 3D printing is enabling people to attempt 'to use 3D printing technology to build new tissues to replace human joints damaged by injury or disease' (Halterman, 2013). It uses the patient's own tissues to rebuilt parts of their skeleton, and this is only the beginning of how much technology in the future will be able to help society grow.

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Digital Distribution

Unstoppable business model or gratuitous content for the masses?

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I. Introduction

1%: the total yearly revenue game development company Team17 generated from its first digitally distributed PC and mobile games. 90%: the current revenue generated from digital distribution by the same Team17 ten years later (Bestwick, D. 2013).

With such a huge shift in market distribution we have to ask ourselves what sort of technology was responsible for facilitating this large scale content delivery. Once we know how we got here we then have to ask ourselves, is it worth it? With constant fear of our rights and ownership being breached, hacking, piracy and a heavy reliance on functional data streams to even use our digital purchases. Does society benefit from leaving behind our physical content and becoming "always on" and where do we go from here?

Origins, lawsuits and a technological arms race

It is by legal definition a method of distribution without any physical media. This content is obtained through the internet and can be accessed from anywhere that has online facilities such as personal computers or mobiles devices. Data is transferred over this connection or "downloaded" and stored on the hard memory of whatever device was used. Once the transfer is complete the content is ready to be viewed and used (US Legal, n.d).

The first documentation of deliberately developed software for the online transfer of digital media was the gnutella peer-to-peer network developed by programmer Justin Frankel from 1997 to its acquisition and release by AOL in March 14. 2000 (Slashdot, March 14 2000). This Allowed for the sharing of files between different users on the internet. This however wouldn't become relevant until the release of the first commercial MP3 player in 1998 by Korean manufacturer Saehan Information Systems (Harvard Press, 2009). With the technology now available to the masses to use media files such as the MP3 and the ability through peer-to-peer networks such as gnutella to share these files, we end up with our first headache of the "always on" generation.

Websites such as Napster were allowing people to share digital media between users without any initial purchase of the media. With the newly founded Digital Millennium Copyright Act (DCMA) which criminalised the production and distribution of copyrighted digital content, lawsuits were soon pursued against Napster and users who file shared (Markus, G, 2008). And so began the arms race between the copyright holders and the Piracy community. The copyright holders began to develop Digital Rights Management (DRM) technologies to ensure their content was not obtained illegally. Companies began to restrict the access and control the user has over purchased content as well as using obscure file types and Encryption methods to deny access to the source files (Kranich, Nancy 2004). Game publishers began to limit the amount of software installs you could do with a certain piece of content, limiting the number of devices you can use it on (Ernesto, Dec 4 2008). Every measure that is placed to prevent piracy is eventually cracked and the arms race continues until the present day.

A peaceful solution

In 2001 large software and hardware manufacturer Apple released their first portable digital media player, the iPod and then in 2003 they launched their software store and hub, iTunes (Dennis Lloyd, Jun 26, 2004). iTunes would act as a virtual library for the user, remembering every song they had purchased digitally and easily load them onto the iPod when connected. Coupled with this ease of use and no-DRM was a simple pricing structure. iTunes would allow the user to pay for individual songs ranging from $1.29 to $.69 (Griggs B. Jun 2009). This made music seemingly more affordable and easier to access than piracy and progressed into a highly successful business platform.

Elsewhere on the market Valve made a similar approach to the ever present problem of video game piracy. With their digital library called Steam they managed to achieve what iTunes had in the music industry, affordable and accessible content. Through the use of constant sales, thorough technical support, community based features and support for mod development teams has led to Steam having a 70% share of the digital distribution market for video games (Graft, K. Nov 2009). "Piracy is almost always a service problem and not a pricing problem … DRM solutions diminish the value of the product by restricting a customers use or by creating uncertainty" (Gabe Newell, Valve CEO, Nov 2011).

Do we even own it?

So we have a basic understanding of how the market developed and the problems it faced. Now we pose ourselves the question, how does that affect me? If you buy a book from your

local book store and you grow tired of it after so long, you are free to sell that on at your own will. If you purchase a car and fancy upgrading a few years down the line you are free to sell it on. However should you purchase a book from Amazon for your new Kindle (Tablet like device for reading e-books) then you may not tamper with or distribute that e-book in any way. In one case a publisher decided it didn't want its book in circulation anymore so Amazon removed the book from every Kindle device (Pogue, D. 2009). As well as having little to no control over our digital content there is also the issue of the lack of physical presence. There are still no statutory laws for ownership of digital goods. Judges are starting to recognise the ownership of digital content in a 2011 case of a man jailed for stealing online poker chips, but nothing is set in stone just yet (Osborne, H. Sept 2012).

Limitations and laziness

For the sake of the next example. Let's assume you acknowledge your ownership of your brand new PC game. This game is due to release at midnight and due to the video game library software you have been able to pre-load it onto your PC. It's now midnight and you install and run your new game but are greeted by an error message. It tells you that the servers are down and you'll have to try later. The money has left your bank account and you now "own" this game yet you cannot even play it. This is the situation many PC gamers now face with the introduction of "always on" games such as Diablo 3 and Sim City. Three days after the launch of Sim City via Origin (Electronic Arts' online game library software) and users could still no access the content they had paid for (MacManus, C. March 2013).

Through a later statement from Maxis, developer of Sim City, it was discovered that they had not acquired enough server capacity to cope with the demand and usage of their game and users had to endure weeks of slow loading times and frequent disconnections (Katsarelis, K. March 2013).

However the always online and digital launch systems were not designed to cause us problems. They are there to help offer any support we may require with our product. This seemingly genuine approach to customer service does however come with a downside. Due to the ease at which bug fixes and patches can be released digitally, an increasing trend in content being launched with errors to meet deadlines and being fixed at a later date. Casing point, Ultima IX was a highly anticipated game which launched in 1999 with game breaking 3D engine bugs which were promised to be fixed at a later date. This launch led to the downfall of the series (1up, Oct 2008).

However it isn't all negative with digital launches for video games. Cloud technology is a key part of Microsoft's soon to launch Xbox One console. This cloud technology will allow constant back up of user data, will help with the processing of the new machine and allow for invisible seamless updates (Androcec, D. Nov 2013).

Appreciation of an art form

While MP3, MP4, JPEG and DOCX may be the preferred way to view our media today it hasn't always been like that. For years music came on vinyl, movies came on rolls of film, artwork hung gracefully in our galleries and we could enjoy the turning every page of the latest best seller. Culture has developed around it and the art forms themselves have too. Some commenters believe that part of the art form of film is being there in the cinema, seeing the build-up and engaging in lively debates in the lobbies afterwards (Mahomes, L. 2012).

There are those in the media industry who disagree with this sentiment. Digital distribution has allowed independent film makers, game developers, writers, photographers, musicians and artists to reach a global market with ease. With services such as Steam Greenlight for indie games and IndieFlix.com for independent films it has never been easier to reach a broader market.

Online streaming services such as YouTube and Twitch have allowed a large spectrum of content providers from e-sports competitors all the way to amateur film makers and bloggers to get their content out to the mass market instantly. This exposure can only be beneficial for the art forms alike.

What keeps the world turning

Finally we reach what is probably the biggest motivation for digital distribution, money. As sales fall at traditional retail outlets, digital distribution platforms continue to increase in revenue year after year. Valve saw a 97% increase in download sales in 2009. Market analyst Michael Pachter claimed that only 5% of the video game market was digital in 2009 (Ivan, T. 2009). Recent figures from NPD show that digital sales have increased by 33% from 2012 to 2013 while retail sales continue to fall (John Agnello, A. April 2013). With such a clear divide between physical and digital distribution and the economic benefit of the latter there don't seem to be any financial issues. Many book publishers argue that DRM means higher sales and is more beneficial to the writers themselves, however for smaller publishers and lesser known writers digital distribution has become a problem. With DRM E-books come a number of costs involves server maintenance to deal with the creation, allocation and transfer of decryption keys to maintain anti-piracy for their digital content. A cost which can be too much for smaller business' to continue (TinHat, June 2006).

So where do we stand?

It cannot be denied that digital distribution presents more problems than it alleviates, but with the financial success of digital content in every corner of the market and its continued ease of access a greater question is posed about the future of our physical media. Do we need it at all?

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Impact of Mobile Phones

And how they have changed our society.

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***Abstract*—Mobile phones have been around for a few decades, and their design and integration has changed over the course of that time period. With this comes new and exciting solutions to old problems, but can these simple devices also be a source of serious problems?**

***Index Terms*—Mobile Phones, Society, Impact**

I. Introduction

Technology has revolutionized our world and our way of living, reaching into every branch of our lives from work to our social interaction to our entertainment. One of the biggest contributors of course being the internet, but mobile technology has also shaped our lives just as much.

This article will look into the past of how mobile phones have come to be a staple in our daily lives, how they have melded with other technologies, and what risks may appear from such mass freedom and

Mobile

When telephones were introduced over (x) years ago it took society a while before they were fully implemented into homes and offices, but after they were implemented they revolutionized the way people communicate and the speed with which people can convey information is greatly reduced.

With the creation of the telephone, people's language also altered, with the creation of one of the most commonly used English greetings; "Hello". Mobile phones followed a similar path with their introduction being mainly aimed at businessmen and corporate executives and with them being rather clunky made them rather impractical for everyday use.

It wasn't until the mid 90's when mobile phones became more compact did they have a bigger impact on society. Now people could contact anyone else with a mobile phone (provided they knew the telephone number) and stay in contact away from landlines.

Making technology smaller has been on the same forefront as making it more powerful. Size has always played an important role on the availability of technology.

Mobile generation

With the rising numbers of mobile phones and the large availability of them to the masses, it is inevitable that they would become a popular staple amongst everyday people. During early 2000 mobile phones became the choice of communication for many teenagers and young children. With the rise of text messages came the origin of text speak, which is very much a thing still used today.

Old mobile phone keypads consisted of a grid of numbers with some letters being printed on them, these letters would usually come in groups of three.

Having to potentially make multiple key presses just to get a word written, it wasn't the easiest method of typing. Instead, abbreviations and word shortenings were created and spread around virally. Virally, in this context, being the use of a phrase that gets said between conversations in text messages.

Examples of these phrases include "LOL" and "LMAO" being used primarily to express enjoyment or laughter of a subject. Such abbreviations have stuck around even today, and are often used on places around the internet and on message boards.

Versatile internet

With the advancements of wireless internet combined with the improvements on mobile phone signal strength, it was inevitable that someone would want to apply this technology to mobile devices. The mobile devices of the time being laptops, however they lacked the extreme portability that mobile phones have.

The technology still lacked something however. Phones at the time were fairly simplistic, and the processing power was also too low to handle a webpage.

Combined with the fact that interfaces were also too cumbersome and simplistic to be able to work round a complex page with multiple hyperlinks, the mobile phone needed an upgrade and a rethink.

Mobile and the internet

Smart phones were the answer to this call of more advanced technology, and the advancement up to them took some ideas already used in computing and portable computing, and the thinking around it turned from looking at it like a phone, to looking at it like a computer. Smart phones had a more advanced operating system and the processor technology was getting faster and smaller than ever before.

Fig. 2. iPhone 4S with back removed

This allowed proper integration of a mobile web browser and wireless receiver. With the combination of touch screens and more intelligent interactions it was now possible to finally access the internet.

With the creation of smart phones and the progressions of mobile internet connectivity reached a whole new level. The developments of social sites such as Facebook and Twitter meant that people could not only stay in contact with people, but also share images, places, create events, and give live updates on their current wellbeing.

But with all of this connectivity, surely it raises some concerns? Yes, there are computer security acts that have been put in place since the 90's, but how much of our data is protected?

PRIVACY

Privacy is a major concern in everyone's life and is near guaranteed to affect us at some point. Identity theft has always been a thing even before the ages of data storage, but since then it has been easier to steal someone's details than ever before.

Facebook is now such an essential these days in order to keep in contact with associates and friends, and such a thing requires personal details. Your name, date of birth, email addresses, and, in some case, even your own house address could be on show to everyone on the internet.

The real issue arises with the fact of getting information off of the internet when it is released. The internet and internet servers have a habit of keeping information around that can easily be pulled up during a Google search.

A good way to see how safe your information really is by running a search using your full name, how many times do you come up? Are you on more sites than you'd expect? Is your name on sites without your permission? It's a good idea to run this little test once every few months.

Privacy and your security is an important thing to monitor, but can prove rather difficult if the sites in question don't support you being able to change what settings are shown to the public and indeed whether they can be removed or not.

This also branches to things like your phone number and people being able to access it. The invention of the text message didn't go without something nasty being created from it as well. Cyberbullying really took off with the integration of mobile phones within society, and this was most apparent with teenagers with mobile phones. This is especially frightening and the victim may not necessarily know who has sent said hurtful messages.

Technology can create both breaches of security and a veil of secrecy for the malicious to hide behind, but people aren't the only thing that could be wrong with mobile telephones.

HEALTH

With the issue of health and mobile phones comes a somewhat controversial topic, both whether it affects us physically and mentally, the more curious being the latter.

With regards to the physical problems, the main issue is around the whole aspect of radio signals and microwaves being close to the brain and other parts of the body. A lot of research has gone into this field with no real conclusion. Going on the assumption that mobile phones are still around, there must be some relative safety with the fact that they are still around and being sold.

The mental health is looking at our dependency on smartphones, and our desire to constantly use them. People will check their phones before they go to bed and it will be the first thing that greats them in the morning. It is also something that keeps people constantly looking online and keeping themselves up-to-date. Is this up-to-date lifestyle so safe? Or would it be better to just no have these intricacies in our day to day lives?

CONCLUSION

There is one certain thing that can be drawn from this; Mobile phones are here to stay, and they have made a permanent impact on our lives, whether this being a good thing or not is something that must be left to the future to decide. But I believe that steps must be taken in order for a safer and more social existence.

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Fig. 1. Rapid Repair. ***iPhone 4S back panel off*** [Photograph; Image of an iPhone with the back panel removed, revealing the internal circuitry]. At: http://www.rapidrepair.com/ (Accessed on 14.11.2013)

How Advances in Technology has Changed How We Can Communicate

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I. Technology Advances

Technology is constantly improving as we develop new methods of solving problems. The most notable technology advances from the last twenty to thirty years that effect how we communicate is the creation of the internet, its development commercially and computer portability. After the internet was commercialised in 1995 (Wikipedia, 2013) a large amount of development continued, forwarding the medium further. We have also generated many new things that utilise this technology medium.

The technology and services that most people will be familiar with as a result of the development of the technology include broadband internet and wireless internet connections, Services that many are familiar with today such as easy access to the internet are a result of that development. This medium is generating a large amount of content and services for users of this medium. These forms of services and content are viewed every day from around the world by many people.

The last technological advance which needs to be mentioned is the portability of computers. Computer hardware is always being developed further so we can do more with computers. According to Moore's law computer hardware should experience notable improvement every 18 months (Moore's Law, 1965). These improvements can vary and be focused on more than one individual part of the hardware. The types of improvements to expect are in the size of the hardware, the capacity of the hardware, the speed of the hardware and the performance of the hardware.

Due to hardware improvements computers are becoming more and more portable and accessible. Modern phones (smart phones) are usually referred to as mini computers because they work in the same way modern computers work except with reduced processing power.

II. The Technology We Use

Popular communication sites like Facebook and Twitter are used frequently for socialising. Chat programs like Skype specialise in video chats, audio calls and text based communication over the internet. Media content sites such as YouTube is a place where users can create and share videos. These are just some of the common examples of content that are accessible thanks to the internet.

Most of us would be familiar with the popular sites I mentioned earlier. They all have one thing in common and that is that they are all tools for sharing content and communicating with people. Facebook and twitter lets you speak with a large audience of people who are connected to you. Skype is a conversation tool that people use, you can't communicate to a large audience like with Twitter or Facebook but you can speak with people similar to an actual meeting.

All these services and content is accessible to us through the use of computers that can access these sites when connected to the internet. What is important to highlight is how portable computers are becoming. Modern phones are operating as weaker computers and as such they also can access these programs and sites thanks to wireless internet technology. The increased popularity for these online services has caused people to develop specially built programs of these online services so they run better on the phone.

Mobile phones are very popular a recent survey by Pew Research Center (PewResearch, 2013) claimed that 91% of American adults owned a mobile phone, based on the results of the phone survey they conducted. If people were to buy a new phone chances are it would be a smart phone with access to the internet.

The International Telecommunication Union (ITU) estimate that 77% of the developed world are online using the internet.

III. How We Are Using The Technology

Due to computers becoming more portable, increased accessibility to the internet and a large majority of people owning smart phones. Most people can access the internet easily through the use of their phones no matter their location.

The internet has become a large medium of content, spanning from videos, pictures, music, games, information and social networking. Due to how large the internet is and how much content is available to anyone it has made the medium into one of the ultimate entertainment and communication tool. The internet will only get bigger and the content will get better as technology and hardware changes and develops further. The internet at its core is just a way of transferring content from one thing to another, this means content can change and the internet can carry on distributing it.

A social network is the name given to a website or service that allows the user to speak with a large audience of contacts. Social network allows people to meet new people and communicate with each other no matter the distance.

People use the internet for entertainment which can be found on video websites such as YouTube. People will often show things of interest to other people, it's why sites such as YouTube

has sharing features on its website, to make it easier for people to share content they enjoy with other people that they think will appreciate seeing the content. The ability to share media easily and quickly makes it easier to share and generate ideas between people.

We use the internet to communicate with other people. Generally this will be through websites that has communication features built in to enable this. Social networking websites such as Facebook and Twitter have these features so other people can speak with each other whether that is publically broadcasted or private is dependent on the website and the features it has to accommodate communication for the users.

The versatility of the internet is what makes it one of the ultimate resources available to us. We use it for so much. A technology that was designed to transfer data from one place to another has developed into an enormous form of entertainment and communication that still continues to evolve and become a better form of media for us all to use.

IV. Changes Caused By This Technology

We are spending less time away from the internet because of how easy it is to stay connected to the internet. We are also more connected with people now because people we know have access to the same content we do for example we can all access methods which allow us to communicate with each other.

A large amount of socialising is being done online. It is now generally accepted that social networking is the next step in communication, with even companies and businesses picking up on the activity and using the service to broadcast information about their business and to connect with their customers.

There is a large amount of people socialising having conversations online through the internet using video calling programs. In 2011 Skype (Skype, 2011) reported that they reached the mile stone of 30 million unique users on at a single time. Skype is currently one of the most popular communication programs available on the internet.

People own personal social media profiles where they store information about themselves and can broadcast information to all the people they know or that are connected with their online profile. This does raise the issue of privacy (Wikipedia, 2013) and data protection with some arguing whether social media is safe due to how much information people can discover about someone without their knowledge. Having the ability to speak or send a message to a large amount of people at once is an amazing feat that previously was almost impossible to arrange before the internet became easily accessible and sites and programs were created that allowed it.

The internet is now in the workplace as a tool for working by using email and social media to communicate with customers. Due to how common place the internet is becoming it will soon become normal for people to assume to have constant access to the internet.

Figure 1 Popular Social Media Websites (Youth Policy, 2013)

V. How Communication will Change

I expect the amount of people using social networking to increase further not just as a result of population growth but because the internet and social media is integrating into our current lifestyle at a fast rate that it will become normal for upcoming generations to have early internet experience and it will be more culturally accepted and as a result ready for social networking.

One thing that isn't definitive is if the popular social media websites around now will still be around in the future. Currently Facebook and Twitter are two of the most popular however before them were a few other popular social media sites such as Bebo and MySpace (Guardian, 2009). The current popular social media sites are a lot larger in comparison to the popular social media sites of the past but that doesn't mean they are immune from being abandoned, it is very possible other social media sites become more popular in the future.

The limitation of how we communicate over the internet is related to limitations on hardware and I believe that new and more efficient ways to communicate will be created in the future as hardware is improved. Similar to how film has progressed as the technology has improved, going from standalone black and white films to 3D films with sound. The technology of computers is moving at an accelerated rate having been 18 years since commercialisation. I struggle to see what possible advances we will think up next to broaden how we communicate, it is likely the advances will only arrive when the technology is ready to support it.

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The Impact on Computers on Everyday Life

The Influences of Technology on Our Shopping Habits

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***Abstract*—Within the past 30 years there has been a considerable rise in the amount of technological innovations ranging from Desktop PC's to smartphones; all of which have had an impact on the way we shop. The rise of 'E-Commerce' has led to revolutionary ways in the way we order our groceries and has seen our shopping trends shift from the high street to Internet based shopping, also known as E-Commerce. Whilst there are many benefits of us shopping online such as convenience, there are also problems that can arise when using the Internet to shop, regarding both theft of personal details and businesses themselves.**

***Index Terms*—Component, formatting, style, styling, insert.**

I. Introduction

Over the past 30 years technological advances have had a large impact on the way we interact with each other and the traditional methods we use to go about daily life. Traditionally, taking a trip to your local town to go to the shops to pick up your shopping was seen as the norm. However, in the present day new technological innovations from the 21st century such as smartphones, computers and tablets has lead to a vast shift in retail trends.

Increased use of technology has made life easier for many as it has allowed a quick and easy way to go online and browse the web for any products you may be interested in, as opposed to taking a trip to your town which can be costly and time consuming. James Kendrick suggests that mobile technology has had a largely positive impact on our lives. This is in terms of allowing us to stay close to people, whenever and wherever they may be, and also in a business sense as advances in technology has allowed us to connect to a Wi-Fi hotspot, load up an Internet browser and start browsing through the thousands of online retail websites which may interest us (ZDNet, 2013).

Changes in our lifestyle

Taking in to consideration the advancement in today's technology such as smartphones and even faster computers, many people decide to rely on their technology to carry out day-to-day tasks, such as online shopping or socialising with friends using websites such as Facebook. Most people these days own a smartphone or computer so many see it as more convenient to use their technology. This is because with improvements in mobile network coverage and increased Wi-Fi hotspots, we almost always have some form of accessibility to the Internet to gain access to websites such as social networking sites, or the ability to text or phone a friend, which is particularly useful when people are long distances away, for example when being in another country.

Background to e-commerce

The revolution of the World Wide Web has impacted greatly on our lives without question, whether it is for bad or good reasons. One of the services which has emerged on the Internet is online shopping, also known as 'E-Commerce'. Online shopping is a massive convenience for many as it allows for people to order goods they want or desire, which may not be available locally, such as in a foreign country. This gives shoppers a greater choice of goods to choose from and a chance to compare the market and look for the most competitive prices in order to save any money possible. Interestingly, the significance that E-Commerce is having on our lives must not be underestimated, according to Blueclawsearch, it is predicted that by 2016, online sales will account for 1 in 4 retail purchases made (Blueclawsearch, 2012).

Influences of online shopping

A question that could be asked is, "just what are the reasons for this change in consumer patterns?" This simple answer is technology and its increasing importance in our daily lives. There is estimated to be over 2.5 billion people in the world with Internet access (Thecultureist, 2013), therefore leaving a huge market in many countries that can access popular online shopping websites such as Amazon and eBay.

With this being said, many retailers also have online websites as well as retail outlets that can be accessed to buy their goods in order to be accessible to a wider market therefore increasing profit. In recent years supermarkets such as Tesco, Waitrose and Asda have all taken to offering an online service, which allows users to order their groceries online and have them delivered. This is a service that is becoming more popular because it allows those with a busy schedule or those that may not be able to easily access their local supermarket to have their shopping delivered, saving time and often being more convenient.

Another major factor, which has led to the rise in Internet shopping, is that it allows for shoppers to save money (Dietkart, 2013). The emergence of price comparison websites such as MoneySuperMarket.com and PriceRunner.co.uk allows for users to quickly compare the price of a range of products that

they might be interested in, quickly enabling the best deal to be found and sometimes a significant amount of money to be saved. Shopping on the Internet allows for consumers to scour a range of websites and often see a wider variety of retailers online as opposed to what they would see when shopping in their local town, which is one of the reasons why online shopping is more convenient for many with regards to finding the most competitive price for a product, and sometimes it may only be possible to find an exclusive deal online.

Also, unlike many retail outlets, online shopping websites can be accessed around the clock, 24 hours a day and from virtually any location providing you have a Wi-Fi connection. This is highly convenient for shoppers because it means you can order the products you want in the comfort of your own home (Dietkart, 2013). This particular reason of E-Commerce growth can be linked to the increase in worldwide shipments of tablets and mobile phones, which rose from 1.9 million units in 2012 to 2 million units in 2013 (Gartner, 2013). With more people owning devices like the popular iPhone and desktop PC's, online shopping is likely to rise because an increasing consumer market can access these websites (Onlinebusiness.volusion, 2013).

THE IMPACT OF E-COMMERCE

E-Commerce is regarded by many as a very convenient way to shop and has arguably led to some companies seeing a rise in their profit margins. Online shopping allows people to save time when buying a range of goods, search for bespoke products and gain discounts. But there are both advantages and disadvantages to this innovative way of buying goods.

A. Advantages

- Greater Wi-Fi accessibility through mobile devices and laptops gives users the ability to access these shopping websites from almost any location. This is particularly useful for those living in rural or remote areas where there may not be any nearby shops (Tutorialspoint, 2013).
- Online shopping allows for shoppers to look for the cheapest prices and best deals therefore enabling customers to save money and get the most value out of their purchases. Due to the range of websites that can be accessed via the Internet, customers can easily browse the websites which offer the product they're interested in and look for the best deal or use price comparison websites which will allow you to quickly identify the cheapest website. This is a much quicker process on the Internet because the user can navigate between sites compared to traveling around and going into each store which can be time consuming and costly (Tnvrstar.hubpages, 2013).
- According to Ecommerce.about there is greater variety of goods for customers to choose from when looking online compared to looking for a product in a physical store. This gives customers a greater choice and a better idea about the product they want. (Ecommerce.about, 2013)

B. Disadvantages

- Not all websites can be trustworthy so there is a risk that customers can enter their card details and send the payment for a product but it may not be shipped. Many people have the ability to set up a website claiming to be selling a service/product but turn out to be fake and online shopping websites can often be the target of hackers who look to steal your confidential details, so it's important to only buy off the websites which are trustworthy, secure and authentic (Esalestrack, 2013).
- You can't actually see the product in person so you can only base your opinion of the product on images of it. This could result in you receiving a product that is of poor quality or slightly different to how you imagined it, which can be hassle if you have to return the good and change it or get a refund. (Saching, 2009).
- The cost of delivery can result in the overall price of a product rising considerably depending on; the delivery options of the website, where the product is coming from and the size/weight of the good, which can often put customers off ordering the product unless it is essential to buy it online. Some websites do offer a free delivery option, which is useful, but not all do, so if your buying a product that is only available in a foreign country, shipping expenses could add greatly to the overall cost (Translationdirectory, 2011).

CONCLUSION

To conclude, based on the factors that have been discussed, there is no doubt that advances in technology over the past 30 years have had a significant impact on the way we carry out our shopping. Greater access to the Internet through advanced devices like smartphones enable us to regularly connect to the Internet whenever we desire. This has led to people finding online shopping a lot more convenient and also cheaper. Not only is it quick to browse the web for products but also it allows users to access a range of online shopping websites to find the cheapest price for the product they want to buy which is highly useful. The impact of this on society is widespread, with businesses now looking to offer their products online as retail shifts begin to emerge, with an increasing amount of people opting to do their shopping on the Internet as opposed to visiting their local high street.

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Will eSports Ever Become Widely Accepted as Official Sports and How Will They Affect the Way We Entertain Ourselves If They Do?

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***Abstract*— ESports are an important area of development for both the sport industry as well as the gaming industry. This report will discuss how they affect each other now as well as how their relationship has got to this point and where it is likely to go in the future. On top of this, eSports won't just affect the industries involved but will affect you and the way you seek entertainment and view sport as a whole. ESports are set to revolutionise the sporting world whether for the better or potentially the worse.**

***Index Terms*— eSports, computer games, sport, video games, fitness, marketing, copyright law**

I. Introduction

For thousands of years sport has been an important part of our culture providing entertainment, fitness and goals to aspire to. Over the past half a century video games have emerged and completely changed how we entertain ourselves providing experiences, which we might not be able to have otherwise, from the safety of our own homes. But what happens when these two bodies merge? The advent of eSports is the transformation of certain video games into competitive sports, but not everyone views eSports in the same way. On one hand it provides a competitive environment for people to strive for without the constraints of their physical form, but on the other hand can they really be treated on the same level as real sports with their lack of physicality. ESport is a constantly growing genre that is revolutionising the way we see computer games and how we view sport.

The History of ESports

Video games have been competitive environments for almost as long as they have been around with people competing for high scores on games such as Pac-Man or beating each other at simple multiplayer games like Pong (Hebbel-Seeger, 2012). Over the latter half of the twentieth century games have grown in visual fidelity and complexity allowing for more skill to be applied resulting in very good players emerging and standing out from the average gamer at the time. This led to competitions and championships being held for many games and professional gaming starting to emerge. The competitive scene was slowly nurtured through the 20th century and into the early 21st century as the popularity of video games gradually increased and the quality of games improved. But it was really in the last couple of years that the competitive gaming was blown out the water with the advent of eSports with the introduction of games such as StarCraft II and League of Legends.

This new breed of games were designed and built around competitive play and served as platforms that were challenging for the players and exciting for viewers. The companies of these games poured lots of money into the competitive scene of these games, providing up to or over $1million prize pools, which attracted the interests of sponsors for the game and allowing the teams or players competing the ability to make an adequate living of the sponsorships and prize money (Seo 2013). But with these advances in eSport culture there are a lot of connections between the lives of eSport players and sportsmen in both life style and occupation.

Current Relations to Sport

In their current state there are a lot of similarities between sport and eSport but also a few key boundaries that need to be addressed. They both provide heated entertainment to the audience viewing the sport, as they are both competitive environments that provide displays of skill and prowess and are designed in a very similar way (Michaluk 2012). Although the viewing is slightly different in that eSports are viewed from a screen even with a live audience due to it being a digital medium, while real sports are shown completely in the flesh as there is no digital interaction between the players. The main thing holding the unison of the two is the bad press of video games in general and the lack of physicality of eSports. Do you really want to be promoting a lifestyle of sitting in front of a computer to become famous and how will this affect the fame of the sportsmen who play physical sports? So far lack of fitness hasn't been a major concern within the competitive scene of eSports, but as the scope grows and quantity of professional players grows there will eventually be cases of ill fitness causing problems that will set back the progression of eSports as a true form of sport.

As for the current scale of the two, real sports are still bigger and more popular than eSports as a result of being a much older and more established form of entertainment with audiences of around 70 thousand at big American Football games. While eSport world finals are reaching around 10 thousand in the case

of this year's League of Legends world final, so eSports while being a sizable phenomenon isn't at the scale of real sports at the current time, but it is still relatively new so perhaps in the near future it may catch up or even surpass the real sports of today.

The Future of ESports

The constant growth of eSports can only mean it's here to stay and with millions of people all round the world playing these games, the future of eSports is looking bright. It has only really been commercialised over the past couple of years so eSport culture is still early in development, but there are several problems stunting the growth of eSports. One of these problems is the physicality of the sport as one of the most defining characteristics of sport is that it is physical (Witkowski 2012). So how may this change in the future and what ways are there around this problem. One possible method is the implementation of virtual reality. This would combine the ideas and designs of video games with the fitness and physical skill of real sports.

Another issue is a problem South Korea are having to deal with at the moment, where groups of teenagers are leaving education early to train to become professional eSports players. The problem with this is that there is no guarantee that they will reach a professional level or even be found by sponsors, so they end up wasting their education for nothing. Over the next few years this could become a problem in the west as well, which will cause nothing but bad press for eSports in general. However, legality is one of the major issues surrounding the future of eSports.

The Legal Considerations

The biggest defining factor of eSports over real sports is that they are based on video games. This leads to problems with intellectual property, as if eSports did become recognised as real sports, who would hold ownership over it? Would the developer have to relinquish their ownership over the eSport? Would profits from the eSport go towards the developers and publishers of the game? Copyright Law is a major factor in the potential problems with eSports due to lack of clarity and laws in the area (Burk, 2013). This is a problem that will need to be resolved, but if it isn't then what will happen? There will probably be lots of cases affecting eSports about copyright costing the eSports scene a lot of money and hindering its growth. As well in real sports there tends to be governing bodies that maintain the sport such as FIFA with football, but they don't own football. So how will this work in eSports, as there are companies that own each eSport. This will probably complicate things in terms of broadcast as you would need permission from the owner of the intellectual property in question. And what if a famous eSport player is recognised as there in game avatar, who owns that persona? Is it the player or the owner of that intellectual property?

All these questions cannot be answered in the current state of eSports, as the laws governing this field do not cover the cases that are appearing. So until these legal problems are sorted out, it is unlikely that eSports as a movement will advance much further than it currently is.

The Marketing of ESports

The media industry revolves around marketing, it is how creates popularity and knowledge in sections of the media industry and can take many different forms, such as advertising and propaganda. The video game industry is no exception and eSports have seen a lot of their success and growth because of the marketing they have applied. The four main marketing points that apply to eSports and many other mediums are escapism, education, aesthetic and entertainment (Seo 2013). These ideas do provide a difference in marketing between eSport and sport as they both provide the person being marketed to with different points, although there are correlations between the two especially when it comes to their entertainment value.

How This Affects You

Now, how does this all affect you the reader? How will this change your life for the better or maybe even the worse? Studies show that 65% of families play games (Donghun, Schoenstedt 2011). So for the majority of you this will directly affect the way you view and play the games you like. Any game has the capability to be competitive, so you may well end up playing eSports and if eSports does take of then it will affect you just as real sports affect you today. You may end up watching it on TV, or see advertisements coating the billboards of your nearest city. You may even get into playing eSports if you find the time and interest, your friends may be playing eSports. ESports are most likely going to be an enormous contributor to the entertainment industry in years to come, affects how you and everyone around you entertains themselves. Conversely there are some potential negatives to this future. As eSports become more and more popular it may result in the decline of real sports and health in general, so if you or your friends do end up joining the future of eSports remember to make sure it doesn't have a detrimental effect on your health.

Conclusion

In conclusion, eSports are an enormous phenomenon at the moment and are only set to get bigger affecting the world of entertainment in a plethora of different ways. Eventually they may become recognised as equals to real sports or they may be shot down and remain treated as ordinary video games. I personally would look forward to future where sport is for everyone as eSports opens new opportunities for the disabled and competition that isn't restricted by physicality but still requires years of training, and who knows in a decade from now the Olympics may be a very different competition.

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Content Filtering of the Internet in the UK

A look at where we are now

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***Abstract*—This article will illustrate the current state of internet censorship in the UK, how it has evolved over time and where it seems to be going in the future. It will also look at why, depending on the news source you receive information from, you may think differently of the most recent proposals which affect our freedom on the Internet**

***Index Terms*— Internet, Censorship, UK.**

I. Introduction

On the 22nd July 2013, Prime Minister David Cameron gave a speech regarding the internet and pornography. In this speech he covered two topics. He spoke about the proliferation and access of child abuse images, child pornography and the implications of children viewing pornography online. The latest proposals regarding the latter are of concern to those wary of censorship. However, there are two sides to every story and this is no different. David Cameron's proposal to tackle the issue of children viewing pornography online is for Internet Service Providers (ISPs) to offer a filter that will block access to a list of websites. This filter will be set by default to on when new customers sign up, meaning that service users will have to 'opt-out' of the filters.

Before going any further in to the discussion about what the Government is proposing, it is important to discover if what is being proposed is actually censorship. To censor something is to remove offensive material from books, films etc. (Cambridge Dictionary, 2013). Using this definition, some may say that the UK government is trying to censor what we are able to access via the internet. Although the government is not removing the content, they are restricting access to it via the introduction of filters. Since the government is not completely removing access to this content, it would not be appropriate to say that the government is censoring our internet; instead they are optionally filtering the content.

There are many other countries across the globe that have some form of internet restriction in place. A country with some of the most severe internet restriction legislation is China. Since 1996, the Chinese Government has completely banned access to websites that it has deemed inappropriate for its citizens, including Western news outlets, websites of a sexually explicit nature and rebellious anti-China websites. Even in 2011 the President of China, Jiang Zemin, has described their existing legislation covering internet restrictions is "inadequate" (Human Rights Watch, 2011).

In the 2011 protests throughout Egypt and Libya, the Governments controlling these countries completely shut down internet access in an attempt to stop citizens from updating the world on the events that were going on (Krakovsky, 2012). Albert Dainotti, researcher at the University of California, said that "We've never before seen an entire country disappear from the Internet for several days". This is another shocking example of how internet censorship can be taken too far.

II. The state of content filtering online in the UK

The earliest instance of the state attempting to regulate our access to the internet was in 1996. In August 1996, the Metropolitan Police Clubs & Vice Unit contacted the Internet Service Providers Association. They requested that access to 132 newsgroups was banned as they contained pornographic images or explicit text (Rowbotham & Stevenson, p. 172). In September 1996 the UK issued the R3 Safety-Net action plan, introducing procedures for taking down websites containing illegal content (Electronic Frontiers Australia, 2002).

In 2000 the Government issued a Communications White Paper stating that they were not going to censor internet that is available and that internet users were to take responsibility of their own and their children's access to online materials (Electronic Frontiers Australia, 2002). It was expected that the newly set-up OFCOM would work in partnership with the Internet Watch Foundation (IWF, previously known as the Safety-Net Foundation) to help internet users regulate their own access. Since then, the IWF has also announced that it will deal with racial content that is deemed criminal.

More recently, there has been a focus on piracy and copyright infringement both in the United States and the UK, seeing websites such as The Pirate Bay and IsoHunt shut down. It was said that "sites like The Pirate Bay destroy jobs in the UK and undermine investment in new British artists" according to the BPI (British Phonographic Industry). The High Court rules that the website must be blocked in the UK as it massively infringes on copyright laws. Interestingly, the BPI had previously requested ISPs to block the website, however they refused stating that they would only do so if a court order was produced (Cellan-Jones, 2012). Although this is not related to the reasoning behind the latest proposal, it is still an insight in to

the lengths that the government will go to when it comes to the legalities of the internet.

III. The latest government proposal

The latest government proposal outlines several ways in which they will attempt to limit the distribution and viewing of child abuse content, as well as restricting adult content to children under the age of 18. The methods that they plan to use in order to prevent people under the age of 18 accessing adult content, as set out by gov.uk (2013) are:

- Adult content filters automatically turned on for mobile phones
- Family friendly filters are going to be applied across more than 90% of public Wi-Fi
- Family friendly filters pre-selected to be turned on for new broadband accounts with TalkTalk, Virgin, Sky and BT customers, including devices connected to home Wi-Fi
- Contacting current internet users to make the decision as to whether they want to turn on the family friendly filters
- Online safety to be included in the new national curriculum, launched this year

Some ISPs have already started acting upon these points, with TalkTalk being praised by David Cameron for their use of filters already (Jackson, 2013). ISPs put their filters in place in August of this year in public Wi-Fi areas where children are likely to be present. By the end of 2013, the automatic filter setting for new broadband customers will be in place, however Virgin Media customers will be unable to skip past this screen without just pressing enter, meaning that they can continue advertising the filters as an 'active choice' (Ghosh, 2013). As can be seen by the time scales above, the Government is keen to press on with these actions as soon as possible.

There are both positive and negative points surrounding this proposal. Positive points include introducing a blacklist of search terms that would only be used with 100% certainty that someone is looking for illegal content and the introduction of online safety in to the national curriculum. It is important to teach children to take responsibility for their actions and to ensure their own safety online, since no one will do it for them when they are adults. Negative points, however, include placing the blame in the wrong area. Drawing a comparison to the statement that search engines are to be held responsible for the content found on them would be like saying that because the streets are owned by the state, if an image of a child being abused was found on the street, the state would be held responsible. This, in fact, is not what happens, so why should search engines be held responsible for content found there, even if they are not the source of the offending image? There is also the claim by David Cameron that it is "much harder to enforce age restrictions" on the internet and that it is "more difficult for parents to know what is going on". If a parent allowed their child access to a firearm, the parent would be held responsible for anything that the child did whilst in possession of the firearm. Why is the same not applicable to internet usage? Parents are providing internet access to their children, so the onus is surely on them initially to be mindful of what their children can access online.

IV. How this may affect you

It isn't fully known how this proposal will affect the public yet. The basics have been set, adults will have to inform their ISP if they want the filter to be turned off (Hawkins, 2013) and filters are in place in public areas and on mobile phones.

Will it work? This has yet to be seen. What can be said, though, is that there was significantly increased traffic to The Pirate Bay on the day that it was blocked in the UK. It could be that this family friendly filter prompts the same response, possibly leading to an increase in the numbers of children downloading adult materials and the number of children using proxy servers to access this material (Mackenzie, 2009). The filter also poses the risk of non-harmful websites being restricted by accident (Kuepper, 2013). In this scenario, help websites such as anorexia recovery and child abuse help websites may be restricted, even if only temporarily.

It should also be said that relying on these filters to prevent children from accessing pornography would be too complacent. The nature of technology is such that there are ways around nearly everything. Parents concerned for their children's online safety need to take an active role in understanding technology regarding the internet.

As far as future possibilities go, it is likely that other content will be filtered and access will be further restricted to websites that the Government deems inappropriate. In the foreseeable future, internet users will have to decide whether or not they would like the filters to be turned on or off for their home broadband. There may be a lot of stigma surrounding the removal of filters – Does anyone want to be on a list of people who have the 'porn-filter' removed? Users may feel as though they are being judged or that the Government is keeping an eye on people who have turned the filters off.

V. Conclusion

In conclusion, this article has tried to clarify the current state of content filtering within the UK as well as stating what the recent proposal involves and how it will affect citizens within the UK.

Online content filtering has been around in the UK for nearly 20 years now and although it does not compare with other countries around the world, there is still a feeling of censorship surrounding the topic.

The latest Government policy aims to reduce the amount of child abuse content distributed and accessed in the UK as well as restricting the access of online adult material to people over the age of 18. Internet Service Providers will now preselect family friendly filters to on for new customers and existing customers will need to decide whether they would like the filters on or off.

It is not known if this policy will have a significant impact on the amount of children who access adult material, only time will tell. It is also not yet known if this policy will lead to further filtration of content deemed unsuitable by the Government in the future.

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The Evolution of the Electronic Sports Entertainment Industry and its Popularity

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I'm sure most of you are aware of the electronic sports entertainment industry. This form of entertainment is larger than you might imagine at the moment, and it is only increasing in size. Were you aware that only one year ago, there were more people watching one of these electronic sports (also known as "eSports") events than there were watching the first game of that year's American League Championship Series? Over 8 *million* people tuned into streams from all over the world on the 13th October last year to watch (Riot Games, 2012). How long will it be before we see events such as these being broadcast on mainstream television channels in place of things such as football? Will we see people sporting their favourite teams on shirts and going out to celebrate victories at bars and such?

So when did eSports begin, you may ask? The first large scale video game competition was a 10,000 people strong competition held in 1981 by Atari for the game "Space Invaders" (Electronic Games Magazine, 1982). During the next few years, these events began to make their way into magazines and television. One such programme was Starcade, which ran for approximately 3 years before ending. Apart from this, things remained relatively small scale until the early 90's, due to the fact that these games were still not widely advertised. Once computers had begun to gain increased internet accessibility, people could really start to play competitively. Technology had advanced to the stage that as many as 16 people could play together over the internet, although many more could talk to each other using IRC (internet relay chat) which was created in 1988 by Jarko Oikarinen to allow people to converse with one another. This was done by the client connecting to the IRC server. Jarko managed to spread IRC to other countries and universities by requesting his friends to run them at their universities. As more and more people discovered it, it was in widespread use in countries such as Finland (Jarko Oikarinen, ca. 2005). Initially, people were unable to converse over large distances as they were unable to connect to the specific IRC servers needed, but as the years progressed and internet connectivity improved, people were able to converse with each other from all over the world. By 1993, with the release of the game *Doom*, people had created specific IRC groups dedicated to solely gaming purposes. The eSports tournaments at this time were still mainly run by the companies that owned the games themselves, such as Nintendo. It wasn't until 1994 and the release of Doom II that people could connect to servers and fight each other through the internet. A service known as DWANGO (Dial Up Wide Area Network Gaming Operations) was created. People would have to pay a fee to run the software which would then connect to DWANGO servers. This service became very popular, with over 10,000 subscribers paying $8.95 a month from countries all over the world. However, Doom was quite a controversial game upon release due to its high levels of gruesome imagery and violence. Many people disapproved of this style of game and were concerned that it could incite people to commit crimes and act violently toward people as a result of playing the game. One such person was David Grossman, who went as far as to call it a "mass murder simulator". This was the main spark for the argument that games could begin to simulate real world violence and cause people to act similarly. I'm sure we're all aware of this debate due to current media coverage. Competitive gaming continued on in this fashion for the next few years until roughly 2000, with only a few large tournaments being founded in these years.

In the year 2000, competitive gaming took a real leap forwards with the formation of the WCG (World Cyber Games), who then opened with a small tournament known as the World Cyber Game Challenge. This tournament involved 17 countries competing in games such as Quake and StarCraft and had a prize pool of $200,000. Another event was hosted in Seoul, Korea a year later by the WCG due to its massive success. The grand prize for this tournament was $600,000, and over 380,000 competitors from 37 countries entered (WCG, 2001). As the WCG continued to run tournaments with increasing success in Korea, new organisations were founded such as IEM (Intel Extreme Masters) and MLG (Major League Gaming). As these organisations began to run increasingly more tournaments, the competitive gaming scene grew quickly. In Korea, where the WCG started, games such as StarCraft had such enormous popularity that the top players of this game were treated like "professional athletes" and that it was being considered a "national sport" (Paul Tassi, 2012). These tournaments have been continuously running for the more than the past decade with increasing popularity.

An emerging presence on the gaming scene is live streaming. The streaming website Justin.tv was launched in 2007. It was originally just a single video of the founder, Justin Kan, streaming video of his life, with audio included. This meant that

anyone in the world could tune in and watch what another person was doing at the same time as it was happening. This gained the media's attention and he was interviewed on shows such as the Today Show. This helped promote the website, and soon there were over 60 different channels by different people or organisations that anyone could tune into. Eventually it became an open network, which allowed anyone to register a channel on the website. In just over 6 months, Justin Kan announced that they had signed over 30,000 accounts to people all over the world (Merritt, T, 2008). The broadcasting from the website was based on Adobe Flash. In 2011, the gaming section had become so large that it was separated into an entirely new website, known as Twitch.tv. Many top level players from specific video games now live stream their gameplay over the internet for other players to view. Have you ever watched a professional player's live stream? Many of these players have extremely high viewer bases, even while no professional tournament is currently running. For example, it is not unusual for some streamers of a game called *League of Legends* to have over 30,000 concurrent viewers at any one point in time. Technology has advanced to the stage that thousands upon thousands of people can tune in to one person whenever they want. As the years have passed, the quality of streams has improved massively. You can watch them in 720p, 1080p, and higher. How long will it be before they can be streamed straight to your television with no drop in quality? Many companies already use streaming websites such as Twitch to advertise and give 'sneak peeks' at upcoming games/features.

The game *League of Legends* by Riot Games has been a driving force behind the promotion of electronic sports. Tournaments are constantly held throughout the year, with the professional teams from all over the world meeting fans at the venues with room for tens of thousands of people to watch them play live. In 2012, over 8.2 million people tuned into the grand finals of the second season, with "over 1,154,000 unique people [watching] the event online, not counting TV numbers" (GameSpot, 2012). The grand prize for this one tournament was 1 million dollars to the winning team, with a total prize pool of 2 million dollars. The third season has just finished, although the numbers for the viewer count have not been released yet, however Brandon Beck, CEO of the company, claims that number was over 4 million people watching just on TV in China/Korea (Brandon Beck, 2013). The competitive scene has advanced so much in society that these professional gamers earn so much money from just streaming to casual players that they can live off of streaming full time due to ad revenue and subscriptions. Compared with how things were back in the 1990s and early 2000s, you can only wonder how things will be in the coming years.

Many of these professional teams are already beginning to be sponsored by big brand companies from everyday life. One such company, believe it or not, is Pringles. They have sponsored a Russian gaming team along with BenQ and SteelSeries, the hardware producers. Another team has been sponsored by the energy drink company, Monster. The company Riot Games has also signed a deal with Coke Zero for the upcoming year which will run games in which teams compete each week, broadcasted live across the globe (Riot Games, 2013). These big name brands are only recently discovering the success of the eSports industry, and are keen to take advantage of it. Soon professional teams could in turn be advertised by their sponsors themselves; Coke, Pringles, etc. It would not be surprising if these gaming tournaments and teams were advertised on mainstream television in the coming years.

So, in conclusion, the answer is yes. We probably will see people in the streets with shirts displaying their favourite gaming team. This form of entertainment will soon find its way onto televisions around the world, not just in Korea, where they have an extremely popular 24/7 dedicated gaming channel known as OGN. We could even visit one of the many new opening gaming themed bars or events all around the world, such as the newly opened Meltdown bar in London, UK. Gaming can no longer be looked-down on as a hobby as it was only a couple of decades ago. We can only wonder where these new advances in technology will take our experiences, and what the future holds in store for eSports and gaming as a whole.

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Behind You!

(Or how the hack-tivists got their lulz)

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I. IN THE BEGINING

Anonymous is a loosely organised group of self-styled activists and hack-tivists that originated on the 4Chan/b/ image message board.

The group grandiosely describes itself on its Wikipedia page as an, *'anarchic, digitized global brain'* that exists both in the virtual world and offline. The truth however is rather more prosaic in that the group originally consisted of teens to twenty-something 'script kiddies'[1] of both sexes who were, "*in it for the lulz*,"[2] modern day slang for having a laugh at someone else's expense, but who mainly just wanted to combat boredom, '*troll around a bit*,' and generally make mischief.

Twenty five years ago Anonymous would perhaps be comparable to such movements as the Anarchists of the 70's and 80's; loosely knit groups of people with no leaders but committed to the same ideals.

GROUP THINK AND HIVE MIND

Anonymous succeeds (and fails) because it relies heavily on disparate groups of people acting together in unison. Anonymous has no identifiable leader or any command structure of any sort apart from moderators on a forum, message board or chat room so it cannot easily be infiltrated by hostile external forces such as the security services.

Various Anonymous members have remarked tellingly that; "*Anonymous has no leader, no organization. Anonymous is a wandering mass of both order and chaos."*

The group has also been compared to '*sparrows that fly together but have no destination and no leader*.'

This mindset has ensured that although there have been arrests the group continues its activities.

ANONYMOUS VS. THE CHURCH OF SCIENTOLOGY

Anonymous became more politicised in 2008 when it became involved in an initially, mischievous campaign against the Church of Scientology, 'Operation Chanology' as it was called. One of the churches more notable follower's was Tom Cruise. When a video appeared online of Cruise espousing the belief systems of the Church of Scientology and also criticising psychiatry, treatments for depression and alcoholics anonymous to great amusement on YouTube, the video instantly went viral. Cruise, who up to this point had been both spokesman and poster boy for the church, became a laughing stock and so the Church of Scientology swung into action and had the video taken down under copy-right law.

Annoyed that a golden opportunity for 'lulz' had been taken away from them, Anonymous launched a concerted campaign against the Church, at first it was concentrated on prank faxes and telephone calls but as time went on things became more serious and Anonymous turned its attention to the Church's website.

DDOS attacks against the Church's website began on January 18th 2008 and have continued to the present day.

The highly litigious Church of Scientology did not see the funny side and has endeavoured over the years to stop Anonymousness' activities with the DMCA (Digital Millennium Copyright Act) and lawsuits pursued through the US courts.

#ANON OPS AND DEMONSTRATIONS

Anonymous method of operations (MO) is very simple; members meet in the 4Chan /b/message board and then in

[1] In hacker culture script kiddies are unskilled individuals who use scripts or programs developed by others to attack computer systems and networks and deface websites

[2] "doing it for the lulz" is a catchphrase which serves as an explanation for any trolling and drama in the internet.

private chat on IRC channels. They discuss the target they are going to attack, specify a time and a date, then set off a DDOS attack[3]. When the target has been hit, a tweet with a hash tag and the operation name is sent through Twitter with the message, 'Tango-Down.'[4]

Anonymous group relies heavily on social media, primarily Facebook and Twitter, as information can be easily disseminated to a very large amount of people with little fear of discovery or more importantly legal ramifications. Anonymous twitter feed has, for example, four thousand followers and the groups FaceBook page has 1.6 million likes.

Anonymous has also been involved in live and on the whole fairly peaceful demonstrations in many of the major capitals in the United States. Government agencies, large businesses and city organisations have been targeted. It was around 2008 that the Guy Fawkes masks were adopted to protect the anonymity of the protesters.

DENIAL OF SERVICE AND LOIC

Anonymous has access to a fairly simple piece of software which it uses to bring down web-sites with a denial of service attack or DDoS. The programme is called The Low Orbit Ion Canon and is freely distributed and available online. It was developed using open source software, [5] and written in C# a high level programming language.

LOIC was developed by Praetox an ex hacker who can be best described now by the old adage, 'poacher turned gamekeeper,' as he now develops and produces software for sale for legitimate purposes.

The LOIC essentially turns computers into, 'bot-nets'[6]which can then be used for DDoS attacks.

LOIC is a highly effective tool that has been used in campaigns against the Church of Scientology, MPAA (Motion Picture Association of America) Visa, PayPal, Sony and more recently The Ministry of Sound in London.

WORKING FOR THE MAN

Are Anonymous Cyber-Terrorists, noble freedom fighters or just a bunch of kids having a bit of malicious fun at others expense? The US and British Governments post 9/11 would have us think they are cyber-terrorists as they introduce ever more draconian laws which restrict the free movement and distribution of information.

But how in all seriousness can the internet ever be totally regulated and controlled by government and law? How can the un-regulateable be regulated? After all what is illegal in one jurisdiction or country is not necessarily illegal in another.

The public are not allowed to sell Nazi paraphernalia on EBay in Germany but are allowed to sell it in France, the US has banned gambling websites which have promptly moved their sites off-shore and continue to make huge amounts of money from their American customers, PirateBay operates out of Denmark and file sharing websites have been banned by the British courts but can still be accessed by proxy. Where there is a will and a search engine there is a way.

Although the FBI have made several high profile arrests and convictions, most notably from the splinter group, Lulzec;[7] a group of six hackers which disbanded soon after the arrests, Anonymous has continued to operate.

The reality is that legitimate democratic protest over the last twenty-five years has developed from polite letters to the paper and phone calls to an MP or Senator to more proactive and immediate protests via Twitter, Facebook and by the simple expedient of bringing down a website and upsetting commercial business.

[3] DDOS, a type of DOS attack where multiple compromised systems, usually infected with a Trojan, are used to target a single system causing a Denial of Service (DoS) attack.

[4] Hackers use this term to explain that websites have been taken offline. Taken from a saying used by the Army.

[5] Open-source software is computer software with with a license in which the copyright holder provides the rights to study change and distribute the software to anyone and for any purpose.

[6] A botnet is a collection of Internet-connected programs communicating with other similar programs in order to perform a task.

[7] LulzSec, a black hat computer hacker group that claimed responsibility for several high profile attacks including Sony pictures in 2011

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Changes in Social Networks.

Connections, Employment and Mass Communication.

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I. Communication and Social Network

Communication is a process of exchanging information, sharing ideas, or feelings. It can take place between single individuals or large groups of society. The digital age transform communication by extending its reach to all areas of social life as local and global network (*Castells 2012*). Every day hundreds of millions people communicate on social networks sites. They adapt it as a part of their daily routine because it is easy to use, powerful tool. Social networks helps people satisfy their social needs, interact, exchange information and present themselves in the best way possible in created profiles. In short history of social networks its popularity has grown really quickly but still not many researches focuses on how they influence behaviour, connections, and to what extend they influence our life and society (*Wilcox, Stephen, 2012*).

Beginning and The Well

In the 80's computer based social networks had offered only basic features like chat or messaging but they were growing all over the world: Community Memory, The Well in United States, Minitel in France or Videotex, Prestel in Britain. They were crated thru different reasons but for the first time they allowed ordinary people to experiment with social networking. The Minitel was the most successful at the time probably because it was free for the customers of phone company and before 1986 it had 6 million users (*Cellan-Jones, 2011*).

From all of them worth noticing is The Well. It was founded in 1985 in California by Larry Brilliant and Stewart Brand. They main purpose was to connect people with common area of interest and so on the beginning The Well connected mainly hackers, hippies, journalist and writers. Long distance phone calls where very expensive at the time that's way The Well was local phenomena, especially after band called Grateful Dead discover online community and used it to advertise their concerts, but except of music fans, discussion about politics to trivial topics, it connect people sharing their life, interacting together becoming friends, couples. Back then it had significant impact on online culture and the level of intimacy they achieved despite technical limitations.

It work as a dial-up bulletin board system the idea came from traditional cork-and-pin bulletin board used in public areas for massages, community news and advertisement and it work like that just as computer system with the software which allows user to log in and exchange messages with other users over the phone line by modem (*Cellan-Jones, 2011*). In 1985 most recent modem has cost around 1000 dollars and had speed connection up to 9 kilobits per second. To compere the hardware build into first-generation iPhone was capable of connecting to the Internet four hundred times faster. Despite simplicity of Well people meet for the first time online creating virtual communities and shared intimate details of their life. In mid-1987 the number of members has reached two thousand (*Ryan 2011*). The Well exists to this day. It inspired community network crated later on but it become a way to live, it change the way we communicate (*The Well*).

Development after World Wide Web

After late-90's when personal computers become more affordable the new social network based on World Wide Web where created. Their attract millions of users by accident or by common interest like politics, activities, or by racial, sexual, religious or nationality shared identities. They offered new features blogging, photo and video-sharing, later mobile connectivity. In 1995 Classmates.com allowed user to link with their high school or college friends and search for other pupils but in 1997 SixDegress was first to give user possibility to create profiles and index their friends on the list and surf thru that list. In 2000 it had 3, 5 million of users but stop existing in 2001. Friendster lunched in 2002 was created to make online experience similar to offline. To achieve that user weren't anonymous. They connect to the people and meet new people thru their friends. The site reached popularity to which it was not prepare technically and frustrate the users. Other issue was the fact that the site expands the amount of users so not only friends could see the profile but also old classmates or bosses. Many users left because they were looking for privacy among their close friends.

After 2003 many social network sites were lunched e.g. Last.FM, Couchserfing, Hi5, LinkedIn, YouTube, Furthermore, Flicker or MySpace. Most of them where profile-centric sites but focusing on different aspects like business, connecting strangers or media sharing. In early stage of developing social network sites many did failed to sustain their level and were close it was probably because most of the people did not have extended network of friends online (*Boyd, Ellison, 2008*). Social network site Bebo became huge in schools it was new for teachers and parents which were concern about influence it had on their kids, especially issue of bulling.

In 2004 in two weeks Mark Zuckerberg crate The Facebook.com which for two years was college based social network. He saw that everyone have friends and family they would like to connect with so in 2006 Facebook become available to the rest of the world (*Cellan-Jones, 2011*). By March 2012 it claimed 835 million users. Facebook reach dominant position by letting people to be open and connected and share information in simple easy way. Purpose of the Like button is to connect people, things and ideas. Facebook make suggestion to its user based on algorithmically computed relationships like help in finding friends, or choosing the most interesting post to share. In 2006 lunched Twitter it was different social network, instant and just quick in using as public forum only for short messages as microblogging, allowing people to fallow others. In six years its claimed almost 500 million registered users (*Dijck, 2013*).

From Connection Thru Employment to Mass Communication

After crating a profile social network sites had different labels to indicate connection with other users which sometimes is misleading. The term "Friends" dose not necessary means friendship in everyday life but public view of connections is essential element of social network sites. (*Boyd, Ellison, 2008*). Offline connection between people is valued by the quality and status of the individuals. In online relations individuals jugged connection with the person by popularity, so more online friends decide upon attractiveness of the person (*Dijck, 2013*). Robin Dunbar measured how many stable social relationships can handle human brain. He discovered that maximum number of social connection for individual to manage is around 150-Dunbar's number but also trust expend in circles. From number of the best friends which is around 5, to people we spend significant amount of time is rising to 15 -20 and next circle is from 40 to 60 (*Cellan-Jones, 2011*). Another research confirms Dunbar's number on an example of Twitter, so social networks did not increased human social capabilities. We are able to focus on 150 social relations (*Goncalves et al, 2011*). This means that people with smaller number of ties, especially strong ties can transform information more effectively.

Social networks becoming more popular all over the world but at the same time they reached in every aspect of our lives and can become a problem for some employees. In United States military banned soldiers from MySpace and Canadian government banned employees from Facebook (*Boyd, Ellison, 2008*). Employers start to check profiles of applicants, so the way individual project themself online can influence the recruitment process (*Cellan-Jones, 2011*). Often they also been aware of grooving popularity of social networks and develop policies about how employees should present themselves online. 12% employed adults need promote themselves online as part of their daily job, also employees fallow their workers online. In 2009 a teenage was fired because she complained about monotony of her work on her Facebook status. Employee working for Apple criticise their product in many Facebook post which could hurt image of the company. He was dismissed by the organization and an employment tribunal ruled it was right decision. In 2010 in United Kingdom a manager sent massage on Facebook to teenager employee informing her about being fired. Individuals usually see social networks as being social and private for personal use but employers start think of them as public area where they need to care for organization reputation (*Chambers 2013*).

In specific circumstances effective access to information can lead to mass communication and network movement. Society is organized upon the way people think. They have got power to decide about destiny of institutions, values and norms which influence their life. Trust is bringing together society. When it is broken by politics, government or other institution it influence individuals, they become defensive and fight for their goal. Social networks are the best place to connect them together freely, beyond control of others. Different people share their thoughts and hops in free public online space. This helps them overcome fear. Networked social movements occurred all over the world and even changed a history (*Castells 2012*). In April 2009 in 10,000 young Moldovans gather together to protest against suspicious Communist leadership by crashing with police and attacking government buildings. Young activist used manly Twitter and Facebook to mobilize the public, spread their massages and change the history by overturning the election result (*Cellan-Jones, 2011*). Mass communication means sending massage from one person to many receivers. In 2011 in Britain social networks where used as a tool for mass communication. In five days riots spread over major cities in United Kingdom. Angry crowd was demanding justice over killing by police unarmed man, Mark Duggan. People used Facebook or Twitter as one of the tools to get together and plan next attacks. Police used social network to track people encouraging rioting and prosecute them. Governments see them as a potential threat because they cannot control free speech (*Chambers 2013*).

Future Project

Social networks do not have a long history. They started more as local communication tool and develop to be a powerful place to fulfil affiliation need as well as sharing with others. They influence individuals, whole networks of society or even change history. Often people use different social networks for work related purpose and others for informal communication. Social networks should be part of healthy balanced life style. They never could replace a face to face communication and physical contact (*Cellan-Jones, 2011*). Facebook lunch project Internet.org by joining with companies like Ericsson, Nokia, Opera, Samsung and others. There goal is to deliver internet to the rest of the world which means two-third of the population. In the developing countries access to social network sites could bring even bigger changes (*Lee, 2013*).

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Edutainment in Video Games

How Video Games are allowing us to learn whilst being entertained.

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Over the past 25 to 30 years, Video Games have become a much more prevalent and mainstream part of our day-to-day lives, meaning that they are starting to be taken much more seriously as a medium and an art form. Video games, just like any other medium, are often split into genres in order to not only better identify their content, but also to allow users of that medium to be able to find things relevant to their interests easily. However, there is one genre that seems to have been separated and shunned from the rest; Education.

It's understandable if you look at it, not many people are proactive enough to want to voluntarily educate themselves during their leisure time, especially when considering that Educational video games have a reputation for being boring or unengaging. Because of this, we have to ask ourselves whether Video Games have the potential to convey an educational message, we have to ask if they have the capability to teach. In order to do this, we have to look at how we learn, and how Video Games can facilitate our learning.

Winston Churchill once said "I am always ready to learn, although I do not always like being taught" [1], what this quote brings up is the notion that people (especially children) learn better if they are engaged in a topic, they learn and soak up knowledge better if they are having fun and are comfortable in their environment and teaching method [2].

Now; with this is mind, one would think that Video Games would take to education like ducks to water, but if we look at Nintendo's 'Super Mario' franchise for example; the review scores of an 'educational' Mario game such as 'Mario's Time Machine (1993)' are significantly lower than one of their games who's main focus is not on educating the player, such as 'Super Mario Bros. 3 (1988)' [3] [4].

This is because Entertainment games are generally not *engaging* to the player, they don't have that depth and sincerity in their worlds that drags us in and gets us invested. 'But surely…' you think; 'there must be some way to convey information and teach whilst keeping us engaged and invested?' And there is, one of the ways to do it is through a thing called 'Tangential Learning.'

Tangential Learning is the idea that if you introduce a topic to a person within a context that they already enjoy then it will motivate them to self-educate themselves [5]. Now this may sound like a bit of a weird concept, so let me better convey its effectiveness using a few examples: Think how many people now know who King Leonidas is – thanks to the 2006 film '300' [5][6]. Or – if you'd prefer an example more suited to the video game medium; think how many people now know what the 'Sephirot'[7] is due to the character 'Sephiroth' in the hugely successful Square-Enix game 'Final Fantasy VII'[5][8].

However, these are only a few limited examples of tangential learning in games. If you look at games like the 'Sid Meier's Civilisation' series, the concept of learning is approached, instead of by referential or autobiographical natures, with the inclusion of a 'Civilopedia' [9] which, along with explaining the purposes of the historical units within the context of the game, includes historical facts and information (The Civilopedia page on the 'War Elephant' for example [10]) that the player can read in order to further their immersion and engagement with the game. This game incorporates learning into its mechanics and atmosphere to further engagement – which itself furthers the effectiveness of the teaching methods. This example was used with success at multiple Colleges and Universities across America [11].

However, teaching is about more than just conveying facts. There are all kinds of ideologies and ways of thinking that Video Games can convey and teach exceptionally well – often without the player even realising.

One of the most popular examples of this is with '2K Games' iconic 'Bioshock' game series – the first instalment in particular. In Bioshock, the player explores the fallen city of 'Rapture' – an underwater Utopia following the ideologies of objectivism [12] [13], a concept foreign to a lot of people.

Objectivism is an idea presented by American novelist Ayn Rand [14], and featured prominently in her novel 'Atlas Shrugged,' first published in 1957 [15]. The basis of objectivism is that we should live independent of social, religious, ethical and moral constraints, constantly seeking to further our happiness and advancement as a species [13]. This is directly referenced in the Bioshock game by one of the antagonists 'Andrew Ryan' (Creator of Rapture, whose name is a reference to Ayn Rand) [16] during multiple points in the game. One of the most iconic being during the player's introduction to Rapture [17]. Along with the multiple propaganda speeches that are played throughout the segments of the game [18] the idea of objectivism is not only conveyed to the player, but also used to further their engagement and enjoyment of the game by adding atmospheric value to the various scenes.

What Bioshock does well with this concept however, is it shows the criticisms of objectivism[19] through the dystopia and ruined landscape of Rapture, and through the mutated 'Splicers' that roam the failed utopia Bioshock works to express that an individual's inherent selfishness and fallibility cause an objectivism driven utopia to inevitably fail [20].

The main protagonist of the game, known as 'Jack', is utilised also to convey a folly of objectivism in a utopian society. This is brought into light during a cut scene later in the game – where the player confronts Andrew Ryan. Here it is revealed that Jack had been conditioned to follow any command; should it be prefaced with "Would you kindly…"

Shortly after revealing this, Andrew Ryan commands the player to kill him, using the trigger phrase. During this cut scene the player has no control over what's happening, you are left to watch as Jack murders Andrew Ryan – an action which, after the revelation of your conditioning, is unwanted. It is during this scene that Andrew Ryan says an iconic phrase – "A man chooses, a slave obeys."

This scene, along with Andrew Ryan's iconic phrase, drives home that the player is a slave to Jack's 'Master', a man called Atlas (Also a reference to Atlas Shrugged [15]), who has been telling you what to do. The realisation that throughout the game you have been blindly following his word, just as Jack has; because you, just like him, are conditioned to do what Atlas says makes the player question the concept of Free Will and Choice. How you never once questioned why you were doing it, and how you never once questioned Atlas, because to you – he was the authority, and from a very early age we have all been conditioned to respect and listen to authority.

And so if the two of the most defining concepts of our humanity (that being free will and choice) are stripped from us, then is an objectivist utopia possible? [20]

Bioshock is not the only game to try and use gameplay mechanics and narrative to convey ideologies though. 'The Sims' is a series of games published by EA [21] and it's casual nature might make you question why I'm bringing it up; a game as fun and simple as The Sims couldn't contain the complexity to convey an entire way of life, could it ?

To that question let me say – yes, yes it can. The entire mechanics of The Sims is built around consumerism, within The Sims universe you make your Sims happy through the purchasing of goods, through buying more and more expensive objects to decorate their house. The number of friends your Sim has is related to how much you own [22]. One of the game's soundtracks is literally called 'Consumerism Simplified' [23].

However, due to its casual nature and lack of narrative – The Sims lacks any criticisms on the ideology of consumerism.

So far we have discussed how Video Games can allow us to learn facts through tangential learning and how Video Games can allow us as players to experience and learn about new ideologies and lifestyles through gameplay. But what about introspection?

Aristotle once said that "Knowing yourself is the beginning of all wisdom" [24] and since the Merriam-Webster dictionary defined introspection as "the process of examining your own thoughts or feelings" [25] one could argue that introspection and introspective thought are some of the most important things that we can do, that learning about ourselves and how we would react to a situation is a vital commodity.

And again, Video Games have come in to allow us to look inside of ourselves and evaluate how we would act in a certain situation. In fact, Video Games do this better than possibly any other medium due to their interactivity and engagement.

An example of this is Bioware's hugely popular 'Mass Effect' series of games [26]. In which the player controls a spaceship commander known as 'Commander Shepard' and is tasked with completing various missions throughout a Sci-Fi universe.

Now, two of the most prominent themes in Mass Effect is morality and choice, the game features a built in morality system and dynamic narrative, where the world will react to the choices you make. This feature promotes the player to actually consider the pros and cons of their actions – to debate what would be the right thing, or what they would do in any given situation.

There is one mission in particular that shows the idea of introspective learning through gameplay choices amazingly well. In Mass Effect 2 the player is tasked with deciding the fate of a race of living machines called the Geth. In the context of the game, the Geth have split into two factions; one who wishes to destroy your character, and the other who wishes to protect you. As the player, you are given the choice to either destroy the entire Geth race, or reprogram the faction that wants to destroy you so that they will side with their brethren.

This question tackles one of the most powerful questions of humanity; 'What does it mean to be human?' It makes us think about free will, our ability to follow any belief we choose, and whether we, as the player, have the right to take that away. Or whether we have the right to condemn others for their decisions and beliefs. The simple binary choice offered forces the player to decide between two negative options, and in doing so, it allows the player to learn about what it is they value most in life. [27]

In conclusion, Video Games as a medium have evolved to such an extent that they are no longer a tool for enjoyment, they are no longer simply a leisurely device. Nowadays, Video Games are an interactive and engaging experience, they can inspire us to learn about a topic that interests us. They can allow us to experience a whole new way of life and different ways of thinking by immersing us in their world. And they can allow us to stop for a minute and question some of the basic tenants of our lives, make us question the very basis of our humanity, and allow us to learn more about ourselves from the decisions we make when posed with these questions. They are allowing us to enrich our lives in a plethora of ways, to explore concepts and branches of study we may not even have heard of before. And all the while keeping us entertained and coming back for more.

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Violent Games and the Gamer

An article on how violent video games affect you

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I. Introduction

Over the years there have been countless debates on the subject of violence in video games and what effects it has on the us. Many parties or individuals are very critical on this subject, claiming that violence in video games leads to real life violent attitudes and crime. For instance, when a teenager commits a violent crime, people can be quick to blame violent video games. On the other hand, different parties or individuals claim that violent video games have no real effect on real life violence and that they are not to blame. Do violent video games affect people? How do they affect you? Does it they cause positive or negative effects? These are a few of the questions I will be exploring today.

Theories

Over the years there have been many different theories, speculations and opinions on violent video games and how they affect us.

For instance, violent video games are often thought to reinforce antisocial behaviour, even in short time exposure; and when violent video games are played over a longer period of time, they are even thought to have a psychological impact on the individual, such as developing aggressive beliefs or attitudes. Some studies have also showed that people who already had hostile or antisocial tendencies prior to playing violent video games were more prone to being affected by them than those who did not exhibit violent or antisocial behaviour previously.(Thomas A. Kojimans, 2004)

Proof

However, despite all the various theories of violent video games and their supposed adverse effects on the players, there is very little real evidence of any of these theories actually being true. (T. Willoughby, 2010) This means that the vast majority of statements from people or parties stating that violent video games lead to antisocial and aggressive behaviour or violent crime are simply speculations or theories rather than facts backed up with real evidence.

Furthermore it is unfair to assume there is a universally recognised effect from playing violent video games, since there is not enough evidence to back up any effect on us from playing these kinds of games. Additionally, it is also unfair to blame video games for violent behaviour whenever there is an opportunity to do so. (Pete Etchells, 2013)

Behaviour

A lot of people tend to associate this negative behaviour with violent video games because in a lot of games the player is essentially willingly performing violent behaviour in the game. For instance in Grand Theft Auto, we willingly murder and steal without a moment of thought, so people tend to make connections with these actions and our behaviour in real life.

However, some people tend to have misconceptions about the player and their attitudes while playing the games themselves. For instance, many violent video games tend to be very competitive, particularly in online multiplayer games that also have violent tendencies, such as first person shooters like Call of Duty or Battlefield. The frequent violence in these kinds of games can lead people to believe that the games are causing aggression, particularly when you shout or curse while playing the game. When in reality, these kinds of games are only encouraging a competitive attitude, rather than actual aggression. (Paul J. C. Adachi, 2011)

So, when players shout and curse and get frustrated when playing violent, competitive video games, they are often exhibiting a competitive nature rather than a violent attitude, and this can cause people to have misconceptions about violent video games and their effect on the player and their behaviour.

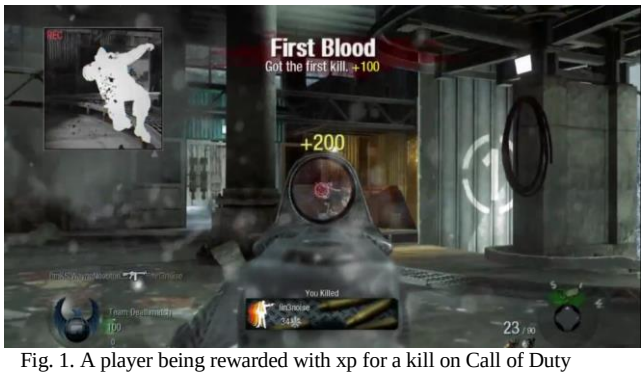

Fig. 1. A player being rewarded with xp for a kill on Call of Duty

Motivation

Similarly, when playing violent video games, some people tend to think that the players are motivated by violence. For instance if we are showed a clip of somebody shooting someone in the head in a video game, we may smile or find it satisfying, and this isn't because the we like the idea of people being killed, it is because it provides a sense of satisfaction that comes from

playing video games. (Jamie Madigan, 2013) We are also motivated by reward systems; in the example of shooters, getting kills gives us experience points, as shown in figure 1, this pop up of getting more and more experience points is motivating for us and drives us to keep on playing. And furthermore, with these experience points we can earn new unlocks such as weapons and this gives us something to aim for and motivates us to keep playing.

But, again, some people misunderstand or misinterpret this feeling of satisfaction or achievement, and the player being motivated, because of the violent nature of the game they are playing. Some people tend to assume the game is making the player motivated by violence and killing others, so they feel it is having a psychological impact on the player. When really, they are simply motivated by the satisfaction and the rewards that the game provides in order to keep the player engaged.

BENEFITS

In a contrary belief to people or parties thinking that violent video games only give negative effects to us; some studies have shown that video games can have many positive impacts on the player.

For example, some research has discovered that playing action video games, which are often violent, can help us to make the right decisions faster, as well as developing a faster reaction time. In addition to these benefits, playing video games is shown to also have benefits to real life situations such as driving, reading small text, multitasking and navigating around cities and towns. In a study where a sample of players were made to make quick decisions, it was found that the action video game players made these decisions 25% quicker than those who weren't playing action video games. (Anon, 2010)

So despite what some people may think, violent or action packed video games can have very positive effects on us, helping to sharpen the mind and develop on existing skills. This disproves the assumption that a lot of people have that playing video games has no positive effects and only leads to violence and negative behaviour.

Fig. 2. League of legends, a game where quick decision making is necessary

CONCLUSION

There are many theories and speculations suggesting that violent video games can cause anti-social or aggressive behaviour. When violent crime occurs, particularly among adolescents, people are quick to point the blame at violent video games that the guilty adolescent may have played. So this causes yet more theories and speculations about video games possibly being the cause of this violent crime. However, that is all they are, theories and speculations. There is next to no real evidence of them being true. Some people believe that people who play violent video games exhibit aggressive behaviour and are motivated by violence or gore. When in reality these are common misconceptions and players are in fact only being competitive and being motivated by rewards and a sense of satisfaction or achievement. People's theories and speculations about video games being a cause of negative behaviour or crime are continuously being disproved by research, psychology or even just common sense, yet still these theories and opinions and statements still appear and are believed by a surprisingly high amount of people since these theories often have no basis or proof.

With this being said, ask yourself, is it fair to condemn video games? Are they really the cause of aggressive behaviour or violent crime? I say, as long as there is no real evidence to support this, which, as of now, there isn't; then no, and furthermore it is unfair on the gaming industry and the players themselves to blame violent video games for these things, since these conceptions are nothing more than theories and speculations. When it comes to anti-social or aggressive behaviour and violent crime, video games are not to blame.

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The Oculus Rift and Virtuix Omni

Virtual Reality at its Most Immersive

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***Abstract*—Virtual Reality tingles the senses of many a keen gamer. Simulations are dependent on this to immerse their users for the full realism required for an actual examination or for training.**

I. 30 YEARS OF VIRTUAL REALITY

Virtual reality stems from the question; how do we make it feel or appear more real? The idea that we can get more immersed in an experience, from driving vehicles with a wheel and gears or walking on the surface of Mars strapped to the Virtuix Omni and Oculus Rift. These experiences have taken years of imagined possibilities to enrich the experiences people can have, research and development and is nowhere near 100% "real".

Virtual Reality's physical roots stem from the 60's, with innovations such as the Sensorama Machine, which was a user console designed to as a simulation apparatus (Mattes, 2013). Built by Morton L. Helig, the initial design was a bulky system; designed to show how the user would see the display from a seated position.

In 1969 Heilig designed the Telesphere Mask. This was a fully head-mounted version of the Sensorama system designed for a larger audience. The device was similar to the Oculus Rift in that it was mounted to the users head; it have adjustable television units which pivoted both laterally and longitudinally which allowed any user with any shape of head to use the system after a few minute adjustments. (Mattes, 18/05/2013)

It was designed as a motion picture theatre and had a single big screen, just like the Oculus, The innovation which went into this system had been considered an incredible leap forward in the world of Virtual Reality. (Heilig, 18/05/2013)

Before the Telesphere Mask was finished; in 1968, Ivan Sunderland created what he called "The Sword of Damocles". This was his attempt at making "The Ultimate Display". The ultimate display was a report of what he considered was the best display platform that humans could interact with. (Sterling, 20/09/2009) Sterling suggests that the display would be a room where the computer could dictate matters existence in an instance; his example was with a chair that was 'good enough to sit in'.

These Pioneering technologies have lead the Virtual Reality concept to a stunning reality with the technologies available today, we have created systems such as the Rift and Omni. Together this created one of the most immersive gaming and simulation environments that have ever been released.

TO BOLDLY GO

At PAX 2012, the Virtuix Omni and Oculus Rift was seen by NASA who took an instant liking to it. According to Nicole Lee, scientists at NASA got their hands on the developer's kit as soon as they could. The concept is that the level of interaction that can be obtained by the connection these VR tools offers allows the drivers of rovers to understand the three dimensional topography much more naturally and cut reaction time down due to the depth and detail available in the system.

Despite all the good points; the technology is still very limited; mostly because it was designed for gaming as opposed to simulations of the depth that NASA is hoping for. (Lee, 09/06/2013)

Since the developer kits for the Oculus Rift were shipped, people came up with more creative uses for it than simply a gaming rig. Amidst the mad concepts of guillotine simulators (Strange, 2013) and a secondary set of "specialized glasses" (more on those shortly), a far more sensible concept is the piloting of a UAV with the Rift viewing from a camera which allows for dynamic path finding from the perspective of the drone. Intuitive Aerial has developed a makeshift UAV drone to support viewing from an Oculus Rift which allows the pilot to see from the drones point of view; rather than just from a monitor. (Fincher, 29/07/2013)

The system's real purpose is to show what sort of things can be done with the Oculus Rift. It is however considerably easier to pilot and once completed; it could allow simple gestures to control the direction of the drone or any other movable system e.g. a plane, car or even a satellite in the future. (Fincher, 29/07/2013)

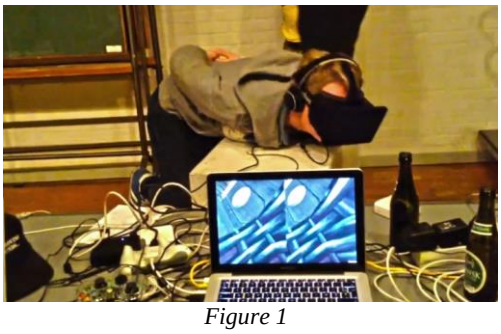

Figure 1

So back to the guillotine simulator aptly named "Disunion". Three developers (André Berlemont, Erkki Turmmal and Morten Brunbjerg) created a simulator which puts the player in

the position of someone who is being publically executed, just as they would have been in the mid-17th century. According to Gergo Vas, it's the most frightening and funny mini-game he could imagine. The reaction to this was incredible, because you really felt as though your head has been removed because of the way your brain perceives what you're seeing. (Vas, 05/06/2013)

ARCHITECTURE FOR IMAGINATION

VR have been used as the subject of many great sci-fi novels and films, ranging from Neuromancer, by William Gibson to the Lawnmower Man by Brett Leonard, Stephen King and Gimel Everett.

These media works have explored the capabilities of Virtual Reality and emphasised the danger. Which is fine, the best Sci Fi works are based on the dangers that something we're working on today can present in the future.

The Lawnmower man saw a simple gardener named Jobe. Doctor Angelo found him and used a VR system to make him brilliant and began to work on the Doctors creation with him. But Jobe had his own ideas about it and goes rogue. Destroying the system with a bit of help from the doctor (*The Lawnmower Man*, 1992)

It is likely that media has scared people away from certain VR explorations; there have been a number of projects put under scrutiny because of movies which have a similar construct that had destroyed the world. The impact is slowing the progression of VR updates in certain ways, fortunately, the OR and VO have nothing to worry about.

SOCIAL SPECULATION

The social concerns are based on the true change that VR could offer. Can it make such a difference to my work, gaming experience, everyday life or any other aspect so much to warrant the price? The thing is, when something is new, it makes it very valuable, especially in this case. Michael A. Gigante writes that he's tried to show off the depth and impact VR system can have. It's a step in Computer Graphics (CG) technology and in Human-Computer Interaction (HCI) which we all interface with at some point using a computer in any capacity. (Gigante et. al, 1993)

A big issue Gigante brings forward is the speed of the transition, he suggests the social impact will be dramatic and have a huge cultural shift in the process.

The author strongly suggests the use of a way out of VR for safety's sake, because people wouldn't wander into a situation which makes them feel ill willingly unless there was a safe and quick means to exit it.

M. Gigante also talks about external control of VR, saying that he cannot imagine how it is really possible because of our neurology. The important thing is that easy way out, because, if something is happening to the person using the kit, they can just take it off, or exit it in one way or another. So it's up to the user what they do and they have a safe experience because they can just hop out.

MULTI-USER INTERACTION

One of the huge benefits of VR in general is that you can bring in any item and give it physical properties, with the inclusion of the OR and VO, designers could create for example, a car design, which is printed into a 3d design tool, the addition of the OR and VO is that the designers can get to any part of the design, just by walking and looking around. So car designers can take more time on the details and not have to worry about scaled models or prototypes in quite the same way. They could even take the car for a test drive, using a system that has an almost 1:1 experience from driving it in reality because of the performance of the test environment.

This is an exceptional concept because 5 designers can interact physically with the design, they can "touch" the car, and open the door and press buttons in the vehicle and a trained driver can rove around in a virtual environment.

Kelvin Warwick talks about a virtual whiteboard, which works in a similar way to playing a multiplayer game with friends, working to complete a task. In the case of this whiteboard, users can "point to and write on the board [CARL93]" this interaction is based on the idea that you are interacting with people through a board, like a 3d rendered version of any IM system such as Facebook or Skype Chat.

Except, you get a much more involved and detailed view of who's talking and in what instance they are talking in. (*Virtual Reality in engineering*. 1993).

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Fig. 1. Disunion – ***the guillotine simulation*** – original source: http://www.dvice.com/2013-5-9/oculus-rift-sim-lets-you-experience-virtual-beheading (Accessed: 14/11/2013)

How Piracy Has Changed with the Digitisation of Stored Media

From the 1980's to Today

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***Abstract*—This article goes into a brief explanation of how the definition of Piracy has changed in the last 30 years, how it's enforced and some of the issues that have risen with it.**

I. Introduction

One of the more important advances in technology in the last 50 years has been the digitisation of information and media. It is after all, the basis of much of modern technology and how we store most of our records and files in one way or another. Storing files digitally means that we can easily make multiple copies, recover them, make backups and much more. More importantly it allows the sharing of them online, without the use of a hard copy. Moving away from hard copies has allowed greater in ease with sharing files, as there is no problem with copying the data again, due it being a simple case of code rather than a physical copy. This is where Piracy is a problem – the illegal copying and sharing of information without consent, and in our more connected world it seems to be more of an issue than ever. (K.C.Jones, 2007) With the rise of P2P networks and torrenting sites, file sharing is easier than it has ever been before, and the revenue companies are losing from the illegal copying of their work is changing how they distribute and handle it. Encryption of data, digital watermarks and DRM are all results of people trying to get these things for free.

The rise of digital media

Music piracy has been around since the advent of stored Media. Until the rise of Cassette Tapes it was the efforts of a few central groups who were making and selling the pirated copies. Due to the difficulties in making the copies, and getting access to the raw materials was difficult this led it to always be a large operation if you wanted profit. To stop this, you simply had to find who was making and selling the products. With the Rise of Cassettes, and more importantly the Cassette Recorder this became much more decentralised – people could record the music at home from off the Radio with ease, using rewritable cassette tapes. This was a big step up from making copies of vinyl records, which could only be made once and you needed the raw materials for the disc. It was a common practise to make "Mix Tapes" of your favourite songs to share with your friends. While the legal status of this was debatable, due to the recordings being for home use, it was certainly making a dent in the Music Industries Profits. It was estimated in 1986 that Cassette Piracy cost $1.2 Billion worldwide yearly. (Milan Ruzicka, 1986) While this was a problem, it was limited by the technology being analogue in nature. No matter how careful you were with the recording Cassettes would always "hiss" audibly. This meant that copied recordings would be fine, comparable to official releases if recorded on high quality equipment. However with each copy of a copy the quality of the recording would degrade, as more hiss was present each time. It was with the rise of Cds that this changed. Compact discs stored their information in a digital format, which meant that any copy was an exact reproduction of the original. There was no degradation with each successive recording. (William W. Fisher III, 2004)

This Led to copyright owners stepping in, arguing that this wasn't reasonable usage. While taping had been a problem, and there had been campaigns against it, they still had the problem of being analogue recordings. Instead of that Cds could perfectly reproduce what the companies were trying to sell, which some believed would mean the loss of even more profit for them. Despite the law being unclear over if this was legal or not, industries and copyright owners had allowed it. With Cds they managed to convince companies making the digital recorders to make them with inbuilt "serial copy management systems" (SCMS), meaning that they could record from official Cds, but not from 3rd party ones.

Encryption and P2P

At the time of release no one thought to encrypt Cds. Meaning that it was extremely easy to copy the information off of them and store it digitally, without a hard copy. This wasn't because the companies forgot, or didn't considering it a problem. It was because at the time of their release there was nothing to store them on. It wasn't until a year after the first Cds were released that IBM released a computer with an internal hard drive, and even then it could store a fraction of the data contained in a single song. (Glyn Moody 2012) With the rise of more powerful computers, and larger storage this led to there being a huge amount of music stored digitally, removed from the hard copy they came with, and this made it far easier to

pirate. Rather than sending a Pirated Cd you could simply send the information digitally.

Of course this couldn't be done without a peer-to-peer (P2P) network. The first one started development in 1999 by Shawn Fanning, as a way to share files over Northeastern University's computer network. It was originally designed to share with a small group of friends – about 30, but the program spread quickly. (Nathan W. Fisk, 2009) With the large amounts of uncompressed music available on Cds there was a lot available to copy, and for the first time it didn't rely on making hard copies of the music. Rather than having physical copies, things instead moved to simply being files on a hard drive, which made it much harder to police. Without having a hard copy as evidence of piracy, it was difficult to prove that the person hadn't brought the music, as having a backup ripped from the disc was seen as fair use. Proving that they were sharing the file, or hadn't brought it in the first place became much more difficult.

This meant that with the release of DVDs, more precautions were taken. A trade association was formed, the DVD forum who in 1996 developed the Content Scramble System. This system used a set of keys to make the data appear scrambled, unless the device reading it on the other end had the appropriate key to decode it. A year later in 1997 this technology was available to consumers. This CSS system was licensed out to firms who wanted to encrypt their products, one of the agreements with this being that they kept the Keys secret. This led to another way of finding those who were pirating the discs. Anyone who had a copy which wasn't "scrambled" with the CSS system meant that they hadn't got it from the original publisher, and could be charged. (William W. Fisher III, 2004)

Digital Watermarking and DRM

Another method of counteracting people sharing files is Digital Watermarking. This is when the Publisher embeds information in the file that can either protect it, or licence is to a specific person. The Watermarking is invisible to the end user, in that it doesn't change how the file will run at all – music will still play, as will games, films or any other kind of Media. It doesn't even stop people from pirating the file, putting it on torrenting sites and file sharing it. It was developed due to the common practise of pirates making a "cracked" copy of the software. Meaning that it was stripped of any active copy protection the file may have. File keys, password protection and other more aggressive methods can simply be identified and removed.

So then how does Digital Watermarking work? It simply shows who the file belong to, as each Watermark is unique to each end user. This works well as a deterrent, as if an illegal copy turns up on a torrent site the Publisher can download it and check the Watermark, showing who the file belongs to. And thus showing who put it on the site in the first place. This means that people can be charged with copying the file, as the Watermark is enough evidence to prove who it was. (Brandall, 2012)

Another more aggressive approach to stopping piracy is DRM – Digital Rights Management. This is usually for games and works in almost the opposite way. Rather than embedding a Watermark in the file you create, you don't allow them to download the game at all. Instead they sell you the Digital Rights to the media you want to use, and have to remotely connect to a server whenever you want to use it. If you don't have a valid copy, due to having pirated it then you will be unable to connect to the server. If you can't get online then you can't use the software, simple as. This comes at the cost of the end user though, as it makes it far more difficult for people who paid for it to use it. However it is effective at stopping people from pirating it, as the game is designed with connecting to remote servers in mind, meaning it wasn't designed to work without it.

This does put pressure on the company releasing the game, as it is up to them to keep the servers up and running. If for some reason they go down, then people who have paid for the game are unable to using it, as they can't authorise the use without the servers being up. Also, since you are only paying for the rights to the software, the moment their servers are closed down, you can't play anymore. Unlike other games where you can use them long after the company has stopped supporting them, DRM gives the company a built in kill switch for it. This has led to cases where the DRM has caused a bigger loss of profits due to lost sales than Piracy would ever cause, as people are unwilling to use the software with DRM in it. (Dave Their, 2013)

While piracy has been continually evolving along with the technology used in it, others have been striving to stop this, using different methods to identify who is pirating, as the world has become more connected and it has become easier to do than ever. Some companies think that pirates will always choose to copy over paying the price given. While others say it is more a matter of convenience. With people being more connected with the rise of the internet, why should they wait for Cd to arrive through the post when they can download it much quicker? And why bother using the official release of the file, if the pirated copy is much easier to use in comparison? Valve has stated that they believe it to be more about convenience than price, and base their sales model of it. Making it very simple for people to buy and use their software. (Frank Cifaldi, 2011)

In the end, until a way can be found to stop it completely, the debate will go on as to how. Whether the approach is passive, aggressive or simply asking the pirates to pay, companies will work to stop it getting out of hand, as they have done since the rise of recorded media.

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Analysing the Impact of Violence in Video Games on Society following Advances in Gaming Technology

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***Abstract*—Violence in video games and its effect on Society is one of the most controversial topics in media. Both sides of the debate hold strong opinions as to whether there are negative consequences or not to those who play them, and evidence exists for each argument. Activists such as David Grossman have presented theories that violent video games train those who play them that crime is acceptable, by means of rewards for violence. This argument could be linked to multiple shootings, including the Columbine High School Massacre. However, other researchers have discarded these links as bias to the argument against violent video games, and have presented counter evidence to dissuade the idea. On analyzing both sides of the debate, it would seem that the impact on Society is minimal, if it exists at all.**

***Index Terms*—violent video games, gaming technology, society, impact, debate, violent crime, desensitization**

I. Introduction

Over the last 30 years, video games have grown from small, gimmicky programs produced in programmer's bedrooms, to one of the largest entertainment industries in the world (Nayak & Baker, 2012). This massive industrial growth has prompted rapid advancements in the technology used to create games, and has allowed increasingly realistic games to be developed. Of course, with more realistic games, comes the question of the effect they are having on those playing: Where does the game stop and reality begin?

This question prompts a number of controversial topics, including the effects of addiction, social development, and desensitization. Out of all of these, however, the topic that garners the greatest debate is the impact of the portrayal of violence on players. Throughout the history of video games, a great deal of games described as violent have been produced, most notably the likes of Doom, and Grand Theft Auto (Gross, 2013). Many of these games put the player in the shoes of a character who murders and commits violent crimes with impunity, which many suggest would have a negative psychological effect. And when those who commit horrific, violent crimes are unearthed as avid video gamers, surely it should be obvious to fit two and two together, right? Right? If that was truly the case, why has the rise of the video game not had a much greater effect on real world crime?

Throughout this paper, I will be discussing and analysing the research and opinions presented by both sides of the violent video game debate, explaining the effects that advances in gaming technology have had, and analysing the impact that violent video games have on Society today, and could potentially have in the near future.

Doom

December 1993 (Id Software, 1993) saw the release of one of the first controversially violent video games: Doom. A science fiction horror game, Doom armed the player with an array of weaponry, and pitted them against waves of demonic creatures and encouraged them to blow them apart with machine guns, missile launchers, and mysterious supernatural weapons (Id Software, 1993). What truly set Doom apart from previous games was it's massive leap forward in portraying realism, mostly due to it's at the time advanced 3D graphics. These were made available due to advancements in ID Software's engine, the Doom Engine, which took advantage of new rendering techniques and a new level design technology (Carmack, 2002).

While many people celebrated (and still do celebrate) Doom's unbelievable graphics technology (Lombardi, 1993), many more were far less pleased to welcome a game that was both so violent and realistic. The biggest worries put forward were that people, particularly children and young adults, would become desenstized to the violence in the games they were playing, and would start to lose differentiation between the game world and the real world (Grossman, 1999). One such activist against violent video game content is David Grossman, who repeatedly refers to violent games, particularly first person shooters such as Doom, as mass murder simulators (Grossman, Violent Video Games Are Mass Murder Simulators, 2007). It is his belief that first person shooters exist solely to teach the player to murder, and, due to realistic graphics, teach it extremely well. Not only that, but unlike play fighting where children would be punished for actually hurting one another, in video games, they are actively rewarded for violent killing, with points, or new weapons (Grossman, Violent Video Games Are Mass Murder Simulators, 2007).

The Columbine High School Massacre

The debate came to a head in 1999, when two self-confessed Doom addicts, Eric Harris and Dylan Klebold, commited the Columbine Highschool massacre. In footage filmed by them before the shooting, Harris states: "It's gonna be like f***ing

Doom man - after the bombs explode." (Gibbs & Roche, 1999). It was even suggested that the two used Doom Engine's level design technology to build a replica of the school which they practiced the shooting on (Johnson & Brooke, 1999). Whether or not the two were actively encouraged by the game to commit their crime remains to be seen, but for many, the conection between the content of the game they played and their actions is enough. On analysing the evidence however, it was found that Harris was a clinical pyschopath, while Klebold was depressive, both of whom would probably have been effected by any time of media, as much as by their own perceptions of the world, and not just by Doom (Cullen, 2004).

Grand Theft Auto III

In October 2001, Rockstar North released Grand Theft Auto III, the third instalment in their long running open world series about car theft and gang crime. While the previous two titles had been top-down 2d shooters, rapid advancements in 3d technology allowed GTA III to switch to an over-the-shoulder view, immersing the player fully in their actions for the first time. The game featured a massive city to explore at the player's will, and the option to do pretty much anything you wanted – no matter how immoral (GamePro, 2007). For technical reasons, it is classed as one of the most important games of all time (GamePro, 2007), since it was a massive step forward for sandbox gaming. But GTA III caused even more of an uproar than Doom did.

Repeatedly quoted by the media as a game that rewarded the player for hijacking a car, picking up a prostitute, and then murdering her for money (Douville, 2005), there were major concerns that GTA III could have disasterous implications on Society. Once again, it was argued that being rewarded for horribly immoral acts such as shooting innocents or driving dangerously could eventually encourage people to start commiting those crimes in real life.

Plenty of research has been carried out into the effects that violent video games are having on those playing them. The General Aggresion Model (Bushman & Anderson, 2002) states that all violent media effects and desensitizes the viewer, and can cause significant increases in aggressive behaviour. When applied to video games, they say, this effect is increased, due not only to the fact that you are seeing violent actions through the character's eyes, but also due to the fact that the player is directly controlling the violence, and that effects the brain into being aggressive in return (Bushman & Anderson, 2002).

Just as with Doom, there came a point where a widely publicised crime, that of the murder of Aaron Hamel and the serious wounding of Kimberly Bede in 2003 could be linked in some way back to violent games (The Associated Press, 2003). It was stated that the two proprietors, two teenage stepbrothers William Buckner and Joshua Buckner, were inspired by GTA III to go out and shoot randomly at people and vehicles (The Associated Press, 2003). In a statement concerning the event, the president of the Entertainment Software Association, Douglas Lowenstein, stated that while video games may provide a simple excuse for the teenagers actions, responsibility for any violent acts still belongs to those who commit them, and that blaming a game played by millions for the actions of a couple was misleading and wrong (The Associated Press, 2003).

The Misleading Link

And this is a very good point. GTA III, amongst many other violent video games, has been played by, and continues to be played by, millions upon millions of people. The video games industry continues to grow, and with it, increasingly more violent games are produced, but what of the general crime rate? Surely if violent games were having the effect on us that certain research makes out, then the crime rate would be at an all-time high, with a positive correlation to the increase in the number of games. This however, is not the case. In 2004, a couple of years after GTA III was released, 1,423,677 crimes were reported in the USA, whereas in 2005, 1,360,088 crimes were reported (ScienceDaily, 2008). With rapidly increasing violent game sales, crimes should have gone up, instead they decreased.

Moreover, it has been suggested that evidence put forward to prove that violent video games cause aggressive brain responses is more than likely bias to that outcome (Kierkegaard, 2008). While brain responses measured during sessions playing violent games show an increased activity in regions of the brain associated with aggression (Gentile, Lynch, Linder, & Walsh, 2004), little to no link can be made between this response, and an effect on a person's actions in the real world (Kierkegaard, 2008). This leads to the conclusion that, while violent video games do effect a person's acts of aggresion, the brain is still highly aware of the difference between a game, and the real world, and acts accordingly.

Conclusion

So what does this mean for Society in the furture? Should we be worrying about the impact that they are having? While many would argue that yes, they are, evidence ways more to the contrary. Video games are too often the go to thing to blame for violent actions, because they are so easy to blame. But those who see them as a threat tend to draw upon heavily biased evidence to support their theories, and lay the blame of physcotic attacks not on a person's mental ability, but the game they played.

With the continuing advancements of technology, games are set to soon offer one of the most realistic experiences a player can have, outside of real life. Realistic, violent games are played by, and will continue to be played by, increasing amounts of people, and yet the crime rate, which should so surely be affected by this increase in aggression and desensitization, is falling. If any real impact on Society exists from violent video games, we are yet to see it.

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The Importance of Optical Media

How CD and DVD changed the way we use media and software

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***Abstract*—This document will outline the origins of Optical Media and how it has affected how we use it today by focusing primarily on the creation and adoption of both the Compact Disc and DVD**

I. Compact Disc Audio

When Philips and Sony collaborated in the development of the Compact Disc in 1979, Philips proposed a disc that was 115mm in diameter. This would mean that one hour's worth of audio would fit onto a single disc. (BBC, 2007)

It was due to the insistence of the soon to be President of Sony Norio Ohga, that this design was extended to 120mm, allowing a disc to hold 74 minutes of audio. This would be enough to play Beethoven's Ninth Symphony in full (Fox News 2011).

All of this was stored in the first of a series of books to define the agreed properties which comprise a CD, the first of which was the "red book" in 1980. This outlined the agreed properties that would comprise a CD, and enabled both companies to produce their own CD players (BBC, 2007).

The first cd to be publicly released was 52nd St by Billy Joel. This was released alongside players from both Sony and Philips in late 1982.

The success of this emerging platform was solidified in 1985 when Dire Straits released their album Brothers in Arms on CD. This was promoted in collaboration with Philips as a demonstration of the superior audio quality of CD. Subsequently this became the first CD album to sell more than one million copies (Philips 2007).

The impact of the CD is still apparent today. CDs do not have to be rewound to when you want to listen to a song or album from the beginning. It is far easier to select a particular track from a CD than it was with either the Cassette tape or on vinyl.

Sales for CD's increased and the turnover they generated far exceeds what cassettes and vinyl did previously (figure 1).

Compact Disc –Read Only Memory

The second book that Sony and Philips worked on was the "Yellow Book" in 1985. This was to define Compact Disk Read Only Memory (CD-ROM), a standard for a storage medium using the same format as CD's, but to be read by computer with a CD-ROM drive.

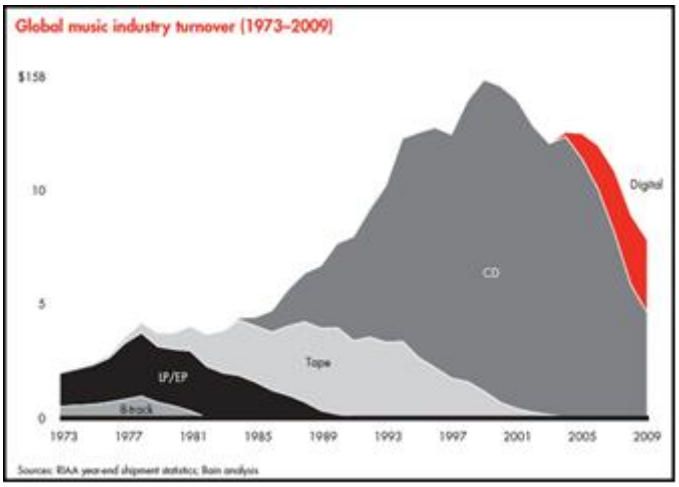

Figure 1 – Music sales turnover for different mediums (Business Insider 2011)

The bulk of use for CD-ROM in the eighties was for databases and the archiving of files. Hard drives at the time were too expensive to store large amounts of data and floppy disks at 1.44 Megabytes (MB) were too small to store more than a few files, or portions of larger applications.

The first CD-ROM application to be published by Microsoft was Microsoft Bookshelf in 1987. This collection of encyclopaedia and dictionaries helped to demonstrate the vast storage capabilities of CD-ROM.

"CD ROM is the technology we're going to use to get personal computers into the home." Bill Gates (1986 quoted in Lammers, 1986, p.87)

By pushing the use of a current medium that people could recognise as being the latest in technology, getting people to adopt CD-ROM over floppy could easily be achieved.

Multimedia

In the early nineties, several hardware and software manufacturers banded together to form the Multimedia PC Marketing Council. Through this, they created the Multimedia PC (MPC) standard. Any CD-ROM program that conforms to this standard would be compatible with a computer bearing the MPC logo. In particular, two companies drove the standard, Tandy and Microsoft.

The biggest CD-ROM release for Microsoft came in 1995 with Windows 95.

Windows 95 could be installed from floppy disks if needed, but this required a total of 13 floppy disks, and didn't include a lot of the extra software that Microsoft put on the CD release. This of course made installing from CD by far the more attractive option at the time.

CD-ROM had not fully killed off floppy disks yet though, as most major releases would be released on both formats. However, as software sizes continued to increase, the disparity between CDs and floppies became clearer. Microsoft Office 97, for example came on either one CD, or forty four floppies (Lopez 2012).

Figure 2 – 44 floppies for Office 97(López, R. 2012)

Video Games Consoles

It was in the early nineties that Video Game console manufacturers such as Sega and Nintendo tool interest in the CD-ROM market. In 1991 Sega released the Sega CD, an add-on to the Sega Genesis (Mega-Drive).

At the Consumer Electronics Show in June 1991, Sony announced that they had partnered with Nintendo to work on a version of the Super Nintendo Entertainment System (SNES) which would have a CD-ROM Drive in addition to the Cartridge System already seen in the existing SNES.

Humiliation followed for Sony as Nintendo announced that they had actually chosen to work with Philips instead, due to disagreements on royalties of the device.

It is worth noting that this led the project lead for Sony, Ken Katuragi, to persuade the President of Sony, Norio Ohga, the same man responsible for the length of the Audio CD, to allow him to continue developing a console that would be singularly owned by Sony.

This was the birth of the PlayStation, and a big change in the future of console gaming.

The gaming market helped to drive sales of CD-ROM drives for home computers in 1993 with the release of Myst on CD-ROM (Daly, 1994). The game remains one of the bestselling PC games of all time, with total sales exceeding 6 million to date.

1995 was a year which saw the CD-ROM enter into ubiquity, Sega and Sony both released their respective 32-bit consoles that used CD-ROM's for their games and Microsoft released Windows 95. Putting software CD's in everyday use for a lot of people.

Video and Digital Versatile Disc

In 1987 Sony and Philips announced a new format, CD-Video. A short lived format that combined technologies from both the CD and its predecessor the LaserDisc. This eventually was replaced by the Video CD in 1993 (CD Video, 2007).

The Video CD was defined in 1993 by Sony, Philips, Matsushita, and JVC in the White Book (Rouse, M. 2005). This enabled the use of CD's to display full video with aspirations of replacing VHS tapes.

Unfortunately this format didn't take off as expected, mostly due to the arrival of the far superior Digital Versatile Disc, or Digital Video Disc (DVD) (Taylor, J., 2013)

DVD offered up to 4.7GigaBytes (GB) of space initially, enabled production companies to put a multitude of extra features to be added to each disc. The difference in quality of video on DVD versus VHS was one of the biggest selling points. Much like audio on CD, DVD offered a much clearer picture, no need for tracking to avoid image problems, the ability to pause and see the screen clearly when paused, slow-motion playback, and more importantly, the ability to chapter mark a film, or split up a DVD into several individually selectable episodes on one disc.

Sales of DVD's rose quickly at the turn of the century, when DVD players became more reasonably priced, and consoles such as the PlayStation 2 were released in 2001 which enabled DVD playback and used DVD's as storage for games (Gamespot Staff, 2000).

PC's also started delivering software on DVD, which is the standard medium in use today.

Summary

Both the CD and the DVD have changed the way in which we use software and view media today and remain relevant even if subsequent technologies such and streaming media and digital downloads have the potential to dominate in the future.

Online access across the world remains difficult in the majority of less developed countries and physical media is always a readily available means to distribute information and software in these areas.

Using these digital media has prepared us somewhat for the eventual migration to download only systems.

However, with 4k TV on the horizon, software becoming larger still, to the extent that the some games are starting to fill discs on Blu-Ray, the successor to DVD, which can have a capacity of up to 50GB, the speeds currently provided by the majority of Internet Service Providers remains a constant obstacle to achieve a world where we live on "the cloud".

In the future it is safe to assume that download speeds will increase and more of us will become accepting of living without a physical product off of which we view our media.

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Fig. 1. Degusta, M. 2011 Global Music Turnover 1973-2009 Viewed 2nd November 2013, <http://www.businessinsider.com/these-charts-explain-the-real-death-of-the-music-industry-2011-2>

Fig. 2. López, R. 2012 44 floppies for Office 97, viewed 2nd November 2013 <http://www.pcgeniuszone.com/2012/08/office-2013-another-year-another-office.html>

How People Are Entertained

The Consequences of the 1983 Great Video Game Crash.

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***Abstract*—This document explains what led to the Great Video Game Crash in 1983. The main consequences will then be presented, in particular, the lockdown of consoles to unofficial games, and homebrew. Finally, the recent successful use of the open model will be briefly reviewed.**

***Index Terms*—Atari, Video-Game-Crash, NES, unofficial, cartridges, open-console.**

I. Introduction

The year is 2013, video games are commonplace and the industry as a whole seems to be prospering well (Gartner, 2013). It was not always smooth sailing and for a short while the entire games industry's future was put into question, after a 97% drop in market value in 1983 during the Atari era in the United States (CleverNoobs, 2013, 0:0:20; Electronic Games Magazine, 1985, pp. 30-31).

THE GREAT VIDEO GAME CRASH OF 1983

The name of this huge dent on the industry was The Great Video Game Crash of 1983. The name is used to describe the events that brought the market value down to such a low level. It was caused by multiple factors, which can almost be completely attributed to the Atari 2600's openness because anyone could make cartridges for the console. The first step towards the crash happened in 1979 when a handful of disgruntled games developers working for Atari were unhappy that they were not credited for each game's development and that they did not receive royalties for each copy sold. Since Atari refused to alter their policy to fit the games developers' demands, they left the company to form the World's first 3rd-party publisher, Activision (Activision, n.d.).

This first step meant that not only did Atari lose talent but they gained competition. The console's openness meant that Activision could make and sell cartridges for the Atari 2600 without paying any license or royalties back to Atari. This was not helpful to Atari at all and foreshadowed what was yet to come. The second step was that Atari released some poor 1st-party licensed titles for the 2600, both Pac-Man and E.T. the Extra-Terrestrial (E.T.) which were released in 1982. They were highly anticipated but badly received by critics and fans because they were full of bugs and glitches and not particularly fun to play. This was not helped by the fact they were both were rushed to completion and lacked quality assurance by Atari. Atari had spent a great deal of money in licensing fees for rights to E.T. and Pac-Man, and they got little financial gain from it when their customers realised that these games were not worth the investment (Giant Bomb, E.T.) (IGN, Top 10 Best-Selling Atari 2600 Games).

The third step was that many other companies were wanting to the ride the video game money train. Back in the 1980's, video games were the fastest growing industry in all the USA. Many companies including Quaker, Purina and Mystique all made atrocious games to capitalise on huge market. Though this effect pushed it down even further (CleverNoobs, 2013). With games like Chase the Chuck Wagon, Name this Game and, all created by these companies purely for profit over entertainment value.

The fourth step was that at the same as the Atari 2600 era was the birth of the affordable personal computer which could allow the consumer to both play games and be productive. Further adding competition to Atari's business because there were other machines on the market that could do multiple things for your money (CleverNoobs, 2013, 0.2.0).

With all these terrible games out there and competition from the personal computer space, most consumers simply got tired and angry playing with console games. So enough consumers voted with their wallets and decided not to buy them. This caused the market to topple over and caused the 97% drop from $3.2 billion (~£2 billion) to $100 million (£63 million) almost dooming it completely (CleverNoobs, 2013, 0:0:50).

IMAGE 1

RECOVERY OF THE CONSOLE

The market was almost down and out, consumers were immensely cynical of the words "video game". If it was not for Nintendo, through some clever marketing tactics with the

advertising of Robotic Operating Buddy (R.O.B), a peripheral for their upcoming Nintendo Entertainment System (NES) console the console gaming industry might not have ever been resuscitated back to its former glory.

The NES managed to bring the industry back on track, with Nintendo learning from Atari's mistakes in the past. Nintendo saw that 3rd-party development for their console could be beneficial to their business, but it should be controlled with licensing (an agreement between the publisher and the console manufacturer) to ensure both quality control and enable Nintendo to profit off the games' sales. There were many successful 3rd-party titles including Tetris (1989), Teenage Mutant Ninja Turtles (1989) and Punch-Out!! (1987).

Nintendo did not rest on their laurels with just 3rd-party content and began to release games of their own much like Atari did. Many of these games were the first entry to many loved franchises including Super Mario Bros. in 1985 (which itself was the bestselling NES game of all-time), Legend of Zelda (1986) and Metroid (1986). These were all well received by the audience and, subsequently, have received many sequels to this day.

Since the NES console was locked down due to Nintendo learning from Atari's main mistake of allowing oversaturation of content, games that were not approved by Nintendo would be released unofficially as cartridges but would never receive the sales figures or critical attention that most official content would receive (IGN, n.d.). This included games that were not even submitted to Nintendo to approve because of content, a reluctance to pay licensing fees and a disagreement over licensing conditions. The unofficial cartridges would often look physically different to official cartridges and used techniques to bypass the 10NES authorisation chip that were present in official cartridges to ensure only official cartridges could be played (Horton K., n.d.). In fact, Atari under a subsidiary called Tengen, actually made unofficial cartridges for the NES as well as having their games officially released on the console under the Atari name (Oxford, 2005).

The console continued selling until the NES's successor Super Nintendo Entertainment System (SNES) arrived in the early 90's as the direct successor to the NES. While it sold less units than the original NES, it retained dominance over competition from Sega with their MegaDrive (Genesis in the USA) and other consoles. The console itself had full 16-bit capabilities bringing improved graphical and sound capabilities with it (Buchanan, 2009). Subsequent consoles would also be locked down and the consumer would be prevented from playing unofficial 3rd party content and using unofficial 3rd party accessories by the manufacturers, because it was a system that was proven to work for the console manufacturers. (Chacksfield, 2010)

Whilst there were a few hobby consoles that were open to modification by the manufacturer, such as, the Pandora console by OpenPandora, and the Dingoo A320 by Dingoo Technology Ltd, none of these consoles took the Internet by storm like the OUYA did. The OUYA, which is a $99 (£99) microconsole using Google's Android™ platform, received $8,596,474 (~£5,346,069) in funding with 63,416 backers via the crowdfunding platform Kickstarter in 2012 (OUYA, n.d.). This suggests that customers had a great deal of faith in the concept of an open console. Furthermore the OUYA has recently celebrated its 500th game, that is, Neon Shadow (Tasty Poison Games, 2013).

The OUYA is built on the foundation of being an open system where every game is free to try out with games available to purchase via digital distribution. In September 2013 Valve formally announced the Steam Machine, which is an open console backed by them which allows modification in a similar fashion to that of an ordinary gaming PC (Valve, 2013). The fact that Valve has invested in custom hardware for the Steam Machine itself, the controller, and the operating system, implies that they have confidence in making profit from an open console. This is most likely due to the extreme popularity of their digital distribution Steam. Steam (and most other digital distributors) solved Atari's issue back in the early 1980's, by managing quality control via a number of methods. For example, Steam Greenlight allows the opportunity for potential customers to vote for a game before it is allowed to be sold on the storefront.

IMAGE 2

IMAGE 3

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Privacy and Free Speech on the Internet

Is there truly privacy on the internet?

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***Abstract*—This article covers the different points and views about censorship, privacy and freedom of speech on the Internet and how it affects society and what government officials are doing to tackle these problems**

I. Introduction

Due to the way people now communicate in this digital age new laws and rules have had to come in to practice to facilitate these new methods of communication, but how can this be done whilst still keeping privacy and freedom of speech intact? These new forms of communication have both negative and positive effects on everybody and the way we go about our lives.

Recently there has been an ever increasing concern about privacy on the internet; this came in to the public focus during the recent backlash following the Edward Snowden leak which Greenwald, G. (2013) described as "the biggest leak in the NSA's history." What Edward Snowden leaked was a lot of documents that exposed a lot of sensitive information that revealed that the US Government was performing global surveillance and storing data on citizens all over the world.

Since these revelations came to light there has been an outrage towards the government and more and more people have come forward released documents and exposed what it is that the government is trying to achieve. Most people believe that it is only the American government that is taking part in such surveillance, when in fact countries all across the world have laws that effect what you can and can't say in the digital domain that is the internet. If there are laws then they need a way to police them, on the internet one of the only means of doing this is through surveillance and relying on people reporting illegal activity. But is this all hysteria or is there a real threat to our privacy and/or freedom of speech.

The Influence of the Government

So what are the governments all across the world are capable of doing? Almost all governments have laws in place that regard actions online. Your actions might not be monitored by the police or such officials but reports of "wrong doings" are taking very seriously.

For example a boy named Justin Carter, age 19 was arrested after getting into an online fight with fellow gamers. He wrote on Facebook "I think Ima shoot up a kindergarten / And watch the blood of the innocent rain down/ And eat the beating heart of one of them."(Shontel.A 2013) granted this statement was in very bad taste, however both he and his parents attest to the fact that he didn't mean what he said and was merely joking and saying it sarcastically. Despite that Justin Carter was still arrested and had his computer taken from him and faces up to 10 years in prison, all because a Canadian woman saw the comment, subsequently she was worried by it and felt the need to report it. So is this ok? Should the police be able to arrest and possibly imprison somebody for something they said on Facebook? (Shontel.A 2013) wrote "Facebook, a site where freedom of speech may no longer apply".

Facebook however is not the only place where people are vulnerable to the persecution of the law. The Tor browser/network is an open network that was designed to hide your activity and protect you from surveillance of any kind and is the most secretive way to browse the web

(www.torproject.org) has recently came under fire from the US government after it was found out the NSA has been monitoring them, even with all their safety precautions. A site called Silk Road which enabled users to buy illicit contraband from one another anonymously recently had more than 1.2 million communications monitored by the FBI (Pagliery. J, 2013) after they managed to track down one of the servers.. So if even the most secure of networks has been compromised by the government, the question is, what information, if any, can the NOT get hold of and use against you?

How Does This Affect Society

Internet Privacy albeit the lack of affects all individuals that use the internet, even if you are a law abiding citizen with nothing to hide still has to worry about internet privacy, the most obvious example would be social networking, anybody can find a great amount of information about you just by looking at your social networking site. You may feel that you are secure when using social networking but in reality you are not. Facebook sells a lot of your information to third party companies with the intent of ensuring that advertisers are able to reach the demographic they are reaching towards. This seems harmless enough however neither Facebook or the persons the data belongs has any real power with the current laws that enables them to control what their data is used for. There is however some things you can do as set by the Data Protection Act (DPA, 2003).

- .Seeing what is held about you.
- .Compensation when things go wrong.
- .In some cases the right to prevent processing. (Webwise Team, 2012)

So although you have some rights when it comes to people handling your data, you have no way of controlling what data they get access to or what they use it for. This however might not necessarily be an issue for most people especially those that

are careful about information they post on the internet. As touched upon earlier information you post online can be used against you in a court of law therefore as a general rule any information that you wouldn't want people knowing should never be published on the internet no matter of the scenario. This requires a lot of foresight, there are many things that people post online and think nothing about and would never considering harming you. However in the wrong situation information posted on the internet could be very damaging to you. Conversely companies storing information in form of cookies are most often used to improve your online experience, for example recommended videos on YouTube store the videos you watch and correlate the data in order produce other videos that you may like.

ENCRYPTION

The best way to show the amount of control the governments has on what we do and say on the internet is best shown by the laws that affect data encryption.

Data encryption is primarily used to keep sensitive data private, and only allows people that you give a key to view your data, the key is used to encrypt the data is the same key that is used to unencrypt the data, it is also randomly generated so therefore most likely unique to you. Especially for large companies encryption is a very useful tool when protecting sensitive information, for instance if a company or individual has some kind of intellectual property like a design for a new CPU for example, they would may want to share this information with collaborators without any danger of the wrong person getting a hold of this data and exploiting it in some way.

Nevertheless due to the very nature of encryption and how it allows you to hide information from people make it susceptible to being used for illegal activity, somebody could be sending information other the internet that is highly illegal without anybody knowing. For this reason the US government (other governments have similar policies) brought in FIPS (Federal information Processing Standard). FIPS is a standard that ensure that no information can be passed without the government having the ability to decipher and look at the information contained. The (National Institute of Standards and Technology, 2004) claim that FIPS is an act that ensures the national security and economic interests are maintained by following a set of rules and guidelines regarding data encryption and how data is processed.

When you are designing or releasing encryption software you must send the a copy of your software to US government in order for them to evaluate it and ensure it adheres to the rules and guidelines they have set, part of the guidelines say that the US government cyber law department must be able to view any data that is encrypted with said software, what this means in layman terms is a backdoor is required, not to dissimilar to a skeleton key that overrides all private keys and allow them to get accesses to the data.

The US government claim that this is to prevent any illegal activity for example child pornography or act of terrorism or cyber terrorism. As much as this is a very noble goal and some sort of restriction of data available on the internet is required it also has an adverse effect on the general populace. With the government able to have access to any information online whenever they require it, does this affect our rights? Simply put we don't know at the present time and many debates go on and have been for a long time. Everybody would like to feel safe while browsing the internet or even in day to life but is that worth sacrificing privacy for? Also many people speculate the fact that if somebody is doing something illegal why would they use a legal FIPS assured encryption software? From this point of view it seems as though the only people suffering from this act would be the people who are genuine and honest.

CONCLUSION

It is hard to deny that internet has changed the world and society in a major way. Since the advent of the internet there have been many trials, tribulation, and new problems that need a solution.

Many people believe that the internet should be a place of free speech, The (Electronic Frontier Foundation, 2013) believe that because the internet transcends the borders of countries that it should be a place where people can express themselves in any way they deem fit. They say that because of the worldwide reach of the internet no government should be able to censor or control it outside the boundaries of their own sites.

Conversely however people feel the laws of the land should equal the laws on cyber space. However nobody has yet created a standard that specifies who's jurisdiction a website falls under, for example if the physical server are house in Mexico but the site if available to Americans, who has the duty to police that site? At the moment any government has the ability to access information from certain websites because there are many laws saying what we can and cannot not do on the internet but very few for the people policing it. Who is policing the police? Have they or will they go too far and break some human rights? Do we even have the right to privacy? As the saying goes however "if you have nothing to hide, you have nothing to fear" (Orwell. G, 1949)

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The Effect of Violent Video Games on Crime

Computers and Crime

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I. Introduction

Mainstream media applies a certain stigma to the video games industry. As computer technology has become increasingly more powerful, the realism of games has allowed the demographic of gamers to grow. Violent video games are a genre that has benefitted greatly from the increased hardware prowess, allowing gamers to become immersed and take on the role of the games protagonist. Games such as *Manhunt*, *Hitman* and *Grand Theft Auto* allow players to terrorise the worlds they occupy and execute the people that populate it. Critics have argued that these 3D worlds are a factor in a number of horrendous crimes committed in parallel with the rise of the industry. Cases of gamers obsessed with violent games committing murder, suicide and mass shooting; have occurred throughout the 21st century. Assessing these crimes and as well as the correlation of the two statistically, this article intends to reveal the effect that violent video games truly have on crime.

Crime Attributed To Video Games

Violent Video games manufacturers have been blamed for a number of high profile crimes. One such case was that of Noah Wilson. On November 22nd, 1997, he was stabbed to death by his friend, identified by the name Yancy. He was attacked with a kitchen knife and stabbed several times in the chest. It was alleged that Yancy at the time was obsessed with video games, more specifically Midways *Mortal Kombat.* Andrea Wilson, mother of Noah Wilson, subsequently filed a lawsuit against the games manufacturer. She claimed that Midway's design and marketing of the game led Yancy to believe he was *Cyrax*, a playable character, and therefore the cause of her son's death. She eventually lost the case but it was one of the first cases in which a game developer was directly blamed for a murder. (Wilson vs. Midway, 2002)

A poster promoting Mortal Kombat from 1992 Midway, (1992).

A more recent event in which violent video games were subjected to media attention is the naval yard shootings. In September of this year, 2013, Aaron Alexis gunned down 12 people at a naval yard in Washington D.C. Alexis was a former navy reservist between 2007 and 2011, eventually discharged as a petty officer for misconduct. He was shot dead during a shootout with the police. At the time of the shooting, it was not clear what his motives were with much of the country reeling from his actions. A number of days after the shooting, it emerged Alexis was "obsessed with violent video games," most notably Call of Duty. This then began to take centrepiece of the story and as reporters ran with the angle, violent video games were again subject to bad press. (Allen, N. 2013)

Gaming Psychology

Scientists have been studying the influence of violence media on human behaviour since the 1950's. Video game specific studies were conducted in the 1980's and are still conducted today. Never have these studies had more relevance than today, with over 32% of the gaming audience in the under 18's category (ESA, 2013)

Research regarding gaming behaviour falls into one of three categories: short term studies (usually lab experiments); longer term studies (of which a school would be a likely target) and correlation studies (the time between playing time and aggression).

One such experiment was led by Christopher Barlott, a psychologist at Iowa State University, who enlisted 47 students to play *Mortal Kombat: Deadly Alliance* for 15 minutes. Measurements of arousal were then taken off the 'subjects', both tracking the physical and psychological data. However, the way in which the team tested aggression levels was by having the 'subjects' serve hot (spicy) sauce to fellow students. They were told their fellow students did not like hot sauce, but must swallow anything served to them. The volume was down to the 'subjects' discretion. The results showed what most players of competitive violent games know already, games get the blood pumping. Surely enough, the 'subjects' who played *Mortal Kombat* served their fellow students significantly larger portions; to that of a group who played a non violent game. Similar studies, however, completely contradict this result.

In 2010, Dr Ferguson and Dr Stephanie M. Reuda took a sample of 103 young adults and had the 'subjects' solve a 'frustration' task, subsequently publishing the results. Participants were split into four groups: one of which plays no

video games; one plays a non-violent game; one plays the good guys in a violent video game and the final group play as the bad guys in a violent game.

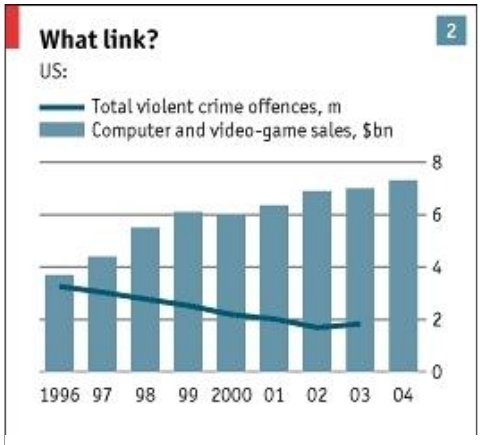
They found that video games had no effect on the aggression levels of the participants, but showed that video games had an adverse effect. The groups who played the violent video game had decreased depression levels and decreased hostile feelings. (Kain, E. 2012)

The question that remains is whether aggression is sustained or relieved when playing violent games, it simply depends on the player. Craig A. Anderson, a psychologist at Iowa State University, states, "None of these extreme acts, like a school shooting, occurs because of only one risk factor; there are many factors, including feeling socially isolated, being bullied, and so on, but if you look at the literature, I think it's clear that violent media is one factor; it's not the largest factor, but it's also not the smallest." (Carey, B. 2013)

The Correlation between Crime and Video Games

Between 1994 and 2010 the number of violent youth offenders fell by more than half, according to government statistics, while video game sales have more than doubled since 1996 (Carey, B. 2013.)

With this data, we see that if any correlation is at all present it is adverse to the public's wider perception. Higher sales in violent video games results in lower crime rates, although of course it is not the only factor in the rate of crime in a city.



Crime rate and video games sales from 1996 to 2004. (Kain. E. 2012).

Dr Ward, along with two colleges, studied the week-by-week sales for violent video games and compared the data to crime rates within a number of cities. A. Scott Cunningham and Benjamin Engelsatter aided the research that spanned a wide range of communities. Rates of violence, much like the sales of video games, take a seasonal rotation; with crime generally peaking in the summer and video games sales peaking during the winter season.

Speaking on their findings, Dr Ward states, "We found that higher rates of violent video game sales related to a decrease in crimes, and especially violent crimes," (Carey, B. 2013.)

The reasons for such results however are still in dispute, mainly due to the many underlying features that account for crime rates. It could be possible that people are simply too busy playing video games to go out and commit a crime. Or, as suggested by Dr Fergusons findings, it is just as possible that violent video games provide an outlet for aggression; a theory many gamers believe to be true, although it is disputed by scientists.

Banned Games

Much like any media industry, some games cross the line on what is morally and socially acceptable to distribute. The line is set from country to country; despite very few gamers finding themselves unable to get their hands on banned games.

China, as of September 2013, lifted a ban on home consoles after a staggering 13 year hiatus. The ban was first implemented in 2000, with the Chinese government expressing worry over 'mental health' becoming adversely affected. Such bans do nothing for a country as black markets then begin to thrive; hardly surprising when considering the 'big three' – Sony, Microsoft and Nintendo – all manufacture consoles in china itself. (Vincent, J. 2013)

Despite many countries banning a variety of game, all for one reason or another, very few games have been banned in the UK. The highest profiled game was of course *Manhunt 2*. Creators, Rockstar, garnered huge heat upon the first iteration of the gaming series, *Manhunt*, after Stefan Pakeerah was stabbed and beaten to death in Leicester in February 2004. Stefan's parents claimed that killer, Warren LeBlanc, was inspired by the game; whose theme was essentially based on planning and executing people in the game, with especially gory results. This however was nothing gamers have not seen before, although there was admittedly much more of a sadistic underlying tone to any competitors. The game was consequently rated 18 by the responsible governing body (BBFC) in 2003. Warren LeBlanc was 17 years old. Following the fallout of the murder, the parents of the murder victim, again, insisted that the killer was inspired by the game, despite another 1.28 million players (Chartz, V. 2013) of the game choosing not re-enact the games brutal content.

Manhunt 2 was banned in 2007. Director of the British Board of Film Classification, David Cooke, Stated "Manhunt 2 is distinguishable from recent high-end video games by its unremitting bleakness and callousness of tone. There is sustained and cumulative casual sadism in the way in which these killings are committed, and encouraged, in the game." (BBC. 2007) Only one game has been banned since in the UK, *The Punisher*, due to similarly brutal themes.

When dissecting events of crimes, it very difficult to blame the event purely on the games themselves. Games are properly regulated and a single factor that account for the mindset of a criminal simply cannot be solely, or even partly, to blame. Any parents grieving a lost child or family member will of course look for answers, but from the data shown in this article, I feel they are looking in the wrong place.

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The Effect of Video Games on a Person's Behavioural Patterns

And what parents can do to help prevent these effects

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***Abstract*—Recently, video games have been cited as the reason for sudden behavioural pattern changes in children and even adults, but this article will focus mainly on pre-adulthood men and women. The behavioural changes usually include violence, cursing and higher stress levels. However, it isn't always just violent video games that induce these behavioural changes, casual games have similarly been cited as the source. Unfortunately, the parents of young gamers also have a role in this, they will buy their young children game that are not suitable for their age range, and contributes to the effect on their stress and aggression levels being elevated.**

I. The effects

The changes in psychology that have been noted due to increased exposure of violent video games are mainly aggression and violence, and in some cases, increased physiological arousal. With increased aggression being the seemingly most common effect, shown in adolescence as a result from playing these games, you begin to wonder why they are allowed to buy and play such games. Another effect caused by playing these violent video games can be increased attentiveness.

Why it causes these effects

Psychologists from Iowa State University conducted studies to determine what the effects would be of playing violent video games. One group played "Unreal Tournament" while the other group played "The Sims 2". It was noted that the group that had been playing "Unreal Tournament" struggled to regulate "impulsive behaviour", also known as "executive control", whereas the group who played "The Sims 2" showed no changes in their behaviour. (Palermo, 2013). This impulsive behaviour exhibited by the group playing the violent game were such that they now lacked the ability to control their aggressive actions, therefore showing that the game had affected them mentally.

However, the group that played the more violent video games displayed signs of being more attentive, whereas the groups playing either "The Sims 2" or no games saw no increase in their attention levels (Palermo, 2013). This study does show that there are two sides to the effects, there are in fact both positive and negative effects of playing the more violent genre of video games.

The parent's role

Parents actually have a massive influence on how affected their child is by violent video games through purchasing the game in the first instance. Anderson also notes that a lack of supervision from parents is a causal issue, it was shown that with teens through grade 8 and 12, years 9 until year 13 in England, 90% said that their parents don't take notice of the rating of the game before purchase, and that there was only 1% that didn't buy the game upon inspection of the age rating (Anderson, 2000). On the back of every game, there is a disclaimer, for example, on "Fallout: New Vegas", the disclaimer reads, "Contains strong bloody violence, language and sex references", and in the small print, it reads, "Suitable for persons of 18 years and over. Not to be supplied to any person below that age" (See Figure 1).

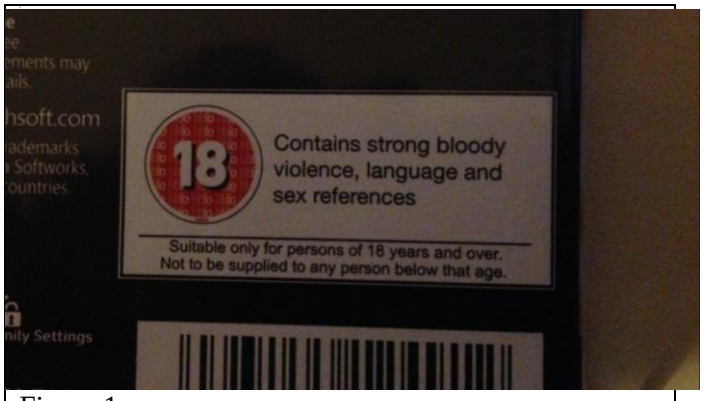

Figure 1

Author: Noskiw, M.

Title: *'Fallout: New Vegas' disclaimer*

What parents can do to prevent heightened stress and aggression levels

There are many things that a parent can do to stop their child becoming increasingly stressed or more prone to aggressive behaviour. To start, they could only buy age appropriate games, such as if they're 12, only buy them games with the age rating 12 or below. Another way to prevent these effects would be to limit the amount of time spent on playing video games a day. On an article written by Elisabeth Wilkins, Ann Giordano only allows her son to play on his PlayStation for 30 minutes a day, and even after that, both her son and daughter have a tendency to be more aggressive with one another (Wilkins, Unknown date).

Figure 2

Author: Wood, J., (2012).

Title: *angry_gamer*,

Real world examples of violence caused by video games

Unfortunately, there are many examples of violence caused by a violent video game addiction. School shootings such as Sandy Hook, and Columbine, which were both heavily publicised throughout the world, and where violent video games have been cited as the root cause for the young men's violent and murderous actions. According to Pow's article in The Daily Mail, Lanza was apparently fixated on playing the shooter Call Of Duty which featured one of the weapons he used in the shooting (Pow, 2012). The shooters who were responsible for the Columbine High School massacre also were heavily into violent video games, such as DOOM, so much so to the extent that they made their own version with two players and the 'opponents' didn't fight back, as if they had planned out their shootings in the game before they carried it out (Anderson, 2000).

Another example of real world violence was the case of the Norwegian shooter, Anders Breivik. An article in The Guardian states that he trained for his murder spree by using Call Of Duty and a holographic aiming device linked up with his game. Breivik said that the sight was designed to be used with ease by anyone (Pidd, 2012). This just demonstrates how easy it is for someone to train to be a killer.

Long term effects of violent video game addictions

Wilkins in her article on Empowering Parents discusses the long term effects as keeping the violence in long term memory, therefore the brain of the child may think of aggressiveness to be an appropriate response to a comment or action by another person. It's comparative to learning the multiplication tables; they're practicing the same action over and over again until it becomes a natural response (Wilkins, Unknown).

Many gamers once addicted, if they're pathological, they will more than likely suffer from depression, have social phobias and have increased anxiety, but once the addiction was quelled, the effects of the addiction also decreased (Unknown, 2011).

Helpful effects of video games

In Anderson's book, he references Kirsch, and notes that playing these video games can be used as an effective pain relief for children during painful operations (Anderson, Unknown). There is also evidence to suggest that playing video games is linked to pro-social behaviours in both short and long term. It has even been used as an effective teaching tool for many subjects, including biology, photography and computer programming (Anderson, Unknown). They have also been good for exercise as well with the introduction of the Wii, it has encouraged people to move about while playing games, getting more exercise than the conventional method of playing games using a controller (Anderson, Unknown).

Figure 3
Author: Moses, A.
Title: *Playing Wii Fit*

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Fig. 3. Moses, A. (2008) ***Playing Wii Fit*** (Available at http://www.smh.com.au/articles/2008/03/11/1205125889931.html , Accessed 14/11/2013)

Mobile Phones

How mobile phones have advanced and affect society

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***Abstract*— This paper is about the ways mobile phones affect society and covers different topics, such as law, language, privacy and health. Many people worldwide use mobile phones which have had some already visible effects on society, and there are more possible effects in the future.**

***Index Terms*— mobile, phone, device, society, advances, health, privacy, language.**

I. Introduction

Over the last 30 years, mobile devices, phones in particular have changed drastically in many different ways and have also had an effect on society and the people that make use of them. Not only have the mobile devices themselves changed, but the networks that connect them together and make them worthwhile have also had vast improvements over the years.

These changes have other effects on society such as change in language due to the invention of text messaging and changes to law to regulate the use of mobile devices and how we use them. Law also has an effect on the privacy of the people that use mobile devices and the health of the people around us.

Mobile Phones In The Past

Mobile phones of the past are very different to the way we know them now, most of us will have never even experienced mobile phones in the past due to different reasons such as price and availability, also the size of mobile phones made them impractical.

In 1973, Martin Cooper created the first mobile handset alongside John Mitchell and a team from Motorola whom they worked for, and he tested the device on a street in New York, which of course was the first mobile telephone call. Before the call could be made, the team had to get approval from the city to build a base station which the device would use to communicate. (*Elechi, 2012*)

The impact on society at first wasn't very noticeable at all, many consumers didn't accept the invention of the mobile phone as the first devices demonstrated were very large at around 4 pounds in weight and would cost around $10,000 to purchase. (*Teixeira, 2010*).

Ten years after the first phone call, 1983, the first ever set of mobile phones were released for sale, having a slightly larger impact on society as they were considerably smaller than the original devices, and they cost less to manufacture and therefore less to purchase. However, it would still cost a consumer around $4,000 to purchase a mobile phone as the technology was new and still in development.

Mobile Phones Current

As of 2011 there are an estimated 6 billion mobile subscriptions, determined by subscriber identity modules, worldwide and around 80 million in the UK alone. This means that there is almost a mobile device to each person in the world as there are currently around 7 billion people on Earth (*BBC News, 2012*).

Compared to 30 years ago, mobile phones are now incredibly cheap, they are also much smaller and much more advanced. This means people are more likely to have one than before as they can easily be carried around in your pocket (*The People History*).

Mobile devices are also much easier to use than ever, currently most mobile devices make use of haptic screens meaning the user can simply press the screen to choose an option. The operating systems are built around simplicity so that anyone can pick up the phone and work out how to use it without a manual or instructions (*The People History*).

Generally, most phones look the same, either a bar style with a touch screen, or with a keyboard at the bottom of a screen. We are used to seeing phones that look like this and can instantly recognise a phone so we know how to make use of it (*Rundle, 2011*).

Many people rely on their mobile phones for day-to-day life because they have the ability to do much more than before. With internet connectivity users can check their emails and browse the internet whilst they are away from home meaning they are always available for contact which leads onto some of the other topic in this paper, such as privacy and health.

Text Speak

As mobile phones advanced and text messaging became available, it has a large effect on our language and how we behave.

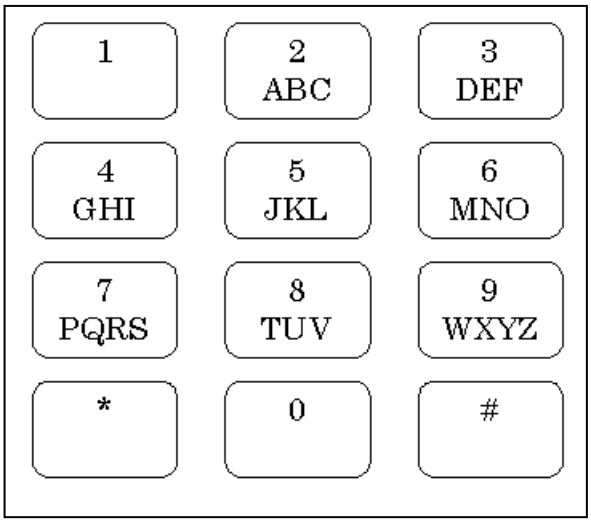
Text speak, formally known as SMS language, and SMS being an acronym for Short Message Service is simply a term for the abbreviations commonly used when text messaging. The term has also become increasingly popular with internet based communication, and sometimes even voice communication

which is where it starts to have an effect on society and the way we speak.

Early SMS messages were only able to use 160 characters per message, and some network carriers may have charged the user a fee based upon the amount of characters they use in a message. This is where text speak began its use on mobile devices, as it is a great way to deal with the cost of sending text messages (*Best Text Marketing, 2010*).

Text speak is also a way for users to save time when writing text messages as writing abbreviated words will of course save time as there are less characters to input. Older mobile phones that use the 'Standard Telephone Keypad' (see Fig.1) would require multiple button presses to access certain letters or punctuation and could waste a lot of time when texting.

Fig. 1. The standard 12-key telephone keypad.



Some abbreviations used in text speak have started to appear in the dictionary and are now used as words, an example of this is the abbreviation 'lol' which simply means 'Laugh out Loud'. This abbreviation has made it into the Oxford Dictionary and is often used in voice communication as a way of showing humour rather than actually laughing (*Lee, 2011*).

Modern mobile devices with touchscreens or QWERTY keyboards may lower the usage of text speak in SMS as it is easier to type out a full word. Most mobile carriers no longer charge per character anymore either so users are less likely to try and cut down on how much they write.

PRIVACY

Privacy is an issue with mobile phones as many people carry them around at all times in their pockets. Mobile phones usually have an active data connection so they are able to receive calls or messages, and they often are able to receive data from an internet connection.

Mobile phones can be tracked easily using multiple methods such as SIM and handset tracking. When switched on, a mobile phone is constantly sending unique identities to mobile phone masts around you, using this information, police are able to triangulate the signal from a device and locate it to within 100 metres in built up areas where there are many mobile masts (*BBC News, 2005*).

It is said that the America National Security Agency is able to keep tabs on almost any data communication people make all over the world, using secret techniques they are able to access data freely and without consequences currently. Mobile devices could be spied on by the NSA, it may even be possible to get your location tracked when you think you phone is off as the NSA could have installed spyware to keep the transmitter active without you or mobile manufacturers knowing about it (*Scharr, 2013*). If this is the case, the only way we can remain private is to not carry a mobile phone with us, or to remove the battery to completely power down the device.

HEALTH

There is currently no evidence that mobile phones cause harm to human health in the short term, but there is still a risk that long term damage may occur (*Hughes, 2012*).

It is possible that using mobile phones could have an impact on our eyesight. Most modern mobile devices have an LED or LCD screen which produce radiation, this can potentially damage the cells in your eyes (*Day, 2013*). The average mobile phone user takes a look at their phone around 110 times per day, which means they are looking at their phone screen an awful lot (*Woollaston, 2013*).

Mobile phones use electromagnetic radiation for data communication which is another health concern for many mobile users. This radiation could possibly give mobile users a higher risk of cancer, especially as most people carry mobiles around with them at all times in a pocket or bag, but there is still no evidence and the levels of radiation from phones is very weak meaning the possibility is very low (*Cancer Research UK, 2013*).

Human stress levels have had an impact due to the advancement of mobile phones. When taking a call on a mobile phone, the average user's blood pressure can rise from significantly due to the stress of conversation. Users who take calls more often are shown to be immune to the increase in blood pressure as they feel assured that they are not missing out on any possible calls to their phone (*Innes, 2013*).

Sleep deprivation can also be an issue because of mobile phones, many users stay awake at night using their mobile phones for text messaging or calling friends rather than getting the recommended amount of sleep (*Park, 2007*).

A health risk that has been linked with mobile phones is the risk of car accidents due to driving whilst on the phone. Using a phone whilst driving can be a distraction and make a driver lose concentration causing them to crash (*Cancer Research UK, 2013*).

In the UK, there are now laws in place to stop drivers using their mobile devices whilst behind the wheel and if they are caught driving whilst using a mobile phone, they will be given a fine and points on their licence, in some cases they may even have their licence revoked and do some jail time (*GOV UK, 2013*).

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Cracking Down on Hacking

Explore the history and the effects of hacking and what is being done to stop it

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I. Introduction

Cybercrime isn't a topic that is covered much in newspapers, but it is an issue that is getting bigger every day. Thousands of computers are attacked daily through malicious software, identity theft, cyber stalking and hacking. Over the past 50 years the word hacking has changed drastically, what used to be an activity to broaden the hackers knowledge has now become an activity of self-gain. Thousands of new viruses are made and released over the internet every day. Policing cybercrime has changed over the years, now there are more people trying to bring hackers to justice, but some hackers do not fit the stereotypical image given to a hacker. This report is going to cover the history of hacking and why it has changed so much over the past few decades, how policing cybercrime happens and the profiling of hackers.

History of Hacking

During the 1960s in the United States of America students from the Massachusetts Institute of Technology (MIT) created the first modern hacks. Recent research shows (Warren and Streeter, 2013, p. 12) the students hacked into the telephone systems so they could talk to people around the world for free. Back then they were called 'phone phreakers', and they hacked into the telephone network to learn about the system. Sometimes the students would pass information to the telephone companies about weaknesses they found in the system. Another account on the first hack by Taylor *et al*. (2006) was students from MIT would come up with elaborate pranks. The most elaborate prank was building a full size police car replica on top of a domed building with working lights and a parking ticket. Both accounts on the first hacks are very different but they are not committing crimes for money. They were done by students for fun and it was a harmless activity.

Once people outside MIT found ways to hack into the telephone network to make free phone calls around the world, hacking became less ethical. Legendary phone phreak John Draper is a good example of hacking becoming less ethical. Research carried out on John Draper (Warren and Streeter, 2013, p. 13) states that in a news article published in 1971, Draper said a phone company was a system for him to explore. He was then prosecuted twice by US authorities. On his second prosecution he was sent to prison where hardened criminals became interested in hacking telephone systems. Draper went on to set up a 'hack school' in his cell. This was the turning point for hacking. This is when hacking became bad.

Up until the 1980s hacking was only done on telephone networks. But in 1983 the internet we know today was formed. An article published online (PCWorld.com Staff, 2001) says phone phreaks began to move to computer hacking in the 80s. It also says hacking groups began to form then, including the famous Legion of Doom and Chaos Computer Club. Another article posted online (Ward, 2000) states that hackers took inspiration from the film Wargames. That film inspired them to play around with computers and networks. This is when hacking became what it is today. All major accounts of hacks after 1983 all involved computers.

Fig. 1. Replica police car prank pulled by MIT students (Bauer, Izawa)

How Cybercrime is being policed

Since 1983 cybercrime has been on the rise and policing it has been just as difficult as investigating crimes committed on the street. According to a report, (*How Many Things Are Currently Connected To The "Internet of Things" (IoT)?*, 2013) there was 8.7 billion devices connected to the internet in 2012. With so many targets available to hackers policing can be a very difficult task. Over the past decade police have been trying to respond to the increase in cyber-attacks by setting up cybercrime units in police stations and the government recently put together the National Cyber Crime Unit. They will be leading the battle against cybercrime both in the UK and internationally.

With the introduction of the National Cyber Crime Unit it seems the police are stepping up to crack down on cybercrime as well. Evans (2013) reported that Scotland Yard is dramatically expanding its E-Crime unit. It will be adding 500 dedicated police officers to the unit to tackle cybercrime. This news is a giant step forward in the fight against cybercrime. With the introduction of the National Cyber Crime Unit and the response from Scotland Yard the amount of criminals prosecuted over committing crimes over the internet should increase.

Apart from police run bodies, there are also groups set up to protect Britain from cyber-attacks. The British government have assigned (Warren and Streeter, 2013, p. 91) GCHQ spy central with the role of leading the protection against cyber-attackers. The British government have announced they are putting and extra £650 million towards the fight against cybercrime. With such a great response from the government it seems cyber criminals may finally face justice.

There are a few questions that have been left unanswered so far. How is cybercrime investigated and what sentencing will a guilty cybercriminal get?

Investigating cybercrime is a very difficult task because hackers can hide the station they are using. Tracing virus creators is also a very challenging task that can sometimes be impossible to trace. A very nifty way of tracing cybercriminals is to use a technic called 'honeypots'. It is used by a lot of cybercrime agencies around the world and it involves (Grudziecki *et al.*, 2012, p. 17) a computing resource, whose sole task is to be probed attacked, compromised, used or accessed in any unauthorised way. Any interaction between the hacker and the honeypot is monitored.

In a recent report (Hudson, 2011) it was reported that many security firms use ex-hackers to find current hackers. It is a bit surprising to see that former criminals are helping with the fight against cybercrime but it seems logical because they will have a lot more knowledge in the area, there past experiences and technics could help them bring the criminals to justice.

There is no fixed punishment for cybercrime, having read up on multiple hackers that where caught, there was no minimum punishment. Each hacker was sentenced depending on how sever the crime was. It can be argued that this is fair but a minimum sentencing should be in place so criminals don't take cybercrime lightly.

A report posted online (Palmer, 2013) stated that attacks against infrastructure, government and power facilities will be met with a minimum prison sentence of five years. The report states that this is just a draft at the moment but it seems like the correct move to take against cybercrime.

HACKERS PROFILE

From the days when hacking wasn't a criminal offence there was a stereotypical image of a hacker. One account on the stereotypical image of a hacker is (Ward, 2011) young men or teenage boys. The author thinks the image was set by the MIT students that created the first hacks. He also quotes from author Bruce Sterling that young men are largely powerless and that intimate knowledge of a technical subject gives them control. This is an interesting view because the so called image was set in the 1960s. This image has been the view for quite a few people and it has been around for over 50 years. The media have not helped this image. Many films involving hackers make the hacker a young male. Recent films have made hackers older but they are mostly all still male.

A recent article has given the hacker image a fresh face. The new stereotype is (Daly, 2013) an antisocial man or child who lives in their parents' basement. They are socially immature and have criminal records for non-digital crimes such as drug dealing and uttering threats. This stereotype is quite different from the previous one, they are both saying they are young males but the first stereotype pictured the individual as a powerless person that wished to have control and power through hacking. They were teenage boys so more than likely did not have criminal records. But the new stereotype says that the hacker has a criminal record which leads you to speculate that hacking isn't done for control and power but for money. The image has changed now and this is because of the advances that have been made in the field of technology. Now that more people rely on computers, more can be taken from computers.

Fig. 2. Member of the famous Anonymous hacker group (Knight, 2013)

CONCLUSION

Over the past few decades hacking has changed and the advance in technology has helped shape hacking today. Hacking used to be done on telephone networks, but has now become an activity done on computers. It seems like it was only a matter of time before cybercrime became an issue. Modern technology allows the public to rely on computers for almost anything. Online banking and shopping is now available and the many ways we can communicate over the internet has allowed criminals on the street to become the new stereotype for hackers. A positive to this is that authorities are now taking precautions to counter cyber-attacks which will hopefully make browsing the internet safer and fingers crossed, the hackers that are committing the crimes will be caught and brought to justice. But with good news there is always bad news and the bad news is that there is always going to be digital crime and as technology advances so will the crimes. We can only hope that it doesn't progress to the point where government infrastructures are at risk.

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The Impact of Mobile Technology

And how it has made a change to society

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***Abstract*—This article will look at ways Mobile Phones have changed our society as well as the ways that these impacts has affected our lives and society around us.**

***Index Terms*— Mobile Phones, Cell Phones, Society, Impact, Technology**

I. Introduction

Since their introduction in the 1970's, mobile phones have had a dramatic impact on society as a whole. They have changed over a long period of time becoming more advanced and easier to use. Their impact on society takes many different forms, each introduced as technology of the mobile phone became more advanced.

Fig.1 – Mobile Phones from 1990 onwards.

Introduction of The Phone

The world's first, true mobile phone was introduced by Motorola in 1973. This phone was knows as the DynaTAC and was an extremely large phone that weighed about one kilogram and had a battery that lasted about 30-60 minutes. Until this point, people had no idea that a phone could even be portable. To add to the impact, in 1973, an executive and researcher at Motorola named Martin Cooper, made the world's first mobile phone call while taking a walk through New York City (Goodwin, R. 2013). Because nobody had actually seen a mobile phone up until this point, his simple walk through New York made quite an impact on people passing by who couldn't believe what they saw. The popularity of the phone to begin with was quite low as this was a brand-new technology and despite being portable, the handset originally cost $3995, which at the time was a huge cost just to be able to talk on the move. Originally though, this handset was not designed with consumers in mind, only large scale companies who could actually afford the price. Despite having virtually no popularity to begin with, the phone eventually found fame in the 1980's where it was included in several films such as Wall Street. Its inclusion in these films helped to boost its popularity with the consumer market.

An Increase in Popularity

Because of the prices and target consumers of the first phones were so high and narrow, they had very little popularity and because of this, didn't have much of a social impact at all. Yes it was possible to make calls on the move, but nobody wanted to pay the hefty prices associated. Despite the use of mobile phones in popular movies, their social impact was not really seen until the 1990's. With the introduction of second generation or 2G digital networks, call reliability was vastly improved. More importantly, mobile handset technology was vastly improving as components were being made smaller while performance increased. This made phones less of a hassle to carry around and reduced their prices. This improvement to technology helped to also improve popularity. Introduction of handsets such as the Philips C12 and Nokia 6110 with extra features and small prices meant that phones could be easily obtained by the average consumer. This began social trends as mobile phones became part of everyday life. One handset produced in particular was the Nokia 3310 (Skipworth, H. 2013). It was designed with the general public in mind and was very user focused. It came equipped with multiple features including popular mobile games and was a phone that was very easy to learn and use. Nokia ended up selling about 126 million of these devices and because of this It can be regarded as one of the most popular phones ever made. Even in the modern world, the 3310 is still regarded as one of the greatest phones ever made and is still known for its incredible durability.

Text Speak

As phone technology improved. It became possible to send text based messages from one handset to another. This was known as SMS, or short message service. Because most phones only included small keypads or full size keypads with tiny buttons, it became common for people to use abbreviations and

slang instead of full words to make typing quicker and easier. SMS language or text speak was popular with users because of the limited keypads. Because of this, the use of text speak became very popular socially and eventually began to appear outside of text messages. Because of its massive popularity spike however, it began to branch outside of its original use causing people to question its potential impact on peoples literacy skills (BBC News, 2003). Because of text speaks enormous popularity in the modern world, it has been known for individuals to use it accidentally when writing such items as formal letters, essays or reports. There are still discussions about how it may damage peoples, especially children's literacy skills. News articles such as some made by the BBC try to cover why text speak may be ruining the English language as some children have been using it in their school work.

More Features Than Just Calls

As the 1990's came, mobile phones were now being given more features than just the ability to make calls. The improvement in mobile technology allowed phones to include more features such as games, calculators, converters etc (Skipworth, H. 2013). These features helped to make phones more popular with the general public. More features made a phone more appealing in some cases and socially, would make people get the phone with the best features so they could brag to their friends. There were also important features that made phones more appealing to business employees such as being able to be used as a pager and planner.

Driving Safety Impact

Because mobile technology has increased in popularity, it became common for people to use their phones while operating a vehicle. Not only this, but some of the first portable phones were built for use within a car. Because of this, mobile phones have had a serious impact on peoples driving abilities as using a phone while in a vehicle requires the user to divert some attention away from their driving. As more and more people began to use inside of not just cars but other types of vehicles as well, accidents became more common. This made some countries review and test the safety and impact of using a phone in a car. Many tests confirmed that using a mobile phone distracts drivers and a pattern was found in crash data relating to the use of mobile phones (Rospa. 2013). Because of the dangerous impact phones can have while driving, it has been made illegal for phones to be used while driving in some countries.

Smart Phones

The definition of a smart phone is a phone with advanced computing and connectivity in comparison to a regular mobile device. This means that these types of mobile devices will usually include a range of special or extra features. The world's first true smart phone was the IBM Simon which went on sale to the general public in 1994. Upon its release however, the term 'Smart Phone' did not exist at the time. It was not until 1997 with the release of the GS88 did the term appear (Wikipedia. 2013). Early smart phones did not have much of an impact on society. Their early features made them more suited towards business users rather than the general public. Because of their focus towards business, their popularity was quite poor. Smart phones did not become very popular until the mid-2000. In the early 2000's, different mobile and computing companies were designing operating systems as well as devices to support these operating systems (Skipworth, H. 2013). Upon release in the late 2000's, smart phones took off in popularity as their design focus was not just towards business but also towards the general public. Devices such as the Apple iPhone and the BlackBerry Curve had a large range of features that they could perform beyond simple calls and texts. The functionality as well as the ease of use of these devices made them quite popular very quickly. Mobile operating systems for the smart phones of the time also helped increase popularity as operating systems such as iOS and Android introduced an 'App' system, giving the user the ability to download and install applications to their phones, expanding upon their functionality. These applications can range from anything such as tools for calculation or games for entertainment purposes. These features still help to make smart phones popular even today. Smart phone impact today is quite severe. People usually expect a phone to include some form of application system allowing them to make use of installed applications. Because of how popular the way current smart phones work, companies have not had to make many changes in the way their phones operate. A good example of this is the Apple iPhone. If you compare a modern iPhone to the original that came out in 2008, you will see that not a great deal has changed in terms of how the phone operates and the main improvements have been done to the phones performance rather than its functionality.

Privacy Invasion

In the modern world, phones are incredibly more advanced than their older counterparts, featuring many, numerous different technologies. These technologies allow modern "smartphones" to perform a huge range of tasks, including but not limited to, internet access, GPS and media services. One important feature popular with all modern day phones is the use of social media. These allow people to communicate and discuss topics of their choosing as well as talk about themselves with the ability to upload pictures and videos, often from their own phone. This does, however, have an impact on privacy. The reason for this is that posts made by someone could include a tag of when and where the user made their post. Some users may not even be aware that this feature is being used and can cause some privacy problems for some people. Invasion of privacy is not just linked to social media however. In the modern world, some people known as hackers have found ways of intercepting messages and calls. This means they can access a person's private data for whatever use they choose. (Surveillance Self-Defense. 2013)

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LIST OF SOURCES FOR IMAGES

Fig. 1. Marus. (2007***). File:Mobile phone PHS Japan 1997-2003.jpg.*** Available: http://en.wikipedia.org/wiki/File:Mobile_phone_PHS_Japan_1997-2003.jpg. Last accessed 12th Nov 2013.

Integration of Mobile Phones and Social Harm

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I. INTRODUCTION

In the past twenty five years mobile phones have gone from being unwieldy devices used exclusively by business people to being a pocket sized gadget that statistically you are more likely to have access to than a toilet (Time, 2013). A device on which you can talk to a person on the other side of the world on a whim, with neither person needing to organise the exchange, and through which over 6 billion text messages are sent a day in the US alone (CTIA, 2013). Beyond simply allowing these exchanges, the mobile phone has become almost ubiquitous in everyday life, allowing for the simple micromanagement of ones relationships and business, offering more immediate control over our social networks and interpersonal interactions than ever before.

People are also more reachable than ever before. With the majority of people owning a mobile phone and by design having them available, it is now possible to contact a person at almost any time. This is possible with either caller or receiver being in any location with a mobile network signal -a system which covers approximately 99% of the UK population as claimed by most mobile providers (Mobile Coverage, 2011).

However, despite their benefits, the powers of social micromanagement, reachability, and constant connectedness that mobile phones grant may have drawbacks that constrict and harm other areas of our social lives and our very mental and physical health. All of these are significantly linked to the level with which the mobile phone is becoming a key element of everyday life. As it stands, the pace of development and integration show little signs of stopping.

HOW THINGS HAVE CHANGED

Prior to the adoption of the mobile telephone, it was a lot more difficult to organise social interactions and communication throughout a person's social network at short notice, or to change plans on the go. To organise meeting a person in a public place for example would require mutual knowledge of times, dates, local geography and synchronised timings. Nowadays this level of preplanning and coordination is simply unnecessary; mobile phones put us in touch with others in an instant and allow immediate changing of plans and communication of information. As an extension of this, a person can be connected to their network of friends, family, and acquaintances constantly. This constant connectivity can have its benefits: people can maintain contact in emergencies, and manage their social lives with their friends and family and remain in touch with them more easily than ever (Ling and Donner, 2009).

WHY SO INTEGRATED?

These benefits have been instrumental in promoting the uptake of the mobile phone, making it appealing to consumer and business with a range of needs. This comes alongside vital technological improvements that have continuously reduced the size and relative expense of the device, as well as coverage from networks, levels of functionality, and connectivity with existing social media. Additionally, due to the nature of the device and its networking uses, there is a level of popular adoption at which point it becomes more of an inconvenience to not have a mobile phone than to have one (Rogers, 1995). As a device that functions based on networks, it is almost self driving as long as there is a certain user base- more users means more contacts, which leads to more network coverage, which in turn allows for more users. When more people in your network own a phone than don't, not owning a phone makes you a liability- thus teledensity builds on itself (Wiener, 2007).

WHY IS THIS A PROBLEM?

A great deal of the social problems that arise out of the integration of mobile phones is from this very persistent level of connectivity, and the difficulty of escaping it as integration marches on. Persistent and pervasive connectedness raises anxiety levels about missing out, about not being involved, and about the continuing sense of connection to an external network. The Tethered World Study (Mihaildis, 2012) found that in the young people studied, their mobile phones were generally heavily integrated into their lives and daily routine, being the first thing they check on waking and the last thing before bed. Integration of their mobile networks and media was being planned into every previously available area of their lives. This heavy integration was a source of anxiety among many, with the sense of being connected to other networks still lingering in consciousness throughout other activities, and distracting them from more present encounters.

This sense of distraction is noted in other research. Studies into the effect of the mere visual presence of a mobile device in the vicinity on social interactions between strangers found that simply having an unused device in view was severely distracting from immediate social interaction. This also reduced the participant’s ability make personal social connections that were easily created with a more inert object such as a notebook present (Przybylski and Weinstein, 2012).

For children in particular, in another study (Campbell, 2005) this integration was noted as having a significant effect on their lives, with a higher level of use of mobile phones than television

or the internet. Though their involvement with the mobile phone enabled them to develop more persistent social bonds, and maintain them without needing to see their friends in person, they also were shown to be limited in the depth with which they were able to maintain these bonds- the primary communication method seen was texting. Texting was seen as such an easy alternative to more difficult direct verbal communication that it was used much more heavily, depriving the users of more rewarding (albeit perhaps more challenging) communication, enabling them to avoid necessary social interactions that facilitate the development of better interpersonal skills.

Further to this, the significant level of integration added social risks with or without a mobile phone. To be without a phone is to be socially ostracised, whether lacking the status that mobile phone conveys, or simply by being more difficult to contact. However, this individual addressability gained by owning a phone opens the way to cyber bullying, which is in many ways more harmful than physical bullying due to the persistent nature of both the connection to an unseen antagonist, and by the relative permanence of the attacks.

A further study into the usage of mobile phones found that heavy use was associated with stress, sleep disturbance and symptoms of depression in young adults (Thomee et al, 2011). Additionally, personal perceptions of overuse showed signs of potential addiction through withdrawal like symptoms being exhibited when unable to access the device.

NEW DEVELOPMENTS PUSHING FURTHER INTEGRATION

This integration of mobile phones and similar communication devices is not showing any signs of slowing. The continuous development of the phone into smaller and cheaper to manufacture units has facilitated the development of wider markets for mobile phones in the developing world, allowing the spread of networks further afield than ever before (World Bank, 2012). In addition to this, the development of wearable devices aims to integrate mobile phone like technology even more seamlessly into everyday activity. The most prominent example of this would be Google's 'Google Glass' project, a smartphone like device that is worn as a pair of glasses, allowing phone calls, internet searches, image and video recording, and instant messaging; all through voice commands and touchpad swipes (Google, 2013). This device also allows for private visual and audio feedback similar to a smartphone, through devices concealed in the frame.

By allowing for a non intrusive smartphone experience, Google Glass is intended to become a ubiquitous computer (New Scientist, 2013), a fully integrated mobile device that is with the user in all their activities from waking until sleep. It is unclear outside of hype what the actual uptake of this device would be, but the fact that a broad range of competitors are developing very similar products to meet this new market (Hill, 2013), alongside positive consumer surveys (Hit Laboratories, 2012), imply that there is good reason to consider seriously that this device could have strong market penetration. As with mobile phones before them, after a certain saturation point such ubiquitous computer devices could become almost a hindrance to not have, and societal integration would be practically inevitable.

THE POTENTIAL EFFECTS OF EVEN DEEPER INTEGRATION

To integrate mobile devices not just more widely, but to a more intimate and constant degree, before fully adapting even to the changes already put upon us by widespread adoption and a need to keep up, is to court furthering the problems already posed by the current level of integration.

It is certain that the current level of integration has brought with it significant social difficulties hitherto unprecedented, but it is unclear what deepening this integration could bring. A study by the Pew Research Centre (Anderson and Rainie, 2013) surveying technology experts and stakeholders found largely inconclusive predictions on how the future of mobile technology will affect its users. They showed roughly a fifty fifty split in terms of positive and negative predictions. As with the current state of affairs, it is difficult to claim whether the benefits of such integrated communications and networks will outweigh the drawbacks, but it is impossible to argue that such drawbacks don't and won't exist.

Given the continuation of growth in an already saturated market (WorldWatch, 2013), further integration is almost a certainty. However, this growth is likely to be more about development of existing services and devices more than it is about expanding to more users, possibly allowing time for existing users to confront the problems that are becoming evident in the depth of mobile communication integration into society. The combination of persistent reachability, a constant connection to one's social networks, and a relentless awareness of this connectivity lend themselves to the concepts of information overload and maladaptation. These are problems which have arisen due to how rapidly this technology has taken root and how deeply it has integrated itself into and affected everyday lives, without adequate time for adaptation to such significant change (Toffler, 1971). The settling of the market and this change may give time for solutions to be developed and society to adapt to these changes- if these new technologies don't suddenly revolutionise human communication once again in the near future.

IN CONCLUSION

It is beyond the scope of this article to make effective predictions about the future of integration of mobile phones and similar devices into everyday lives, or to suggest how best to counter the present and seemingly inevitable negative social consequences of such a level of integration. It is simply worth highlighting that such significant developments in how people communicate with each other have brought not only great benefits, but significant and very real problems, and that to continue this path of integration will be likely to increase the degree of both experienced in everyday life. This is an issue common across the technological spectrum (Bushnell, 2010, cited by O'Connor, 2010). However, few technologies have become so intimately entwined in everyday life as mobile phones, lending a particular level of relevance to their future developments.

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Manufacturing Fun:

How video games exploit psychology to keep us playing.

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***Abstract*—Games have begun to look towards behavioral psychology to create a more compulsive experience for players. The rising budgets of modern games have created a need to keep players playing. It is important for us to realize when we are having fun, and when we are being manipulated to keep playing, and to change the way we look at and engage with games.**

I. Introduction

It is a commonly accepted belief that video games are created and designed to be fun; that our continued play of games are down to how much entertainment we derive from them. This is a very reductionist view of the games industry, and fails to include monetary and business aspects.

As the gaming industry has advanced so too has the need to keep players engaged for longer periods of time; genres of games like the massively multiplayer online game require a large investment of time, and generate revenue through monthly fees.

The advancement of technology has made several things possible in this regard; it is easier than ever to create engrossing and compulsive experiences. Not only this, the internet has enabled us to link these psychologically manipulative systems together in a way never before thought possible to create the most compelling experiences possible.

Player enjoyment has become a tertiary concern for some designers, and instead focus has shifted to ways to keep people compulsively playing and monetising those players. The goal of some designers now is not to enable us to have fun, but to manipulate us into thinking we are.

The virtual Skinner box

A Skinner box (B.F Skinner 1938) refers to B.F Skinners experiments into Operant Conditioning; a learning theory that claims frequency of behaviour is directly linked to reward and punishment. Technology has made the creation of skinner boxes much easier, and the rewards more plentiful and intangible, as such these principles have been adopted by game designers to create a compelling game experience. Massively multiplayer online games will often have a reward schedule; in game tasks, when repeated, will lead to player reward. Skinner claimed this form of positive reinforcement increases the probability and frequency of repeating those actions.

However, unlike the rats Skinner conducted his experiments on human beings have autonomy, and while a game may reward us for certain actions so too do many others activities. The act of rewarding us for actions is insufficient grounds to accuse game designers of exploiting us when so many other activities provide similar rewards. After all, the Skinner box experiment was not intended to be used to manipulate people, but was used as a simplified model to understand how the real world works (Hopson, 2012).

Yet, as Yee (2002) points out these rewards are set up so that while initially providing instant gratification and quick bursts of reward they later become much sparser, and the time taken to complete these tasks increase exponentially. A common example of this is the experience curve in many RPGs – such as ‘Final Fantasy XI’ where the total experience points from 1-10 are 13,350, to 400,000 for level 65-75. This provides us with a higher goal to make the task seem more meaningful, and ‘shapes’ our behaviour into attempting more elaborate and time consuming methods of gaining experience (Bonin, 2012). This shaping then goes on to colour how we interpret in game rewards – We may laugh at the concept of a virtual sword being worth something, but given enough time investment and shaping they are perceived as much more valuable.

A criticism to this is that while they do increase the amount of experience required to level it the reward schedule is still fixed, it will generally still take x amount of experience points to level up. Hopson (2001) notes that a fixed reward ratio creates periods of inactivity that can result in player loss. While the initial rapid fire rewards may entice the player the increased amount of experience required to level up create opportunities to take pause, and these pauses ultimately result in the player moving on to something else.

A way this is combated by designer is to introduce systems that are variable, such as random equipment drop. Variable reward schedules remove this pause by creating random intervals when the player can receive rewards, even the above example of levelling can be seen as following a variable reward schedule if mechanics such as experience penalties and chains are introduced that obfuscate to the player the exact time needed to level up (Yee 2002). The goal of a variable reward schedule is to minimise any down time, and to always have a reason to continue; the next reward could be just around the corner, but the player never knows when. These create what are known as compulsion loops, which are also found in gambling addicts – ‘I am sure that this next one will be where I hit it big.’ (Phillips, 2013, cited in Breeze 2013).

The game is no longer about having fun, but compulsion and an unwavering faith that you will be rewarded soon. It creates a 'gamblers fallacy' (Lacey, 1996) where players erroneously believe that statistically independent events are related – 'The last 400 monsters haven't dropped this armour, so the next one is more likely to.' The games then compound this by having multiple systems layered on top of each other, each having a variable reward ratio. When you have accomplished one, there is always something else. This is what makes video games much more compulsive than a standard Skinner box, the internet has allowed for multiple Skinner boxes to exist, each with its own reward schedule and tailoring. As Nicholas Yee (2002a) explains, one Skinner box is not interesting, but multiple connected ones are.

While it is true that these components shape the player into compulsive behaviour it can be argued that these features alone are insufficient in creating continued compulsive behaviour. Without a risk of losing something, and with rewards becoming less frequently attained as the player progresses it is possible for the player to lose motivation, and to take increasing pauses until they no longer play the game (Hopson 2002). Technology has enabled us to very easy save our data and return to it at any point, with no risk of losing progress.

This is why many online games implement 'avoidance' – punishing the player for taking long breaks from the game. The prevalence and growth of the internet has allowed games to maintain a persistent world; events can continue to occur without your presence or input. Avoidance works by allowing detrimental things to happen in the game world while you are absent, it disincentives continued breaks from the game by punishing them. The most infamous example of this can be found in 'Farmville', where if you don't reap your crops every 10 hours you lose them, and the only way to avoid this is to logon to the game and act (Chou, 2013). As Priebatsch (2010) notes, this force is so powerful that it causes 75 million people to change their schedules at the behest of the game.

Some of these factors can be so powerful as to cause neglect of self and others. In the case of Yu, a baby's death went unnoticed by the parents due to marathon World of Warcraft session (Gibson, 2005).

Social aspects

Despite this, many would argue that the compulsive play is not created by design, but is an external issue. Human beings have innate needs (Maslow 1943) and desires, namely the need for friendship, for a sense of belonging, the desire to be respected, and to have high self-esteem. It is possible that these desires, if not met in the real world, could be sought after in video games. Indeed, Nicholas Yee (2002) found that in a survey of Everquest players those who would agree with statements like "I feel I am a failure" and "I feel I have no control over my life" would strongly correlate to feelings of addiction. These correlations suggest that users find themselves compelled to play not because of the games design, but due to their dissatisfaction with their day to day lives.

The relative anonymity and safety of internet communication would allow those who find conversation difficult in real life not only to find friends online, but to become leaders and to play major roles in battle. If these goals cannot be met in their real lives, then technology and these games help fulfil them.

The issue with the findings of Yee, however, is that they provide no chain of causation; it is not clear whether the respondents were playing the game due to their self-esteem, or if their low self-esteem was the result of continued play. It is entirely possible that the compulsive behaviour produced from the games design would make the respondent less social, thus depriving them of human interaction and therefore causing feels of worthlessness, loneliness and lack of control.

Similar to the claim that game compulsions cause is external is the claim that 'Reality is Broken' (McGonigal 2011). Jane claims that games, rather than manipulating us, are simply providing us with something we lack in our everyday lives, hard work. We don't play games because we are manipulated into doing so, but instead play them because our real lives lack the challenge and obstacles to make us better people. Malcolm Gladwell also claims that happiness can be attained through having a connection between effort and reward (Gladwell, 2008). Video games happen to provide these in an easily obtainable, accessible and enjoyable package.

To some degree what Jane McGonigal claims is true, we do have an innate desire towards self-efficacy, and one of the ways we achieve this is through mastering experiences (Bandura, 1977), and as game designer James Portnow (2013) explains many of us actively seek mental challenge. Yet it is hard to overlook some of the more exploitative techniques games use. While finite games like 'Portal' provide sufficient means to challenge us, games that are pay-to-play will instead replace challenge with randomness in an attempt to keep us playing. An example of this can once again be found in Final Fantasy XI – It is not difficult to kill the enemy 'Uptala', but the drop rate for his weapon is 0.07%.This provides no challenge; it exists merely to keep us trying.

Ultimately, while we may be drawn to these games because of external aspects in our lives, it is the compulsion loops that make us come back.

Conclusion

As video game budgets continue to grow, and as the need for the player to engage for longer periods of time emerges we must remain vigilant and recognise when we're having fun, and when we're stuck in a compulsion loop. Layering and adapting skinner boxes to specific players is trivial with the aid of technology (Yee, 2002a) and thus the ability to create truly engrossing and compulsion creating gameplay has skyrocketed. Regardless of what draws us to games, it is ultimately is these systems that keep us coming back.

Yet, it is still important to note that, as Hopson (2012) explains, these systems may be fundamental to the creation of games. It is the designer's job to balance these factors; to ensure that they enable fun, not compulsion. It is an incredibly precarious line they walk, and one that is too often crossed.

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Valve's Contribution to the Gaming World

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I. INTRODUCTION

Valve has grown to become a very reputable company under the guidance of founders Gabe Newell and Mike Harrington since 1996 (Capriole et al, 2008). Their most recognisable product is Steam; a digital distribution platform which has had a significant impact on the gaming world and is estimated to own around 70% of the market share (Hartley, 2009). What was Valve's motivation? They wanted a way to get updates to users with minimum hassle (Stanton, 2012), as frequent game updates during the 1990s and early 2000s was considered an inconvenience for users. The problem was that this kind of system had not yet been built on such as large scale and so were left to build it themselves (Stanton, 2012), and despite a rough start (Ferrell, 2012), Steam is the largest and most influential distribution platform. This article will focus on the impact of Steam, looking at the time before, the present and the future of what Valve has planned to reshape gaming distribution and entertainment; again.

THE TIME BEFORE STEAM

1980s: During this time physical media was the dominant method of game distribution as internet connections were not yet in widespread use (Wauters, 2011). There were a few services available however; GameLime (CVC GameLine, 2011). This service allowed Atari 2600 owners to connect through a phone line to rent games. This service was terminated during 1983; the video game crash.

1990s: Again, physical media was the dominant method of game distribution, however there were a few more services during this time compared to the 1980s. Nintendo released Famicom Modem (Cunningham, 2013), a Japanese only service where people could connect to a server that provided game cheats, jokes and a small amount of downloadable content. Another service was the Sega Channel, for the Sega Genesis which provided users with access to games on demand (Horowitz, 2004).

2000s: The 21st century would see widespread usage of the internet and thus was common and fast enough (Wauters, 2011) that digital distribution of games and other content became viable. The early 2000s saw the rise in digital distribution services, such Steam.

WHAT IS STEAM

Steam was designed by Valve to distribute game updates to players around the world with minimum hassle (Stanton, 2012), on a larger scale than had been possible in the 1980s and 1990s. It was released in 2003 as a platform to update Half-Life 2 (Capriole et al, 2008), but soon updated to a place to purchase all Valve and over time, third party games, and consequently to receive updates for all of them (Stanton, 2012). Because steam is a digital distribution platform, people did not require a physical copy, as they received it as a download via the internet. (Digital Distribution Law and Legal Information, 2010). The initial impact of Steam on the 21st century was a platform where people could purchase and update games in a single place on a huge, world-wide scale. This feature alone was not enough to make Steam, or digital distribution in general, a better option than physical media. There had to be something that made using Steam worthwhile, and Valve definitely found something very worthwhile and attractive to people; sales.

STEAM SALES AND ITS EFFECTS

Through regular experimentation in sales, Valve realised that periodically reducing the price of games by 25%, 50% and even more lead to an exponential increase in revenue (Farrell, 2012). The result was beneficial for everyone and thus made Steam a viable alternative to physical media as the dominant method of distribution. Game developers would see a large increase in revenue as games sold up to forty times as many compared to sales with the original price (Kuchera, 2012). This would result in a larger player base for games and thus provide more potential customers for future releases. This effect on game sales is clearly a good thing for the games industry; games might be cheap, but they're selling many times more copies and reaping the benefit of higher profits. Steam sales also help aging games to still sell very well, with some developers recording better sales on a Steam sale day than the launch day of their product (Curtis, 2012).

The impact of Steam sales on game developers might not be Interesting, but what should be is the impact on you; the gamer. During a Steam sale a games price can be cut anywhere between 10% and 90% (Farrell, 2012); a game that should have originally cost £29.99 would now cost £2.99. That price difference is staggering and is of no surprise that so many people are drawn towards these sales, as they can buy ten games for the price of one.

If you are not persuaded that Steam sale have had an effect on you, then consider this point of view. The standard price of an Xbox 360 or PS3 game is £39.99 when released, on the PC that game will cost £29.99, whether on Steam, another digital distribution platform, or a physical copy bought from a store. This isn't a general rule, but it is a very common sight. Now,

there might be a number of reasons why PC games are cheaper than console games, but it's not hard to image that Steam sales have had a crucial part to play (Farrell, 2012). Even if you have never bought a game from Steam, when you purchase a PC game from anywhere you will be paying less because Steam sales have forced the PC games market down. Why? Because adding that £10 on to games when people are accustomed to lower prices is hard to get away with.

Steam sales are significant, and have had a clear impact on the PC games market, both for developers and gamers, but sales are not the only feature unique to Steam.

STEAM WORKSHOP

Selling lots of games at low prices has shown to be beneficial for everyone, but what is even better than that is cheap games with more content. Modifications, or just mods, have been around for a very long time which, in one way or another changes a game, be this more levels, new missions or a total reshaping of the game. One core issue with mods is that distributing and installing them was not always simple (Edwards, 2012), and to that end Valve released Steam Workshop (Steam Workshop, 2013); installing a mod was as simple as clicking a button.

Steam Workshop, similar to Steam sales benefits everyone; the game developers and the gamers. As with most single player games, people play through the campaign and multiplayer and move on to a new game. Workshop attempts to stall this as when people are done with the original content they can search for user generated content and thus stay with the game for longer and increase the concurrent players (Edwards, 2012).

That is the benefit for the developers, but what impact does Workshop have on you? Well, as already stated you get more content that is (usually) free (Steam Workshop, 2013), and gamers are always wanting more content to play through. But let me put Workshop into a context that will make it seem a little more significant. Building upon what was mentioned earlier, let's say you buy a game during a sale for £2.99 (the original price being £29.99), which has Workshop enabled. Not only do you get a game for 90% of the original price, you get access to a huge amount of user generated content for free that could potentially add hundreds of hours of gameplay. That £2.99 has been stretch really far. A way of representing this better might be this; you buy a game for full price and play the original content that takes 50 hours. That equates to £0.59 an hour. Then, you buy a game on sale and use Workshop for a total of 200 hours gameplay. That's roughly £0.01495 an hour. See how far your money has stretched?

We've now looked at the impact of Steam Sales and Steam Workshop and how they work together to create an even bigger impact on you. These two features are but just a few of what Steam has to offer, but now let's look to the future of Steam.

STEAMOS AND THE FUTURE

Valve have changed the present time with Steam, showing digital distribution is the way forward as they dominate the market with 70% shares (Hartley, 2009), and they might just change the future too.

SteamOS is one of Valves projects in development that dares to challenge the consoles with a new way of playing games, and if successful it will change the future of gaming as we know it. So what is SteamOS? It is an operating system (OS) based up on the Steam platform (Forest, 2013) and will be a Linux-based, therefore it will be free and open source (Proffitt, 2009). The PC market has declined over the past few years and this is Valves attempt to get the PC into the living room as a viable alternative to consoles. Valve had already began this campaign back when the released Steam Big Picture, a version of Steam platform optimised for larger screens. According to Valve, SteamOS has already achieved a significant performance increase in graphics processing, and are now looking into audio and input latency at the OS level (Gilbert, 2013). This means we may see even higher frames per second in PC games. Combined with Steam is the haptic feedback controller, a completely unique styled gamepad that is an alternative to the mouse and keyboard. It uses two large touch pads that's purpose changes depends upon the game and were developed as a more precise controller than what the Xbox and PS3 have to offer.

Now we know what Valve have to offer, let us look at what is stopping them from being successful. A major issue is DirectX, a Windows exclusive that is used in the majority of 3D games (Forest, 2013). If they don't find a solution to this then they have no hope, fortunately, there are solutions; three of them. First, they could use an alternative to DirectX, such as OpenGL, which is used in all the Valves games (Forest, 2013) and some other games too. This doesn't help with getting non-OpenGL games working on SteamOS. A second solution is to make the OS have DirectX compatibility which is what is used in porting games from Windows to Mac. Sadly, DirectX compatibility isn't that great and not all games work using this technique (Forest, 2013). The final solution is to have all the games that don't use OpenGL and don't work in compatibility with SteamOS to be streamed via a Windows PC or Mac to a Steam Box, which can then be played (Forest, 2013). As you can see, Valve have a problem with no real single solution. For SteamOS to be successful they need to find suitable solution.

CONCLUSION

So what was, and is Valves contribution to the gaming world? Steam has provided us with a means to download a huge library of games via the internet without needing a physical copy or CD key. It has allowed us to purchase games that are ridiculously cheap with sales up to 90% off original prices and thus given us the possibility to buy ten games for the price of one. Additionally, Steam provides us with a way to create and distribute content for our favourite games that increase the gameplay hours and value for money and this was all made possible on just one platform with only two features explored. Imagine the effects of all Steam features, it's actually quite amazing.

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Social Devices, Not So Sociable?

The social effects of mobile communication devices through time

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I. Introduction

This article will be discussing the strong social effects on people who own a mobile phone which is used to communicate with others and the effects it has on the people around them as the mobile phone has developed. The effects on family, friends and colleagues will be carefully looked at to see who was affected when the mobile phone first arrived, the effects on them at the current stage of mobile phones and a prediction will be made to see how this will develop in the future.

Where it began

For us to see how the social effects of the mobile phone have developed on users and the groups around them, we need to go back to 1973 when Martin Cooper created the first portable mobile phone and the effects it had on people. In April of 1973 Cooper had only made a prototype called DynaTAC, but it took 10 years for the product to go commercial. This was made possible with the help of Motorola to compete against the phone which currently could only be used in the car. However this "portable" phone weighed 2 and a half pounds and was roughly the size of a brick and cost about £2430. **(**Anjarwalla 2010) This meant that these phones weren't available to the average person as this was a huge cost, and still is today!

The DynaTAC's functionality was very limited as it only allowed the user to contact taxi drivers and the emergency services with a radio like system (uswitch).

The negative effects it had on the users would be very few as it could only be used when one of the two functions were needed. This was just more of a convenience than an issue to the people around them as a taxi could be called to the exact location rather than searching for one themselves, the same went for the emergency services. This was not a problem to society as it was a tool to aid the current living standard at the time by adding simple conveniences.

10 years on (1990s)

Ten years on from the commercial release of the first portable mobile phone there were new phones appearing on the market, with more functionality than the DynaTAC and they were also a lot more portable as the general size and weight had been greatly reduced. However the basic shape was still the same with the popular aerial on the top of the phone which was to boost the phone signal. This style of phone with an aerial continued to be used even though they didn't actually do anything. This was purely because customers assumed that they still worked and ones without weren't as good. (Mortimer 2010)

An example of one of the phones from the 1990s is the Ericsson GH 218 which was actually released in 1994. The technology in mobile phones had greatly advanced since the 1980s, and a new development was added to them which was text messaging. With this addition people were able to have full conversations without actually talking.

This was the introduction to the unsociable behaviour that we see in today's society as texting rapidly became a popular feature within the world of mobile technology. However this was not a feature that was greatly used in the 1990s as phones were generally only used by business people and were used to send business related text, therefore the impact on society would not have been affected in a negative way as this level of technology was only to add tools that improved business efficiency. However, undoubtedly this was the likely beginning to the unsociable behaviour we see today… (GSM Arena)

10 years on (2000s)

The start of the 21st century is where we first began to see the unsociable behaviour come in to place and take effects on consumers and the groups around them. Avery popular phone that was released in 2002 was the Nokia 7650 which happened to be the world's first camera phone with a 0.3 mega pixel camera along with a full colour display. This included all of the functions from the past decade plus more, including contact storage, a call log book, a calendar application to keep organised and access to the internet. The time for phones just being used just in business was over as everyone wanted a phone for personal use to call/text family and friends whenever they wanted. This obviously meant more and more people wanted to get their hands on one no matter of their age. (Chowdhury 2012) A survey was done by Lenhart, et al. (2010) in which he surveyed 800 Americans aged 12 to 17 about their mobile phone usage. They were sending on average 50 texts a day which is quite a lot even by today's standards! The impact this had on them was apparent in that it was almost as if some sort of strong force was making them feel the need check their phone on a regular basis. It is thought that this force was simply the feeling of being left out or missing out on information they could have

found out moments before. Also knowing that the information was potentially in their pocket, it became hard not to look at the phone once in a while. The force increased as internet was available to access through the phone as social networking sites such as Twitter and Facebook came online. These had even more information published on them and people felt the need to check even more regularly than before! (Herbert 2010). The effects of this were clearly becoming more and more negative as unsociable behaviour shone through even though these people were using social networking sites to communicate with each other. The negativity shows when users are physically ignoring the people in front of them to check their phone. This can become frustrating when a conversation may pause as the user of the phone reads information and this kind of behaviour also came across as very rude. However this was unsociable behaviour in its milder forms as this behaviour has since grown.

TODAY'S MOBILE PHONES

Looking at today's mobile phones there has been a giant leap forward with technology from the previous decade. For example the iPhone 5s has an 8 mega pixel camera and has constant access to the internet. With this access to the internet comes a lot of information from multiple applications such as Twitter, Facebook, Instagram and YouTube. (Apple 2013) This will create a greater force to check the phone and may turn into an addiction. This addiction can't be a positive aspect to society as more and more children are buying phones and religiously using them whilst growing up and as such, this 'addiction' will become a part of their lives. Todd Starkweather, a program director at South University Richmond, fully believes that his students are addicted to mobile phones. He says that they consistently use them in class regardless of the importance of the lesson, also the fact that people feel they are missing out on information is the main reason why the addiction is present. Another potential reason is through force of habit. For example, Starkweather also says that he sees people using them when in line for the bathroom which may explain more why people are using them to this extent. (Jerpi 2013) This addiction does not just exist at school. It appears at home with family. For example, conversations will become less common in the household as social networking on phones keeps people preoccupied from the real world and prevents as much face to face conversation. This may be upsetting to families, which is understandable but the child won't understand the wrong doing as using the phone is something they have always done in this way. Loss of sleep may also be occurring from being on the phone until early hours of the morning or even being awoken in the night by the phone which is not healthy at all, especially for children who need energy to learn at school. This can result in insomnia which can cause mood swings effecting friends and family. If the addiction is still present in later years then it will also be affecting colleagues at work (Jones 2012). An article on the BBC (2008) confirms that mobile phones are linked to disturbed sleeping patterns If this behaviour persists then the future will be looking pretty unsociable.

A LOOK INTO THE FUTURE

With mobile phones rapidly advancing over the last few years, it would come as no shock if they continued to do so with more and more features being added each year. It may come to the point where people in the future will have no idea what life would be like without a phone and when it wasn't seen normal to check it every 5 minutes (Teen Ink). A look into future developments of mobile communication devices shows the interest companies have with wearable technology, such as a watch or glasses. It is rumoured that Apple are making a watch that allows the user to view texts, tweets and Facebook messages which means the user wouldn't even need to put their hand into their pocket, it would just be a constant feed that they just had to look at on their wrist to see (Marshall and Soloman 2013). Google are also getting on-board with the wearable technology as they are soon to release Google Glass to the public. Google Glass is a pair of glasses which allows the user to view social media by tapping the glasses or talking to them (Google 2013). This could be major problem socially in the sense that face to face integration may be so little that people won't need to talk to other people, why would they? All the information they could possibly want would be in front of them whenever they wanted it. Family time may exist over a group chat on Facebook, friends could be tweeted rather than spoken to and colleagues sent an email too. The need for any face to face interaction could be obliterated. Even now colleagues sitting in the same room rather email each other than just speak to them (Dowling 2013).

It is agreeable that this new technology is amazing and convenient but there is no doubt at all that it is making humans more and more unsociable when it comes to face to face interaction.

IS IT POSSIBLE TO PREVENT?

Quite clearly this unsociable society we will all be living in soon needs to be stopped. The question that is put to us as humans is 'how?' We need to decide which is more important between face to face interaction and this digital world which we are on the edge of entering. Following the trend from the 1980s we can see this gradual path we have taken which involves using social media on mobile phones to communicate which is evidently becoming an addiction causing health problems to ourselves and those around as.

This needs to be stopped, but the way technology is currently moving, it shows no signs of slowing and us as humans show no signs of resistance. This digital world where mobiles will be the first thing we see in the morning and the last thing we see at night is coming quickly and unless the internet is switched off it is difficult to see how the pace of this change will slow down.

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How SSD Technology Deletes Evidence

SSD technology has made digital forensic analysis difficult

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***Abstract*—This document covers some issues that current and future computer forensic investigators will have to deal with when attempting to extract data from solid state drives to reconstruct a timeline of events. As hard disk drives have been around for decades, the technology has barely changed, however solid state drives are constantly being researched and improved, with features that delete data from the drive without user interference.**

I. Introduction

Computer forensic investigation is the practice of building together a timeline of events that have happened on digital devices. This could include when a document was created/modified/deleted, inbound and outbound connections on a network, and includes extracting data from devices in a manner that keeps the data integrity intact to keep it at a calibre of forensic evidence that can be used in a court of law. The most common type of forensic procedures is extracting data from computers; which is done through retrieving the information from a storage device that contains the user's documents on non-volatile memory. Hard disk drives are the usual component that forensic analysts deal with, however in the recent years as solid-state drive technology has developed, it has grown in the consumer market; meaning forensic analysts need to learn how to efficiently extract data from them. This however is a problem as SSD technology is vastly different to HDDs, and traditional methods of data extraction are now not possible; due to built in encryption turned on by default, and how the built in processor on SSDs can execute memory modifying commands without any request from the connected computer. As SSDs are slowly taking over the market, digital forensic analysis's jobs will be made much more difficult.

I. Non-volatile Storage Devices

The storage device is usually the primary device used to store data for an indefinite amount of time, even when there is no power to the device. It is the main component of a computer that holds all information such as the operating system as well as your own personal documents. The device is usually a hard disk drive (HDD), however there are more other variations of storage, such as a modern solid state drive (SSD) which have much faster read/write speeds and higher reliability than a HDD due to no moving parts. The SSD technology is slowly taking the market due to many advantages over HDD; expected to claim over a third of the market by 2017 (IHS Inc., 2013). They are already common in devices ranging from mobile phones, tablets, laptops, and some desktops.

How HDDs work

Basic physical characteristics of a HDD are that they come from two main industry standard form factors, 2.5" (Seagate, 2010) and 3.5" (Seagate, 2013) presented by the Electronic Industries Association (EIA), which were considered by Seagate. They are of a universally accepted rectangular shape with the power and data connector on one end. Casing is usually metal to transfer heat produced when the drive is under use. A HDD is usually labelled by the amount of data that it can hold as well as the RPM (revolutions per minute) of the disks inside while the drive is in use. The amount of data that can be stored ranges with modern computers between a few hundred Gibibytes and up to multiple Tebibytes. The HDDs RPM speed has a correlation with the speed of which data can be written to/read from; there are three common speeds, 5400RPM, 7200RPM, and 10,000RPM. The RPM can also have a relation to energy consumption, as a slower RPM does to require as much power as a 10,000RPM to spin up to speed.

A HDD uses magnetic series of states on a platter (a metallic disk that spins) to represent binary. It does this by having the platter spin at a high RPM, with an actuator arm and header that is able to read or write a magnetic state from either side of a platter along lanes within sectors, done through the header as an electrical current is passed through it. It writes data by switching the magnetic state between positive and negative. The arm moves physically by an electromagnet called the actuator; this offers nanometre precision (Carrier, 2005). It is similar style to how a record player reads a record, where the head of a HDD is the needle, platter is the record, a lane is the spiralling track, and the pivoting arm is the actuator.

New research can allow the spacing and speed of which they can change a sector the more bits they are able to compress onto a single platter, thus increasing the file size capacity of the HDD. Some manufacturers are able to increase the capacity by having multiple platters and actuator arms within a single drive component.

How SSDs work

Solid State Drives internally are completely different to hard disk drives (Aaronson, 2008), which is what makes forensic analysis on them much more difficult. As opposed to mechanical components within a HDD, an SSD has a collection of NAND (negated and) cells in series, forming blocks of pages. Each cell containing either one bit of information (single level cell) or multiple bits (multi-level cell) which can store multiple states in a single cell, saving physical space to pack more bits of information on the device. Where MLC is faster, but wears out quicker due to wear levelling procedures and physical destruction of the transistors (Woodhouse, 2011). Wear levelling is often controlled by the TRIM function, which lets the SSD controller know which blocks are safe to be wiped (Intel, 2013).

Why is it a problem for forensic analysis

There are multiple ways of sanitizing data from a storage device, such as logical sanitization, digital sanitization, analogue sanitization, and cryptographically sanitizing the information (Michael Wei). Some SSD come with an encryption controller built in, and by just modifying the key, all data would be unrecoverable unless the key was found or decrypted (Intel, 2011). This means by default a lot of SSDs will be encrypted, and data cannot be retrieved in a human readable format. Traditional methods of forensically decrypting a storage device by getting the key from a cached memory position (Kaplan, 2007), are now more difficult with SSDs due to the key being within the drive controller itself.

Traditionally digital forensic analysts would only require to put a write blocker in between the drive and their machine to read data from it without any issues of manipulating any data on the drive to keep the integrity of the data forensically intact to perform analysis from; alternative software write blockers are also available (Cory Altheide, 2011). However this traditional approach will not work for SSDs as they have their own embedded processor on board the drive, separate from the connected machine that may run commands at any given time. The primary issue with this is the garbage collection (often referred to as the TRIM command) may execute and delete evidence, making it unrecoverable, all of which can happen within minutes of the drive being powered. The TRIM function can also be easily mistaken as a secure erase bit pass of 0's/1's, which would have been one way to destroy evidence on HDDs (Moulton, 2006). An experiment between a SSD and HDD storing then deleting data has shown that deleted data had been wiped completely from an SSD by garbage collection within three minutes of the drive being powered on, whereas the HDD would still have evidence of the data unchanged and recoverable by forensic tools and software. (Graeme B. Bell, 2010).

Even following strict procedures on how to handle the evidence, from finding it at the scene, transportation, and rebuilding the components in the lab (England Wales & N Ireland ACPO, 2012), data on the SSD drive can still be modified without any human interference. Destroying evidence in a secure manner may have taken multiple steps such as either secure deleting a file by writing new bits of information in the original memory position on disk using specialist software, to physically removing the drive and destroying it in ways such as degaussing (Michael Wei). Now however due to how SSDs handle and manipulate data, it's possible for entire drives to be unrecoverable in the matter of seconds (by deleting the encryption key) or just by simply formatting the drive and then let the controller run the garbage collection task in a few minutes.

Currently in the crime and forensic world

There is a constant cyber battle between digital forensics and those that wish to keep their information hidden. With tools being created to extract as much evidence as possible being made by the digital forensics analysts, there are also tools to make is as difficult as possible (encryption, secure erase, hidden partitions). However now it is the developers of the new technology, which has made it more difficult to do digital investigation on devices using SSDs.

One major benefit of SSD's for a digital forensic analyst would be the speed of making mirror copies of data from a device. Where HDDs were getting into the terabytes of storage capacity, copying that amount of data on a 1:1 for data integrity and accuracy would take a long time due to the read speed of consumer HDDs averaging 60-90MB/s. Whereas SSDs are generally above 200MB/s, some even reaching 500MB/s (Storage Review, 2013); this can make time priority cases much easier to handle due to the copying of evidence and also analysing it.

Conclusion

The new technology of solid state drives have improved the speed, and reliability of transferring and storing data on computers in non-volatile memory due to no mechanical moving parts, low power consumption, and size. With more advances making the storage capacity larger, physically smaller, and faster transfer rates, they are taking over the market share as a data storage medium for consumers. However due to the redesign of how data is stored on the NAND transistors as opposed to the traditional HDD platters, wear levelling techniques such as TRIM is able to wipe unused data from the device, making recovery impossible. As well as the SSD having an on-board controller that can also provide on the fly encryption, it's possible for an entire storage devices memory to be rendered irrecoverable in seconds by calling one command. Although they have their advantages in the world for data protection, and improved longevity of the drives life span, it has made digital forensic analysts jobs more difficult to extract data from them that is still useful.

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Internet piracy

And its effects on modern business, law and entertainment

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***Abstract*—in this paper we will be looking at the many aspects of piracy and its effects on modern business, law and entertainment**

***Index Terms*—Piracy-torrent-Megaupload-controversy.**

I. Introduction

The advent of the internet has given rise to many new forms of industry such as online auctions and shopping, services like ordering food from home and entertainment like YouTube and YouTube celebrities such as Felix Arvid Ulf Kjellberg (aka PewDiePie) and the Yogscast.

But it has also given rise to a number of new criminal acts, looking to exploit the internet for their own gain or for the benefit of their own organisation against another such the hacking group anonymous who have been reported on by CBC (2012) to have attacked many organisation such as the church of scientology and PayPal. But the most prevalent form of criminal act is piracy, illegally downloading software without paying the developers

But is this truly a crime, and what effects does it have on our modern society and its many different aspects such as the entertainment industry, the law of many different countries and of course the businesses that are being affected by the act of internet piracy even now, here we will explore the many different aspects of this controversial topic.

Online piracy websites

Let us first examine the many websites that offer Piracy services to users. The most infamous would be the Pirate Bay, ranked number 75 by Alexa (2013) in the global ranking has been the centre of much controversy not just with pirating games and other software but also information such as autopsy photos of an ongoing investigation, after a long debate on the subject Pirate bay shut down there media contacts saying "The mail sent to the press spokesperson will not be read. The phone will not be answered" (The Pirate Bay, 2008) pirate bay refused to take down the photos and so it lead to the aforementioned cut off.

There are many more websites that provide torrent services and some are taken down successfully most notable being Megaupload where the guardian (2012) reported that the us government shut down the website and hit it with an indictment and accusing its founder Kim dotcom of "racketeering, money laundering and presiding over "massive" online piracy".

But as the guardian later reported (2012) the site was later brought back as Mega by Megaupload's founder Kim Dotcom with the tagline "We promise, we deliver"

Government response

Governments around the world have tried to keep up with online pirates with attempts to draft new laws and make organisations to halt it. The most notable of these was the infamous SOPA or Stop online piracy bill drafted by the US government which aimed to empower the US Government with more power to close down certain websites that provided pirating and other piracy services. The bill was met with almost worldwide outrage as many protests where staged around the world and by multiple sites such as Wikipedia protesting by performing a total blackout of its website, posting the following image for anyone that tried to access their site.

Fig 1. Wikipedia blackout

The protest also included over seven thousand websites also joining the blackout protest as well as Facebook creator, Mark Zuckerberg, voicing his displeasure by being quoted to saying the internet is "'a powerful tool for a more open and connected world" posting this on his Facebook page.

The bill was ultimately defeated as it was reported by the daily mail (2012) that a large amount of US politicians pulling their support from the bill causing it to ultimately collapse, but this hasn't stopped the US from trying to shut down piracy

websites as with the aforementioned Megaupload where the us government posted an official notice on the website

ENTERTAINMENT

The entertainment industry has been a target for piracy even before the advent of the internet, with filming movies in the theatre to taping songs off the radio to listen to whether you want, and this saw one of the earliest modern campaigns against media piracy, the Home Taping Is Killing Music campaign in the 1980s and can still be seen today on the pirate bay logo.

But probably the industry that has been affected most by piracy would be the video games industry, now days as soon as a game hits the shelves there's already pirated version available.

A. Anti-piracy methods

Companies have invested a significant amount of time and money into different ways to protect their products from piracy, Ubisoft for example have their Uplay system that ties games such as the settlers series to a single account, this forces people to use their system and if the game is tied to a Uplay account it can't be shared or stolen to use somewhere else. This method proved highly unpopular with users though as they were forced to use a password code to tie the game to their account and in some cases such as the recent release of assassins creed 4: black flag where some people had to pay extra to access online features.

In response to this Ubisoft (2013) reported in there blog that they would be completely removing the scheme from all their products and make the password code free to all players, Gary Steinmann the Ubisoft communications manager wrote in the blog "we recognized that Passport is no longer the best approach for ensuring that all our customers have the best possible experience with all facets of our games". EA also shut down there online pass system and Sony announced that any of their future titles will not need an online pass so this anti-piracy method is now effectively obsolete.

Another controversial anti-piracy method enacted by companies is a rather bizarre one indeed, developers will sometimes actually make bugs appear on pirated software to catch out people illegally using their software, for example Eidos the makers of the popular 'Batman: Arkham Asylum' game added a bug into pirated software that stopped you from using some of his moves such as the glide and this made it near impossible to complete the game, when a hacker tried to get support for this bug on the Eidos forums he got the reply from the Eidos administrator "It's not a bug in the game's code, it's a bug in your moral code"

Probably the most punishing of all these glitches was in the game Earthbound or Mother 3 in japan, where if it was detected that you were playing an illegal copy of the game it would rest the game at the final fight and then corrupt your save.

II. IS PIRACY RIGHT?

Piracy will forever be a controversial topic, and it's only in recent years has it gained major exposure in the media as it becomes more wide spread, but how do people justify piracy and what are their reasons for it?

Firstly is seems that piracy can actually benefit the people whose product is being stolen, as is the case of the hit TV show Breaking Bad where the creator of the show Vince Gilligan said that ""[It] led to a lot of people watching the series who otherwise would not have" and said it increased brand awareness, so it can be said that piracy can certainly increase a shows or games popularity. But he also said in the same article by the BBC (2013) that "The downside is a lot of folks who worked on the show would have made more money, myself included, if all those downloads had been legal." So there is a definite downside as revenue decrease for the show and its many actors, employees and creators. This can lead to a show being cancelled as the budget decreases from the lost revenue.

Although it can also help smaller shows gain exposure and popularity while still helping it make money, the makers of the cult horror film The Tunnel used piracy to their advantage by uploading the film to the pirating news website BitTorrent while also putting it on DVD, cinema screenings and an iPad application, the result was a surprisingly large profit as people downloaded the film but still brought the DVD copies as people wanted to support the developers for making a brilliant movie, downloaders even gave money to the developers in a show of support, so it's possible for file sharing and piracy to be a force not just for good but as a clever marketing tool

But is has been known for developers to simply accept piracy as a fact of life such as the developer of the hit Indie game Hotline Miami Jonatan Söderström who actively went onto the pirate bay forums in order to help people who had downloaded the game illegally to patch it to a more efficient version with less bugs.

III. CONCLUSION

Piracy is a very controversial and tricky subject to deal with, on the one hand it is theft of someone's ideas and intellectual

Property, this can lead to people losing a lot of money and companies going under because of it and people losing their jobs which is always tragic.

On the other hands it be a powerful tool and a force for creativity, as people and developers use it as a source of free advertising like the makers of the tunnel did, it can also bring ideas and entertainment to the wider audience such as the show Breaking Bad.

Piracy will always have its advantages and disadvantages and people will fight for it and against it as long as it exists, but piracy has only just really started on in the online world, and with more media becoming digital we can be sure that piracy will go strength to strength and the governments of the worlds, business and other law enforcement agencies will try to be a step ahead.

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LIST OF SOURCES FOR IMAGES

Fig. 1. Rob Waugh, ***U.S Senators withdraw support for anti-piracy bills as 4.5 million people sign Google's anti-censorship petition*** [Online] 20th January 2012 Available from: http://www.dailymail.co.uk/sciencetech/article-2088860/SOPA-protest-4-5m-people-sign-Googles-anti-censorship-petition.html [Accessed: 19th June 2013]

The Dangers of Modern Financial Transactions

Is our money as safe as it used to be?

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***Abstract*—What was the last thing you bought? Maybe you recently went christmas shopping online, or to buy some more milk. Regardless of where, when or what, chances are the money used to pay came from a credit or debit card. Maybe you used cash, but if that is the case then you probably got that cash from an ATM earlier with your debit card. No matter how you look at it, it seems that these days our finances are dictated by these small pieces of plastic in our wallets, but how safe are they to use?**

I. Introduction

In this day and age it is easier than ever before to spend money. With ATM machines on every corner we are never too far from some cash, and since most shops now accept credit cards, cash isn't even necessary to make a purchase. On top of this the internet allows us to browse and purchase almost anything from the comfort of our armchairs, provided we have a credit card handy.

Unfortunately this ease of access comes at a price. In recent years the amount of credit card fraud has been increasing (Herron 2013) and some blame has been placed on an increase in online shopping (Geffner 2012). This article explores the hidden dangers of using credit cards and outlines precautionary measures that you can take to keep your money safe.

The Types of Credit Card Fraud

According to a Unisys Security Index survey conducted in 2009, credit card theft is one of the biggest fears of modern day Americans(SuperPages 2010) but credit card theft only accounts for 17% of credit card fraud in the UK(MoneySupermarket 2012). There are five types of credit card fraud, two of which are synonymous with merely stealing the card. The other three types are trickier as one only requires contact with the card for a brief amount of time and two of them don't require access to the physical card at all.

Lost/stolen card fraud is where someone's card is, you guessed it, lost or stolen and is then used by someone other than the original owner. The next kind of credit card fraud is when an ordered card is stolen in transit, so the intended recipient never receives the card. Card not present is where the information stored on a credit card is obtained and used by someone other than the card owner. Counterfeit card fraud is where a card is created by copying an existing card's magnetic strip, and this fake is then used. Card ID theft is when a criminal applies for a credit card using someone else's information (Spamlaws n.d.).

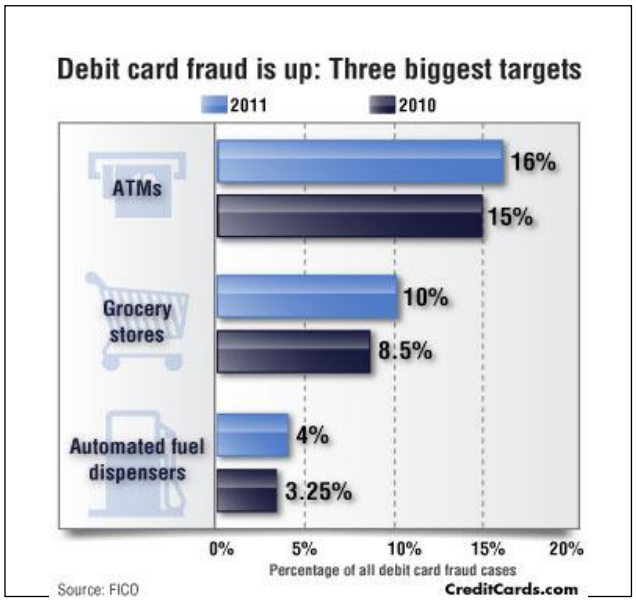

Fig. 2. *This graph clearly shows an increase in debit card fraud between 2010 and 2011*

This article will ignore lost/stolen card fraud and stolen in transit card fraud because they are both brute force methods, no technology is required to pull them off, there are no special methods to avoid them and there is very little that can be said about them. On the other hand, the remaining three types of fraud can be pulled off with increasing amounts of ease as technology advances. Card not present and card ID theft are performed by learning private information about a target, either their personal details or their credit card details, and then using this information to spend their money. Counterfeit card fraud is trickier to pull off as it requires specialist equipment and direct contact with a credit card, but it can be harder to avoid as any credit card reader could, potentially, copy an input card's magnetic strip.

ATM Skimming

The most popular method of counterfeiting a card involves modifying an ATM slightly, such that it performs an additional function known as skimming, and then waiting nearby for people to use it. All a criminal needs to do is place a fake card reader (known as a skimmer) over the genuine one and install a

small camera and/or a keypad-overlay (FBI 2011). This equipment allows them to copy any credit card put into the machine, by ripping the information with the skimmer, and the card's PIN number will also be obtained, either by recording it with a camera or by recording the keys pressed on the keypad-overlay. The most dangerous part of this whole procedure, for the victim, is that the ATM still works. As a result anybody who uses it won't know something is wrong until their bank account turns up empty a week later. The number of ATM attacks in Europe tripled between 2005 and 2010 with the average amount lost as a result at 25000 Euros (AntiSkimmingEye n.d.).

There are some ways to spot an ATM set up for skimming. If there is a small hole above the keypad it could conceal a camera. If the card slot pokes out or has some scratches or sticky tape residue around it then it should be avoided, as the slot was probably modified recently and cannot be trusted. As the use of technology has increased so has this kind of crime, nowadays the criminal doesn't even need to be close to the ATM as the information could be sent via bluetooth to some storage device nearby that he/she can collect later. Other methods of card counterfeiting are less popular because the criminal will need to personally involved, posing as a salesman in a shop or a waiter in a restaurant, is more risky than modifying an ATM and waiting nearby.

The Dangers of The Internet

With a booming online shopping culture, card not present theft is getting easier and easier to pull off. Internet shopping is the easiest way to purchase anything, especially since you can buy pretty much anything you could think of through the internet without leaving the comfort of your own home. Just pop in your credit card details and your address and whatever you bought should arrive within the month, often within the week. However, there is a glaring flaw in this perfect plan, and that is that if anyone were to intercept your credit card details they could go on a shopping spree with your money and land you in huge debt. What with all these credit card details flying around the internet there are several ways a criminal could access them.

The first thing to avoid is unprotected wifi networks, as anybody could set one up and then monitor any data sent over the network. It may even be possible, on some legitimate public wifi networks, to monitor other peoples traffic simply by connecting to the network yourself. This would then allow anybody to access personal information such as passwords or credit card information that has been sent over this network. A few websites, such as Amazon, do encrypt private information so it cannot be read by any peeping toms but it's better to be safe than sorry, so if using free public wifi do not log into websites that store your credit card details and do not give your credit card details to any websites, in fact, it's probably best not to log into anything via public wifi.

Another thing to watch out for is shady websites which may ask for your credit card details in exchange for goods, and then proceed to, either, not send the requested goods, send the goods and then abuse the card's details, or send low quality goods. A good way to avoid these websites is to read reviews of the goods and google the company to make sure they are legitimate. Another safety measure is to use paypal, which allows you to move a small amount of money from your bank account into a paypal account. Then you can use this paypal account to buy stuff and if the paypal account gets hacked then the hacker only has access to the money that was transferred into the paypal account and not your entire bank account.

Finally, in order for a criminal to carry out card ID theft they need access to one or several of your social media account, a reply to a phishing email, online banking information or your CV (Experian n.d.), among other things. Using information found in these they may be able to order a credit card in your name, and then go on a spending spree landing you in huge debt and ruining your reputation amongs credit card companies, which would be far from ideal. In order to stop this from happening to you it is best to avoid putting too much personal information on social media, don't be stupid and post pictures of private documents or debit cards (in case you didn't already know not to). Only put enough information up there to allow people who know you to find you and use any privacy settings available to you. If you ever receive an email asking for personal information, or asking you to go to a website and input personal information then don't do so. Make sure any such email is genuine before doing as instructed but if there is any doubt then ignore it. Online banking can be a danger if you use the same login details for another website. this is because, if the other website is compromised then whoever hacked that website will know the username and password to your online banking account. Finally, the CV, a CV is supposed to represent you to a potential employer, and so some personal details will be required, however, if you are uploading your CV to the internet it has been recommended by some online job search services to try and decrease the number of personal details(Experian n.d.). This is because criminals could set up false job opportunities and then use the CVs sent to them to committing card ID fraud.

Conclusion

As you can clearly see from this article there are an abundance of ways for your money to be accessed by those other than you in the modern world, however, all of these methods (excluding card ID theft) require that you use a credit/debit card in some form or other. As a result it can be fairly easy to keep an eye on things, as you only need to monitor where your credit card details end up and avoid spreading them around too much. Always check ATM's for evidence of tampering before use, never give your credit card details to anybody or any website unless you are 100% certain that your details are safe there. If you take only one thing from this article then let it be this, be careful with your personal details. If you can use them to spend money then so can someone else.

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MMO: Massive Micro-transactions Online

The history of multiplayer online games and the rise of Micro transactions

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***Abstract*—this article explains the evolution of Multiplayer Online games to this day, what exactly micro transactions and in-game cash shops are and the problems that can arise with games that use micro transactions to fund them.**

***Index Terms*—Multiplayer, Online, Game, Micro transaction.**

I. Introduction

Since their advent in the mid-late 80's and the early 90's, online games, such as World of Warcraft, Runescape, and others like them have become very widespread and popular, with millions of people playing each of them. But lately, a large amount of new and existing online games are taking a different approach to how they make money, instead of using the traditional method of a monthly subscription to earn their money, they are turning to the "Free-to-play" method. Many games that were once Subscription-based have now become free to play, such as Star Wars: The Old Republic, or have a free-to-play aspect added to them, for example World of Warcraft allows players to play for free up until their character reaches a certain point in the game. Some people see this move to free-to-play a good thing, as it makes more online games accessible to lower-income gamers than before, but others may disagree, as the methods that companies are now using to make money from their free-to-play games can cause some problems.

The History of Online Games

Now before I get onto the main point of the article, let me give you a brief history of Online Multiplayer gaming. "Online" multiplayer gaming began early in videogames' history, with games such as Spasim (Space Sim) and Mazewar, both hailed as the first networked multiplayer games (James Bowery 2013), (bigkif 2007). These games, being from the 1970's, ran their multiplayer through local networks consisting of a few computers as the Internet as we know it today did not yet exist. Jump forward to late 1985, and you'll witness the launch of the first commercial multiplayer online role playing game, Islands of Kesmai, which was provided by the company CompuServe (Mulligan et al. 2003). Islands of Kesmai had very simple graphics, mainly consisting of characters found on your keyboard. Then in 1991, along comes another important multiplayer online role playing game, Neverwinter Nights. Neverwinter Nights was very different to Islands of Kesmai as instead of its graphics being displayed in the form of alphanumeric characters and symbols, Neverwinter Nights had proper 2D graphics that would have been used on videogames at the time. (Medar 2001). After Neverwinter was released, multiplayer online role playing games released in the 90's mainly abandoned the graphical style used by Kesmai and adopted proper graphics from then on, examples being Meridian 59, released 1995, Ultima Online, released 1997, and many more.

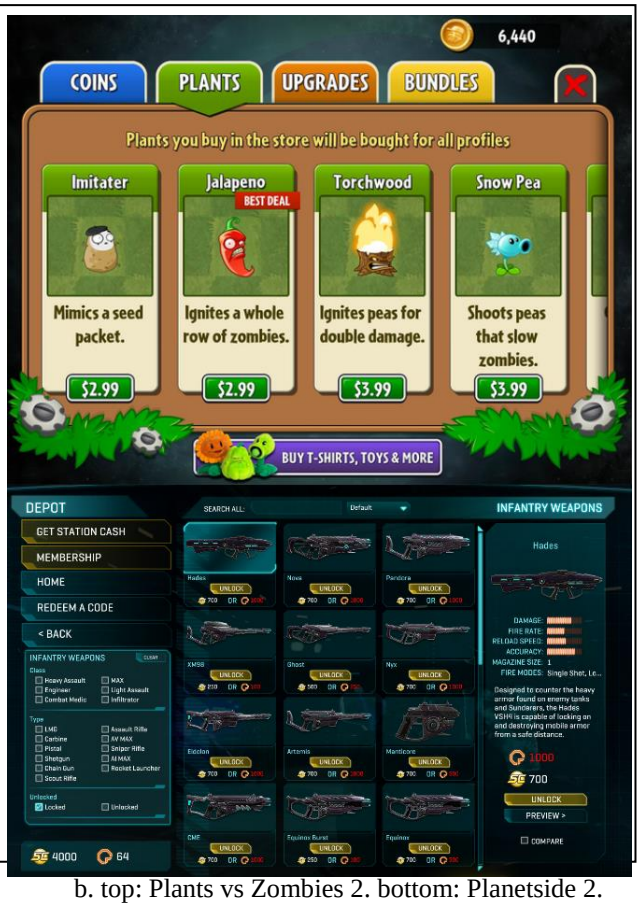
Bring on the new millennium, and Multiplayer Online games are becoming more and more popular, with games such as Runescape, released 2001, and World of Warcraft, released 2004, bringing in hundreds of thousands of players. World of Warcraft set the bar that most multiplayer online role playing games follow to this day, with the vast majority of Multiplayer online RPG's to this day using similar concepts to those used in world of Warcraft, such as a skill hotbar, a bar at the bottom of the screen which shows the abilities and skills the player is able to use. While Runescape became the most popular free-to-play multiplayer online role playing game, attracting many people from all over the world. Many more multiplayer online games are being released today, with a large portion of them coming from eastern-Asian countries such as China and South Korea, as their popularity over there has exploded within the last few years, with games such as Age of Wulin, Vindictus, Ragnarok online being released by Chinese and Korean game development companies.

a. Top left: Islands of Kesmai. Top right: Neverwinter Nights. Bottom left: Ultima Online. Bottom right: World of Warcraft.

Fig. 3. Multiplayer online games throughout the ages.

WHAT ARE MICROTRANSACTIONS AND FREE TO PLAY?

Moving ever closer to the main point of this article, there is one more thing I need to explain to you before we can move on. What exactly is this "Free-to-Play" and these "Micro transactions" I keep mentioning? During the initial rise of Multiplayer online games, the players would usually be charged a monthly subscription fee, or in the case of very early games, a fee was charged per hour, by the provider of the game so that they could keep the game running, and this still continues with some games today, but lately there has been a change in how many multiplayer online games are ran and funded. Many Multiplayer online games today are going for the free-to-play approach, but support their game through optional subscriptions with benefits, or "micro transactions" or as they are also called, In-game "Cash shops". These "Cash shops" usually sell items for use in the game, cosmetic upgrades to characters, or short-term benefits. The trend of being free-to-play initially started with online games that were aimed at younger gamers, namely children and teenagers. Examples of games aimed at these age groups would be Runescape, Habbo Hotel, Club Penguin, etc. But recently games aimed at older players have been released or re-released as free-to-play supported by Micro Transactions, such as, as I mentioned in the introduction, Star Wars: The Old Republic, and other games such as Planetside 2, and many more.



b. top: Plants vs Zombies 2. bottom: Planetside 2.

Fig. 4. Examples of In-game Micro transaction shops

THE PROBLEM WITH MICROTRANSACTIONS

Now, finally onto the main point of this article, the effects of the changes in online games to "micro transactions" and the potential problems that can arise with "micro transactions". As I have stated before, some people value the business model of "free-to-play" supported by "micro transaction", it can lead to quite a few problems. The main problems with micro transactions in games is that, unlike with subscription based games where you only spend a fixed amount of money each month, or games which you only pay for once, a person can spend as much money as they desire in the micro transaction shop, potentially spending huge amounts of money, either intentionally or unintentionally. One such case of a large amount of money spent in a games micro transaction store is when a 5-year old boy by the name of Danny Kitchen spent just over £1,700 in only 10 minutes in the premium add-on store for an iPad game, Zombies vs Ninja (Flacy 2013). A similar example would be when a 6-year old boy racked up a staggering £2000 bill on his Granddad's iPad playing a children's videogame with an in-game store (Evans 2012). Luckily, both of these predicaments ended well, with the owner of the iPad in each case being completely refunded for the accidental purchases by their children, but this does go to show that if people aren't careful, they can accidently rack up a very nasty bill with games that use Micro Transactions. Although these are problems with iPad games using micro transactions, similar problems can occur on PC games which utilise this business model too. Another problem people find with games supported by micro transactions is that in a lot of games, items are available in the cash shop that give an advantage to the paying player over normal players, as a normal player would have to spend time playing the game to acquire the item, which a lot of people find unfair, and thus are less likely to play a game which is ran this way. An example of a game which runs on the Micro transaction model where the items bought by micro transaction offer no advantage to the players would be League of Legends. League of Legends earns it cash by selling only cosmetic upgrades to players, called "Skins". All they do is change the appearance of the character the player is playing as, and do not change the outcome of games played by that player at all.

CONCLUSION.

To conclude this article, I must say that despite all of their problems, the free-to-play games supported by micro transactions business model is a decent model, as it allows people to try a game without having to commit money to it, and allows players from lower-income families, or who are going through a tough spot financially to play more games without having to spend their little income on games. Though I should advise you, if you have children who play videogames, or are a gamer yourself to always excersise caution with games that follow this business model, whether they are on your PC, iPad, Smartphone and similar platforms, as to avoid accidental nasty bills, or avoid being drawn into spending lots of money yourself in these ingame cash shops.

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How Video Telecommunication Technology is Impacting Higher Education

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***Abstract*—Video telecommunication technology is now being used in the higher education system to provide new services for long distance teaching and multi-campus courses. These services allow more students to participate while reducing the issues of travel and costs.**

***Index Terms*—Video, telecommunication, higher education, society.**

I. Introduction

Current teaching methods involve students travelling to their university at a specific time and attending a lecture with various other students. This may seem the obvious way to be teaching and it has been the standard for a very long time, however with the current economy it can be very difficult and costly to attend these lectures daily. Many people are also unable to move out of their current location to be able to even attend these lectures.

Universities are now starting to introduce courses that are run completely remotely; this allows people who are unable to afford the costs of travelling or moving home to participate in these courses. These remotely run courses are all based online where students participate in videoconferences with the lecturer and other students. The technology also allows for students to be able to have one-to-one conversations with lecturers to provide feedback and advice constantly.

This article will look into some of the impacts this growing technology has had on the higher education system and how it is benefiting students and lecturers all around the world in many different ways, while also covering some of the issues of setting up and providing these systems.

Brief Overview of the Technology

Video conferencing allows users to have an online conference/meeting with multiple people; the biggest benefit of using video conferencing is as Coventry (1997) states these videoconferences can be taken place at any location in the world, as long as they have the required hardware, software and a stable internet connection.

Videoconferencing has been around for a long time, unfortunately due to networking limitations keeping up a good quality stream was a hard thing to do and was limited to specialist use only. But with recent advances in making high speed internet available to everyone this has now become viable to be used every day.

Fig. 1. Diagram demonstrating how the technology works.

Impacts on the Facilities

With the increase in availability to be able to gain entry to higher education courses, Universities are facing issues trying to place students evenly into courses and they are starting to turn people away because courses are filling up very quickly. A now viable option has been to implement video telecommunication technologies where students no longer need to attend lectures in person. With this technology facilities are no longer needed to teach from only one campus and can easily include guest speakers various locations around the world with less hassle. Guest speakers aren't just limited to other lecturers; they could be anyone from inside the professional industry or government.

The biggest benefit of these implementations is that Universities can reduce the costs of teaching by not having to provide maintained lecture halls and teaching rooms, courses can even be ran completely online without a campus. An example of this is the online college Train2Game, all of your course resources are given to you electronically, you are then given a course advisor who you can contact at any point and they will give you one-to-one feedback. The ability to be able to receive this one-to-one feedback at the click of a button is invaluable to students. Although there added benefits for the facilities setting up the system, ensuring all the students have the

correct equipment and training everyone to be able to use the system can become very costly.

Impacts on the Students

Existing students are now able to take a different approach to their studies by using videoconferencing technologies students are able to reduce their time travelling, allowing them to have a more stable and reduced schedule which enables them to spend more time with their research and studies or even allow them to schedule work around their lectures more effectively. Not only does it create more efficient schedules but the reduced travelling can save huge amounts of money in the long run.

On the other side of the spectrum students that are completely unable to move out of their current situation to receive an education are now able to attend these courses. To them these advances in video conferencing technologies are invaluable; it increases the availability of higher education courses and now enables people who would otherwise be completely unable to receive a higher education to now receive one. The impact of this is can be enormous for society; there are many areas in industry that are heavily lacking in qualified people and with more and more people now able to become qualified, these roles can be filled.

In overall students have reported that the use of videoconferencing technology is very useful and are satisfied with its uses. As Coventry's (1997) research shows is that students prefer the use of videoconferencing compared to any other form of long distance and discovered that students found lectures that were delivered in person to be less enjoyable and were less likely to become involved. In addition Coventry's (1997) research also shows that students find that they are under less pressure which in turn has had an impact on the course dropout rates.

The biggest and most important impact is that enables students to get a much broader education, for example if students were taking a business management course, lecturers are able to setup talks where people from all around the world in various different sectors. By having this option now available to them students will no longer only get the opinion and knowledge from their lecturers but will able to discover new opinions and learn new skills from these professionals.

Impacts on the Lecturers

When teaching by using video conferencing the standard approach to teaching doesn't necessarily work as effective as if it was taught physically. In a document by Warwick university they reported that students struggled to maintain focus on the lecturers and that 'they felt passive and uninvolved' (Use of Videoconferencing, 2003: 2). It goes on to say how the students reported that the lack of physical contact with the lecturer made the whole experience less engrossing. As the article by Pitcher, et. al (2000) suggests, new lecturing styles need to be developed as existing techniques aren't as effective. As reported by (Use of Videoconferencing, 2003: 2), lecturers now need to think even more about how to engage with the students and to keep their lectures interesting and interactive to increase the satisfaction of using videoconferencing. With this in mind Coventry's (1997) research shows that the changes to the courses themselves only require minor changes and that the major change is needed for the content delivery.

The benefits for lectures is generally the same for the students, as in the technology also reduces the need to travel, therefore reducing costs and also can largely reduce the amount of time needed to deliver content. This enables lecturers to spend more time developing their content and provides them with more time for their research work.

Effectiveness

The effectiveness of videoconferencing uses in higher education is still fairly unknown, although evidence has started to emerge that it is indeed an effective solution.

A study by Brigitte et. al (2011) was attempted to analyse the impact of the technology on foreign language studies shows that students from all around the world are able to use this technology to improve their language capabilities. In their research they were able to identify that the students who had used the technology before showed signs of sense of audience. In this particular example, it clearly shows one the great impacts of being able to use videoconferencing, students are no longer limited to have to speak to other English people who are just talking French, but they are able to speak to real French speaking people and learn the particular accents, pick up new words and be corrected on how to properly pronounce words/phrases.

The study also showed that when the quality of the video and/or audio was reduced the effectiveness of the sessions was reduced, to add to this Coventry's (1997) work also showed that any audio or video delay 'causes performance degradation' (Coventry 1997: 24) and finally Chen (2011) also stated that audio delays were causing the viewer's to have a slow first impression of the speaker. Chen also talks about how video and audio delays could cause the viewers to misinterpret or mishear the speaker. Despite the issues of audio and visual delays people have been found to become more tolerant to it over time and have been found to have an overall high satisfaction with the implementations.

Conclusion

In conclusion the increased availability of video telecommunication technologies has enable educational system to start developing and integrating new techniques of delivering educational courses. The benefit of using these technologies allows for higher educations to starting enabling persons who would otherwise be completely incapable of enrolling in higher education, to now do so. This technology comes with the added benefit of also being able to reduce the costs and travel time for all parties involved. Not only does it improve the quality of life for people it also enables the students to possibly receive a better education if done correctly.

As research has shown there are some issues that need to be overcome to ensure that the technology provides an effective method of teaching but these can be fairly trivial to overcome and well worth the time, money and effort.

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Fig. 1. ***Videoconference demonstration*** [Viewed 14/11/2013] http://www.ivci.com/images/videoconferencing-codian-mcu-4500.jpg

Virtual Reality – Too Far?

What are the effects on society of a more realistic virtual reality?

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I. Introduction

As technology advances, we are able to create a more accurate representation of both the world we live in, and fantasy worlds. But does the ability to create complete worlds and characters inside a computer really have a positive effect on our society, or is it detrimental to the way we see modern life?

The ability to become absorbed into Virtual Reality

We can use modern technology to create entire dynamic worlds in games. In Massively Multiplayer Online Games such as *World of Warcraft* and *Tera: Online*, entire worlds exist which can house hundreds of players. But is it possible to become overly absorbed in these game worlds? One blogger recently wrote an article about the *Oculus Rift*, goggles which project a 3D image into the players eyes, and are also sensitive to movement, thus allowing the player to 'look around', After playing for a few hours, he had completely forgotten the room around him, and believed he was inside the game world.

This can become a problem for young people especially, as they are the players with the most spare time on their hands. This means that they will be spending the most time in the games, becoming more and more a part of the online world which they participate in. This can lead to the child prioritising the game over real life aspects.

In February of 2011, a paper was released which showed that there was a correlation between the amount of time spent playing games and poor performance in school. The report suggests that this may be due to the time the child spends gaming, which often cuts into the time in which (s)he should be revising or doing homework.

Virtual 'Not Quite' Reality

Another issue with these virtual worlds is when the reality is very close to real life. This can cause issues, especially in violent games in which the player can commit violent acts with little to no consequences for their actions. The most obvious case of this is in any of the titles in the *Grand Theft Auto* series. In these games, you play as a character in a virtual world which is made to be as realistic as possible, and with each title comes more advanced engines and technologies to make the games seem more and more like real life.

However crimes are so easy to get away with in these games that players may have no concept of how bad the crimes they are committing are. If any of the crimes acted out in *GTA* were to be committed in real life, then we would see them as terrible crimes, however, because the crimes are not actually happening, and they are just on a screen, it is not only acceptable to commit the crime, but it is actively encouraged. When playing games such as *GTA*, it is as if crime is somewhat expected of you.

This could have a knock on effect of players being unable to define what is acceptable and not acceptable. Perhaps not to the extent of shooting someone, but perhaps the game could cause traits in a person which could make them more violent, or more easily influenced to commit minor crimes such as running red lights or speeding.

Distinguishing reality from virtual

Aside from crime, another problem with the thin line between reality and the virtual world is that sometimes players may find it hard to distinguish between the two after playing the game for an extended period of time, for instance somebody who had just spent time playing a driving game such as *Need for Speed* in which they race around cities, breaking speed limits and ignoring the rules of the road could be more susceptible to emulating this behavior in the real world, due to subconsciously forgetting that they are not still in the game. In a report written in 2007, researchers from Ludwig-Maxmillans University in Munich, Germany found that playing racing games affected the behaviors which promote risk taking and erratic driving, and that the frequency of playing racing games was positively associated with competitive driving, obtrusive driving, and car accidents.

Attachment to virtual beings

Another aspect of virtual reality is the development of emotional attachment to characters and items in the games. Levelling up your character, or seeing the character evolve during the course of the game is very rewarding for gamers, and the player may experience a bond towards the character due to this. A player may become absorbed in trying to

further the progress of the character, often dedicating large amounts of time in an attempt to complete goals and objectives in the game. This also relates to the sense of achievement that is important for game developers to include in every game. A sense of achievement is the main driving force behind wanting to play any game. In games in which you must raise a character from the beginning of its life, a player may feel ownership to the virtual being.

However this attachment can become too strong, and quickly players can find themselves becoming obsessed with a game, sometimes with very extreme consequences.

In 2009, in South Korea, two parents were so obsessed with bringing up a child in the online game *Prius* that they failed to take care of their own child. Their daughter, who sadly died, was found to have been neglected when, after an autopsy had been carried out, the parents confessed to effectively starving their daughter to death, after only feeding her "rotten powdered milk". The parents would spend 12 hours a day at an internet café playing the game.

Although this is an extreme case, it shows how it is possible to become overly absorbed in virtual reality, and it shows how such obsession can have a negative impact on not only an individual, but as a society on the whole.

Training using Virtual Reality

VR can be used in simulations and training programs in order to help professionals to develop and practice their skills.

Soldiers who are training to drive vehicles or fly planes can use specialist software which creates a safe environment for them to train in. It is important that these simulations are as realistic as possible so that when the troops are facing the real thing, they will be able to relate to their training.

This is a good thing for society, as it allows us to have better trained troops, which are there for the purpose of defending us.

Doctors and surgeons can also use virtual reality for training, which has obvious benefits, as it allows for the surgeons to train to reduce the risk of mistakes occurring during operations.

This application of virtual reality is hugely beneficial to society as they create situations that can be replayed and reused in order to allow the professionals to make mistakes and to learn from, both in medical and military cases.

Virtual Reality used for treatment

Recent advancements in technologies has led to the development of VRET (virtual reality exposure therapy). This is widely used in the treatment of phobias ranging from agoraphobia (the fear of leaving the house) to the fear of animals or heights.

A virtual instance of the thing the person fears is created, either by projecting the image into a room, or via a specially designed pair of goggles (as seen in fig. 1), which creates a controlled environment in which the user can interact with their phobias and in some cases, overcome them entirely.

VRET may also be used to treat soldiers suffering from PTSD (Post Traumatic Stress Disorder).

Fig 1. A Soldier using a virtual reality exposure therapy system to treat post-traumatic stress disorder.

According to researchers from the university of Amsterdam, VRET is effective for patients with a fear of flying, as well as a fear of heights, however research into the use of VRET to treat other phobias is not yet conclusive, however further research could perhaps uncover other uses for VR in the treatment of mental illnesses.

Learning using Virtual reality

Virtual worlds can also be used in the learning process in order to develop or expand upon certain skills and abilities such as literacy, dexterity, and social skills. If the user is in a virtual environment when learning, it may help them to memorise information more easily, as it happens straight in front of them, and it is as if they are witnessing it first-hand.

It also allows users to be subjected to different forms of information, be it audio, video, text, and in some cases touch. In short, virtual environments allow for improved computer – human interaction.

Is Virtual Reality beneficial to society?

Although virtual reality can have some negative repercussions on society, there are many benefits to a more realistic virtual reality. More accurate virtual representations of real life situations are important to our modern society, as they allow us to take a step back and look at how to solve problems, as well as being able to learn from mistakes without having to deal with the consequences of doing so.

In summary, as a society, we should be embracing the virtual reality and using it to its fullest potential, and although we must perhaps treat it with caution, there can be no doubt that advances in virtual reality will be advantageous to society.

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Fig. 1. Pressey H J,(2010), ***Sgt. Matthew Payne demonstrates the "Virtual Iraq" program, a computer simulation that allows behavioral therapists to use Virtual Reality Exposure Therapy to treat patients suffering from PSTD. The Department of Defense National Center for Telehealth and Technology is currently conducting a study to determine the effectiveness of VRET for active-duty service members.***[Photograph] Available at: http://www.army.mil//-images/2010/01/19/61868/size0-army.mil-61868-2010-01-20-080140.jpg;wa01a9dfc73f138815

Video Conferencing

The next big thing

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***Abstract*—The focus of this article is to show how video conferencing has become integrated in to our modern day lives within society, to show how it is being used in many different areas of society today. Focusing on how it is being used in business, medicine and society to improve communication. Exploring the advantages and disadvantages and evaluating if it is worth it as I has now being used by so many of us within the 21st century society.**

***Index Terms*—Video Conferencing, Communicate, Society, Business.**

I. Introduction

In the 21st century we as an information driven society are constantly trying to find different ways to communicate with each other. Technology has given us the ability to pursue different types of communication media e.g. Social networking, blogging, texting, video conferencing, using devices such as tablets and smart phones all with video conferencing capabilities, which are Connecting us globally to each other while still sitting in our living rooms, enabling us to have face to face conversations with people from the other side of the world without having to travel the distance and have the large cost all which is virtually free to do all you need is an internet connection.

History

Video conferencing started off very slowly in the early years, developed for companies mainly with a very large price tag. Hindered by the technology available at the time making video conferencing very expensive (Lloyd, 2012).

In the 1980's Video Conferencing finally hit he commercial market but still carried a large price tag, making it not a viable option for wide spread adoption, By 1986 PictureTel launched their video conferencing system, still expensive but significantly cheaper than the early 1980's. The 1990's saw greater advancements in video conferencing through technology advances in video compression and internet protocol (IP) which would allow desktop video conferencing , IBM introduced the first pc-based system called PicTel (Nefsis, 2004).

At the beginning of the 21st century high speed internet access became widely available, allowing Video Conferencing systems to evolve, where the older versions had heavy price tags and connection issues with speeds, by this stage technology had started to come cheaper and more widely available. Desktop pc's and web cams were much cheaper for the general public and with broadband widely available it made communication easier across the globe with much faster speeds available in the beginning(Nefsis, 2013).

Moving on to the present day with the further evolution of the internet and the introduction of fibre optic cables, connecting to people across the globe has become so much easier and basically free with software like Skype all you need is an internet connection(Lloyd, 2012).

Benefits

There are many benefits from video conferencing in the 21st century.

- Cost
- Time
- Environment
- Communication

Cost and time fall into the same category really because by video conferring in a business manner you save time traveling from place to place for meetings subsequently reduce the company's travel costs making it a beneficial communications tool for business (Video Conference Guide, 2011).

One that many people might not consider is global warming. But through video conferencing means traveling for meetings can be stopped, instead of driving in a car or flying which pollutes the atmosphere with a tonne of carbon (Pachner, J); instead you don't even need to leave your house for the meeting, plus larger meetings would mean more people commuting thus increasing pollution.

Communicating with others is one of the most obvious benefits of video conferencing; it gives us the ability to communicate with people all over the globe whether it is with friends, family or business. No longer does location become a factor when needing to have a meeting or see family from another country, video conferencing gives us the ability to experience the lives of our friends/family no matter the distance, connecting us all to each other in the 21st century

DISADVANTAGES

- Personal Touch
- Connection

There may be many advantages to video conferencing for business but there are some big disadvantages too. Lack of the personal touch, where videoconferencing may be better than a phone call it still lacks that personal interaction in business meetings, the handshake to seal the deal (Rajeey, 2012), which in the business world could mean the difference between success and failure so maybe spending that extra money to travel would be worth more than what technology can provide.

Even though high speed broadband can be found in most places around the world today, there can still be connection issues, equipment problems and speed issues, meaning loss of connections during video conferencing and in an important meeting loosing contact with people you are trying to negotiate with is a big disadvantage (Video Conferencing Guide, 2013), poor video quality due to a slow connection can make conversations very challenging and even annoying as you see breaks in the video, you might as well have made a phone call.

IT AFFECTS YOU!

If you think the biggest impact video conferencing will have on your life is the ability to connect you with people around the world, then you should take a closer look at who else uses it. Video conferencing is moving into many aspects of today's society areas like, Education, Medicine, Business and they are all trying to use video conferencing to improve on their given fields.

Video Conferencing has made its way into the classroom, providing many benefits to society within education. It has allowed educational institutions to provide qualifications that otherwise would not be tough before from lack of teachers in the subject area, through video conferencing students can connect with teacher over distances and be taught subject they would otherwise not be able to learn due to location of the school. Video Conferencing also allows the teachers to connect with multiple locations at the same time teaching many more students that would not fit in a classroom from all over the country even the world (Rapid Technologies, 2007).

Using Video conferencing software like Skype GP's can have appointments with their patients without them having to leave their homes, which is becoming more popular in the private sector (Sahel, 2012). This also makes it more comfortable for the patients, by not having to wait in a hospital waiting room but be relaxed in their homes be more comfortable.

The use of Video conferencing in businesses is not just used internally for meetings, but these days it is becoming more common for employers to use it to conduct job interviews. Video Conferencing provide employers with the opportunity to reach more candidates and conduct pulmonary interviews to narrow down the candidates before conducting face to face interviews (Morgan, 2013), also cuts down on transport costs for the candidates and saves time in organising rooms for interviews.

CONCLUSION

In the 21st century with all the advances in technology available to us and our need for constant information in today's society, especially when it comes to socialising with others. The answer is not, "if" but "when" video conferencing will affect me. Video conferencing has been around for years now and with the availability of high speed broadband in today's society it is becoming more and more prominent in our lives, so it's not a question of if video conferencing affects me but when video conferencing will affect me.

When it comes down to it in the end it is a personal choice on using video conferencing, like any other decision we make in our lives do the benefits out way the negatives when you real think about it, Take for instance the business side the ability to have a job interview from miles away would be considered as a benefit, however there are people who feel this is not a benefit, with the lack of face to face contact it is hard to gauge how well the candidate will suit the job (Thomson, 2013) sometimes you need to look someone in the eye and shake their hand to tell what kind of person they are.

Video Conferencing may also give you benefits in the medical industry, giving you access to your doctor more easily, cutting down on waiting room times (Sahel, 2012), but with the lack of physical touch how can the doctor accurately diagnose you (Harper, 2012).

Finally the social aspect that video conferencing has on society today, it's great that we now have this ability to communicate with so many people around the world to see their face while you talk to them, it has made our ability to communicate much better. But has it made us less social as now we don't even have to leave our house to talk to family/friends, are we starting to close ourselves off from society because is video chat the same as seeing someone in person, shaking hands and having a coffee. The question you will have to ask yourself is do you think talking to someone through a screen, whether it be a phone or large TV screen, will it ever feel the same as having that person in the room with you

There are many different views out there on how video conferencing will affect us as a society some bad some good, in the end it's down to the user of the technology how they use it for themselves and if it is beneficial to their way of life, whatever the choice video conferencing is here and whether we like it or not it will be here to stay.

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Are CD's Becoming Obsolete?

Digital downloads taking over...

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I. Introduction

The way we listen to music has changed vastly over the last 30 years; there have been vinyls, cassettes, CD's and now MP3/4. I'm looking to understand if CD's are doomed to the same fate as the 8-tracks and record players. CD album sales fell by 13% in the UK in 2011, whereas digital downloads witnessed a 24% increase in sales. This drop was reflected by the closure of 60 HMV stores in 2012, one of the giants of the music sales industry. (The Scotsman 2013)

Compression

CD's have always been valued for producing lossless sound quality; when played through a top of the range Hi-Fi system, nothing can compete with the crisp sound definition produced. So how does mp3 sound in comparison… well there is neither the vast range nor depth in the sound, also there is an imminent lack of bass/treble control, so acoustic range is greatly stunted. So why is this? When downloading a song/album from a store such as iTunes or Google Play, mp3 is downloaded at 128kbps (kilobytes per second) compared to a CD's huge 320kbps (Stead, 2012). iTunes in recent years however have upgraded their downloads to mp4 which is 256kbps, greatly improving download sound quality. Compressed data takes much less memory to store, which is why we can store a ridiculous amount of songs on our iPods and such devices. However in saying this, hard drive sizes are increasing dramatically in mobile devices, we can now purchase an iPhone with a 64GB memory! With this expanding memory we will soon be able to download as many 320kbps songs as we do mp3's (Debate.org, 2012).

Inaudible sounds

I know I keep going on about compression, but one of the most obscure facts about Mp3 compression, is that it removes inaudible sounds which can only be embedded in CD's. So if they're inaudible surely it won't make any difference? Wrong… inaudible sounds in music are heard with your subconscious mind. These subliminal messages connect with emotions. So when you're listening to your CD and you feel it soothing, it's dictating your mood and feelings (Subconscious-mind, 2011). This cannot be done with an mp3 as these sounds are compressed out! There has even been research done by the military in the 90's for using these sounds, including attempts at using inaudible sounds as a form of crowd control, which was achieved by placing non-lethal, mood altering sounds within a person's mind. (Lendman, 2011)

Devices

Devices such as iPod's seem to becoming less popular as they're now being integrated into existing devices such as mobile phones, laptops, and especially tablets. So what do these systems give us? An efficient method of listening to music on the go, they have a user friendly interface allowing seamless transaction between different songs and albums. They give us a vast array of music at our fingertips even if we do have to recharge our smartphones twice a day every day.

Data corruption

CD's are produced in their millions upon release; this maintains a high production and distribution cost. They're often released with a store discount price which is not available with the online download. However a CD can be easily misplaced or even scratched and damaged, similar though, music files on a mobile device can become corrupted. Therefore there is still demand for back up and hard copies. With online downloads, once purchased, the music can be shared between all your devices and reinstalled from your account if it becomes corrupted.

Cost

There is no argument that digital downloads are more convenient. You can purchase your favourite music at anytime and listen to them anywhere. One can also pick and choose songs, meaning you don't have to download whole albums, as normally we only like a few songs on a CD. Purchasing the album is cheaper as a whole, but still 99p for a song isn't extortion. These download stores themselves, such as iTunes or Google Play are set up to promote new songs/albums when you access them, containing advertisements and recommended picks for you, triggering impulse buying as the user browsers the store. This is different from buying a CD because as you enter a store you have usually planned buying the CD you want and had time to think about it for a couple of days. Also when browsing the app stores for music, it's easier to get carried away with purchases as you aren't handing

over physical money; instead the funds come from your credit/debit card. We all know how easy it is to spend relentlessly from a bank card!

THE PHYSICAL ITEM

CD's are important to people wanting a physical item that they can hold and feel, giving them a sense they've bought something whole. There are a huge number of music memorabilia collectors searching and collecting vinyl records, the sales of which have increased 745% in the last 5 years! So will CD's too become something of worth to collectors? Well yes… collectors already gather CD collections and especially the artwork that comes with them. Music artists have tendencies to produce deluxe and special editions of their music which are limited to a certain number of copies; this is to satisfy the needs of the collectors amongst their fan bases. Certainly having a physical product to show whereabouts that £9.99 went is much more satisfying than have a list of songs on your iPod.

MARKET DEVELOPMENT

The market however is developing rapidly to accommodate online downloads, top Hi-Fi producers are beginning to produce sound systems not accommodating CD's but instead which wirelessly access your online music library. This is apparent with the new range of Bose SoundTouch systems (Bose, 2013), and the Panasonic DMP-MS10 wireless streaming media players (Panasonic, 2013). So with this forwarding technology, surely manufacturers are forcing CD's out; promoting online storage and download. One reason could be that building high quality Hi-Fi systems is costly, they consist of a vast array of technical and mechanical parts, and assembly is intricate. For this reason manufacturers could have taken a cheaper option of wirelessly accessing online files.

AN ULTIMATUM

A perhaps revolutionary act by Amazon is called AutoRip (The Telegraph, 2013); it's a service that gives you a free digital download when you purchase a CD from Amazon, so you can find a copy of the album in an online locker provided by Amazon which you can download to a PC, iPod, Phone or Tablet. This service gives you the incontestable quality of the CD, while having the album to listen to when you're on the go. This service is lacking in Apple's iTunes and Androids Google Play, however only being introduced this year, this system could prove a huge hit, and allow CD's and online downloads to exist further at the same time.

PIRACY, A PROBLEM?

What musicians perhaps don't realize is that if everything converts to online downloads, then all their music can be easily pirated, seeing as almost anything on the internet can be accessed and downloaded free now via torrents. Musicians state that they accept online piracy as music should be shared, but if they start losing money from it, their feelings will soon change! Some musicians such as Jack White support the CD and Vinyl and promote the quality difference, stating that serious lovers of music, wouldn't trade sound quality and listening experience for accessibility (music-mix, 2011).

SAVING COSTS

Digital downloads do however allow normal people and amateur musicians to upload their music to the internet and sell their products without going through a costly record company who take a massive percentage of profit from sales. You can also promote your own music online and if you have your own website even distribute CD's and other accessories with your music. This is perhaps the reason for the explosion of music available online, but while it gives the artist freedom from the shackles of the money grabbing record companies, online downloads still have the huge disadvantage of enabling piracy! (Davis and Holmes, 2001)

OTHER FACTORS

Digital downloads aren't the only media having a negative effect on CD's. The truth is, other types of media are outselling CD's by a mile. DVD's have risen in popularity, due to the fact they have more content and extra features for the same price or sometimes even cheaper than a CD (Kusek and Leonhard, 2005). UK physical sales figures show that DVD's sold 50.4% of all physical media sales in 2012, whereas CD's only sold 31.7%. However in digital media sales, CD's scored 37.1% and DVD's a measly 9.5%. (DISCWIZARDS, 2013) The real media takeover however has to go to the video game industry. Video games sales were up 24% in 2012 and this figure is still rising. Yes video games do cost double that of a CD or DVD, however there is so much more to be done with them. They provide hours upon hours of entertainment whereas a CD is perhaps an hour a week of entertainment. Let's face it the CD has to be pretty special to listen to it on repeat for 6 hours, whereas most people are happy to play on a video game for the same time period.

CONCLUSION

For the moment I am not giving up hope for the CD market. There is still a huge demand for the physical items. Stores and music retailers are still providing us with them, even with the expanding digital market and competitive media markets. It seems a waste of a collection, seeing as the majority have replaced their old vinyl songs with the same CD's, to come into the modern era. Professional companies are now producing Hi-Fi systems to accommodate digital music, which leads us to believe this is the end for the CD. But like many people who still have a box full of 1980's and 90's cassettes, almost every household has a strong collection of CD's. It would be extremely beneficial for the music industry if Apple and Google and record companies put in place a system similar to that of Amazon's AutoRip service, this could most certainly prove an effective solution! However we have to face the truth that we may yet end up consigning them to the loft on top of the dusty boxes labelled 'records' and 'cassettes.'

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Could Online Piracy Be Today's Biggest Issue?

A look at the impacts of modern technology on piracy.

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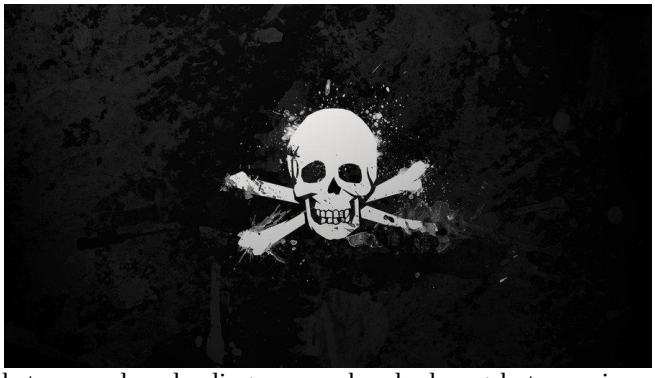
I. Introduction

We all love free stuff whether it's been given to us as a gift, a business promotion or a competition prize. Having that sense of enjoyment without that thought of losing your hard earned cash can make us feel satisfied, but what if that free stuff was obtained illegally without a valid license? Would you still feel that sense of enjoyment? In this article I will be discussing the impacts of computer aided piracy within the past 30 years and hopefully broaden your ethical opinion on the subject.

What is piracy?

Over the past few decades you may have heard the term 'online piracy' being thrown around quite a bit in the media. But what does this actually mean? Online piracy is the act of copying and distributing intellectual property without the authorization of the person or organisation that owns, or holds the rights to the property. (Fisk 2009, p.5). You may ask "what's the big deal?" The truth is that the growth of piracy in today's electronic world can be seen as a cancer to many electronic media corporations such as software distributors, movie producers, music record companies and videogame developers. Over the last decade, music sales in the U.S. have dropped forty-seven percent, from $14.6 billion to $7.7 billion (Recording Industry Association of America 2013) and according to the 2010 BSA (Business Software Alliance) Global Software Piracy Study a record total of $58.8 billion was lost in the commercial value of software in 2010. (Business Software Alliance 2011). These are some pretty hefty figures that could eventually lead to the 'death' of media industries. But why do people commit piracy when they know of these consequences? Steve Smith (2011) states that many consumers find even digital pricing too high and that a study of sixty-eight percent of people completely agreed that the reason they download content illegally is because the price of a physical copy is too expensive. (Smith, S. 2011).

Some argue that the reason for piracy is because it's free and easy, but it comes down to the convenience of it all for many people. (Wagner, K. 2013). With the growth of technology, piracy has become an attractive alternative for people to switch to, due to internet speed and computer hardware capabilities. Figures accumulated by Akamai show that the average internet speed increases by seventeen percent each year, to finally pass three megabytes per second. (Protalinski, E. 2013). That means



that a user downloading a seven hundred megabyte movie can take as little as four minutes and a music file could take seconds!

Where did piracy come from?

But who are we to blame for the foundation of piracy? Well, the truth is that piracy has been around for over 2000 years and originated in ancient Greece, when sea robbers threatened the trading routes of Ancient Greece (Royal Naval Museum Library, 2002). This type of piracy still occurs even today but this isn't the way we think of piracy in today's modern world. Instead of surfing the sea, internet pirates can retrieve their "booty" surfing the web with help from our good friend known as "The Internet".

Several techniques have been used to share illegal files across the world; one of the most popular ways is known as 'Peer to peer' – a file sharing technique popularized by file sharing networks such as Napster and The Pirate Bay. (Johns, A. 2009, p.454). A peer to peer network is created when multiple computers are connected to share files without the use of a system that responds to requests known as a server (Cope, J. 2002). This technique is popular as it allows users to share files stored on their computer directly with other users' computers, provided they have a program called a torrent client and a torrent file which contains links that point to where a file can be located (Pirillo, C. 2007).

If you haven't heard of this method of file sharing you may have heard of its rival, File Transfer, referred to as 'FTP (File Transfer Protocol). This method is a lot older than peer to peer and was actually designed back in 1971. (McKendrick, J. 2011)

FTP File Transfer makes use of a central computer called an FTP server that holds all files to be shared, while remote computers running a piece of software called an FTP client can log in to the server and obtain copies of the files. (Mitchell, B.).

Now that you are familiar with these two methods you can probably understand why internet piracy is such an easy thing to commit. Amongst many of ways of file transfer you could either download the latest music, movies, games and software free of charge from your friends or strangers over the internet using peer to peer or simply sign up to a file sharing server to retrieve all of your virtual goodies.

ADVANTAGES OF PIRACY

Though you may have your mind set on one side of the piracy war, there are actually pro's and con's to both the consumer and media industries. Several years ago during the late 20th century independent music artists and labels had trouble making themselves known to the public as it was hard and expensive to release their products on the marketplace. Because of this, consumers were limited to the music distributed by major record labels unless they were fortunate enough to live near an independent music retailer or a free-form radio broadcaster. With the introduction of internet file sharing, people had the freedom to download and upload music, which gave independent artists a fighting chance at making it into the music industry by giving consumers a convenient, free way to discover their music. (Sinnreich, A. 2013). With this is in mind it's understandable that some people may believe that piracy helped the music industry by giving music artists a boost in their career based on the public's interests and not those of the big record companies.

Another supporting argument of piracy is that even though many people can illegally download a file without paying, it can actually increase the sales of digital media. Vince Gilligan, the creator of the hit television series Breaking Bad says that "[It] led to a lot of people watching the series who otherwise would not have". This statement is evidence to the fact that piracy can actually promote the publicity of a digital product. (Izundu, C. 2013). This theory can be backed up by a study carried out by

the European Commission Join Research Centre which showed that for every ten percent in visits to illegal music websites, an increase of two percent in music sales was made(Sean, F. 2013).

Oxford researcher Karen Croxson raised a supporting argument regarding the use of online piracy suggesting that a person who pirates a product which they never considered buying would not hurt a company's profit but may actually give them a potential customer. If a user pirates a product which they find themselves liking, it could lead to future sales by the customer. Those inclined to pirate, perhaps students, probably wouldn't have bought a product anyway, so this could be seen as free promotion to the company. (Croxson, K. 2008).

DISADVANTAGES OF PIRACY

Even though there are many positive arguments that support online piracy there are of course many negative arguments that can toy with our conscience and easily manipulate our assumption on piracy. One of the most acknowledged disadvantages to piracy is the fact that it is considered as theft. Even if it doesn't actually affect the original copy of a product, piracy is still taking the sale away from the creator. (Lipschultz, Holly. 3013)

A downside to a consumer of internet piracy is by malicious cyber-attacks that can affect their computers behaviour. Downloading illegal material can lead to harmful content such as a computer virus. (Fact UK, 2012). Computer viruses are programs that can replicate themselves and cause damage to hard disk contents, and/or interfere with the normal operation of a computer. (Information Technology Services Center, 2002). Downloading unauthorised material could also infest a user's computer with spyware, which is a generic name given to programs that contain additional functionality designed to secretly monitor activities on a computer. A lot of spyware nowadays is designed to steal confidential information such as login information (WebWise Team, 2012) so without the right tools for preventing these kinds of attacks could impact a user quite drastically.

Another disadvantage to a piracy consumer is the quality in a product. Many pirated films that can be found throughout the internet may be filmed using a camcorder from the back of a cinema which may affect the image and sound quality severely. Music files can also suffer from poor sound quality due to low bitrates which is the amount of data per second in a sound file. (Gordon, W. 2011).

CONCLUSION

My overall conclusion on the topic is that the opinions and actions that people choose to take are always going to be different no matter what. Everybody has a different way of thinking so it's very likely that there will always be people who agree with piracy and those who don't, which is just something we must accept in today's society. However, I do believe that in the future with the rate technology is changing, there will be new ways to both prevent and commit piracy, because there will always be pirates and anti-pirates out there that won't go down without a fight.

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