The Direction of the Gaming Industry and Designing Games for All Types of Handicaps

(Academic research paper written in 2013.)

In the age of everything being handicapped accessible in the United States, one mainstream form of entertainment today is not. This form of entertainment is video games. Video games can take someone who is disabled, such as myself, to a place where you cannot go and allow you to do things you normally could not do, such as playing sports. Therefore it is imperative that game developers think of making video games accessible for everybody. There are many types of disabilities that game developers should develop for such as mobility, visual, and hearing. In the United States, there are over 33 million disabled gamers alone, as well as 60 million potential disabled gamers. (Ablegamer Foundation, 2012) Developers should care about taping into this market by making games handicapped accessible. Handicapped accessibility features would include changing control options, having subtitles for the hearing impaired, and having difficulty levels such that the game could be accessible for play to anybody regardless of skill level.

As a gamer, what if you were frustrated by a level in a new game, say *Beyond Two Souls?* You bought it and you now are unable to play it because you could not get past a certain level? It is annoying, right? Now imagine you are able to play the game with only one hand. Would it be more difficult? Yes, it would be! That is the situation when you have a mobility disability and try to play a video game. The makers of *Beyond Two Souls* came up with a mobility solution; they created an app called Beyond Touch on iOS or Android that you can control the characters on the screen by your iOS or Android device. (Severino, 2013) All you have to do to is connect Beyond Touch over your local wireless network to your PlayStation 3 and the app will work.

So how do you play with this app you may be wondering? You touch and drag your finger across the screen to move the characters, Jodie and Aiden. You can move the camera around by holding the camera button down, which is located in the lower left corner, with one finger and dragging another finger across the screen. When the white circle appears on the game, you can do interactions by tapping the screen. You can also interact when other symbols appear simply by holding your finger on the screen on the symbol to control the experience. To do an action with Jodie, such as a fight action, swipe across the screen in the direction Jodie is moving. Switching between Jodie and Aiden is simple; just tap the switch button on the upper left hand screen to do that. When a blue orb appears, all you need to do is tap the screen to perform an action. You can make Aiden blast objects by swiping down on the screen. To manifest, possess, or levitate shield, a character, or an object, just hold your finger down in the middle of the screen. So as you can see, this app enables a limited mobility player the capability of playing the game much easier.

Do developers think about disabled gamers? Historically, no; however, Mark Barlet, founded the Ablegamers Foundation in 2004 for the purpose of adapting controllers and to raise awareness. Also the Ablegamers'community does accessibility reviews to let disabled gamers know whether or not a particular game is right for them. Their mission statement is: "The AbleGamers Foundation serves anyone in need through direct person-to-person services, assistive technology grants, community support, and access to data. We help people afford expensive technology which allows them the ability to participate in gaming experiences that improve their overall quality of life. Additionally, we provide the largest database of mainstream video game titles complete with reviews focused exclusively on the accessibility of a given title. Finally, we raise awareness by showing disabled veterans returning from war that video gaming

can allow them to reconnect with friends and participate in an activity that they enjoyed before their injury." (Ablegamer Foundation, 2012)

They have created awareness that we, the disabled gamers, make up a large portion of the population. Barlet said "When we started this in 2004, I went to GDC (Game Development Conference) and I said, "Have you ever thought about how people with disabilities play games?" and the answer was universally, "Nope, never even crossed my mind." (Prell, 2012) So developers of video games have gotten a bit better taking into consideration the need to make their games more accessible for all types of gamers, but there is still room for improvement.

I now want to cover what developers can do to make their game(s) really handicapped accessible. Mobility, visual, and hearing impaired are the ones that I am going to touch upon, but there are more. Some of the mobility changes in games are listed in "Includifacation", a document by Ablegamers which lists some things that game developers would need to do in order to make a game accessible for consoles and also computers. I will start with the list that computers and consoles share. It includes things such as remappable controllers, alternative controls, no button mashing, camera and joystick sensitivity, gameplay which does not require precision to execute, no mandatory quick-time events, timing of movement and/or button pressing is unimportant, easier levels of difficulty, and game assists.

Visual elements which game developers need to include are such things as: key elements of the game are not identified by red and/or green, colorblind options are present, the game is presented in high contrast, subtitles are easy to read and are letterboxed, and game menus are easy to see, read, and use. (Ablegamers Foundation, 2012)

Game developers can also make their game accessible for the hearing impaired. They can do so by ensuring subtitles are present, that ambient noise is included, that the game identifies

the speaker on screen, that all audio cues are accompanied by visual cues, and the game can be successfully completed without the need for sound. (Ablegamer Foundation, 2012)

The computer-specific accessible controls which the "Includifacation" article mentions for mobility are that the game can be played with either the mouse or the keyboard and the user can move the user-interface elements. For visual aspects of the game, the users need to be able to change the font type, color, and size in the menus and for the subtitles of the game so it can be played by anyone. The console-specific controls are the same as the combined controls for the PC and console units.

Remappable controls are some of the most frequently requested accessibility controls. Games such as *World of Warcraft, Star Wars: The Old Republic, Resistance Fall of Man, 2,* and *3*, the *Fallout* series and *Skyrim* all have remappable controls. These controls let you remap the controls on the controller the way you want them. An alternative to remappable controls is alternative configurations. These are not as helpful in making a game accessible, but they are another option to developers which can be used in their game to make it more accessible for disabled gamers. An example of alternative controls is when you can switch the analogue controls or customize button assignments. This enables the gamer to control looking around in first person action games or as a first person shooter.

"No button mashing" is a term that means it is not mandatory to mash down on the buttons during the game. Changing the sensitivity of the analogue sticks to move around the camera or the player should be an accessibility option every game should offer. Not everyone can track or follow every movement. Therefore, the player should have an option to control how sensitive the right or left analogue stick is so they can control the camera or player movement much more easily.

The most accessible genre of games is massively multiplayer online games, MMOs, and casual games according to Steve Spohn, the Editor-in-Chief of the AbleGamers website. Steve, who is also the Community Outreach Chair of the AbleGamers Foundation, said:

"MMO RPGs (Role-Playing Games) and casual games are the most accessible simply because they have the most ability to adapt to their customers and the lowest demand on quick movements with multiple keys. Racing games are pretty much the most difficult, and that's why Forza 3 was able to win the award this year because the combination of a console game being accessible plus the included accessibility controls were just outstanding."(Gallegos, 2012)

Other games that have won the AbleGamers Accessible Mainstream Game of the Year Award are in 2008 - *Warhammer*, in 2009 - *Dragon Age*, in 2010 - *Forza 3*, and in 2011 - *Star Wars: The Old Republic*. (Ablegamer Foundation, 2012) These different games each have their own unique disability niche which they have filled. For example, *Warhammer*, was built from the ground up with colorblind people in mind. Another one that is worth mentioning is *Star Wars: The Old Republic* because it has a lot of accessibility features.

There is a simple way to add all these features if the game developers plan for it at the beginning of the creation of the game. It does not require many resources nor does it take time away from the game's release. If the game developers do not plan for these features, they can easily be added. As a matter of fact, 60% of adults use accessible features on their personal computers even if they do not need them. (Ablegamer Foundation, 2012) The United States and United Kingdom population of disabled gamers is at 20% (Ablegamer Foundation, 2012). This is another reason why game developers in these countries need to or do create accessible controls in new games or add them to inaccessible games. More staggering statistics that support the reason for these features to be added to games is that there are 21.8 million veterans that served

in the army with 5.5 million of them being disabled and 3.3 million having a service-related injury. This population might pick up a video game and play it if the controls were adapted correctly to their injury. (Ablegamer Foundation, 2012)

The cost of game development of the next generation of multi-platform games for today's consoles, on average, is $18 to $28 million. New intellectual properties for a single platform game, on average, cost $10 million. (chron.com) It is incomprehensible that gaming companies and game developers cannot spend the little bit of extra time and/or money to make a game accessible for everybody with the already high cost of development. It is much easier to have accessible controls for a game if developers take the time to implement them at the creation of the game.

You may wonder what the salary of a programmer who has to code these accessible controls is on an annual basis. In 2010, the Game Developer magazine conducted an industry-based survey that reported game programmers make an average salary of $85,733 a year in the United States. Programmers pay increases with the more experience they have. Regular programmers having fewer than three years of experience received on average $55,426 while those with three to six years of experience averaged $76,416. Programmers that have been programming for more than six years typically made $107,888 annually. So in the "big picture" with the cost of $18 to $28 million to create a game, it would not be cost prohibitive to pay a programmer a bit more to add accessible controls.(www.chron.com)

Games are never finished. There are always bugs, art issues, and other things that are important to the game designers and programmers that still get left out. For that reason, accessibility options are put on the back-burner or completely forgotten. The game developers may initially have accessibility in their plans but it may get left out at "crunch time." As a game

gets closer to release, there is something known as "crunch time" in the game developer community. "Crunch time" is the final week or two the developers have to fix bugs and any issues the game may have before launch day. As the game developers progress through "crunch tim,e" they may underestimate the time needed to fix bugs or they have other more important issues with which they need to deal. Steve Ellmore is a lead programmer at Irrational Games. He worked in the gaming industry for nearly 20 years and was involved in releasing nine triple A titles. He said that gaming companies take great pride and spend a lot of time in making their game as accessible as possible. During the development of *Bioshock Infinite*, a great deal of time was taken to make their game accessible. Specifically they included rebindable keyboard support (changeable keys), sensitivity and inversion controls, and several different control schemes for the handheld controllers (PS3 and Xbox 360 controllers). They also had subtitles for all of the dialogue in the game and their user interface was designed to be accessible for people with color blindness.

In terms of the development cost to make games accessible, it greatly depends on the type of accessibility feature being added. Implementing control rebinding requires two things:

- A game needs to support configurable controls which is something that is straight forward; and

- A game also needs a user interface to let the user configure what they want. This part is trickier then you think. At Irrational Games, during "crunch time", they try to be inclusive as possible with their games not only with accessibility but also in the type of games they make. They want to appeal to a broad and diverse audience and for them that includes implementing accessibility features. (S Ellmore, personal communication, December 9, 2013)

In doing my research, I also contacted the International Game Developers Association (IGDA) about developers putting accessibility options in games. Thomas Westin, one of the members of the leadership team for the IGDA's Game Accessibility Special Interest group, said that the game developers would do accessible controls if it were widely requested. For example, Valve has implemented support for closed captioning since *Half-Life 2*. He also said that it has gotten easier for game developers to implement these accessible controls because of guides which are now available that bring up accessibility issues, such as "Includification" and gameaccessibilityguidelines.com. In Thomas's ten-plus years of experience in the industry, he has not met one game developer that is not willing to do more with regard to making their games handicapped accessible. The issue was and continues to be money. His personal view is that all the game developers desire to make their games more handicapped accessible. It just comes down to the how-to and the expense of doing so. (T. Westin, personal communication, December 4, 2013)

Universally designed games are another step in the right direction of making games accessible for everyone. What is a universally designed game? Universally designed games are accessible for anybody. This means that no matter what type of disability you have, there are options in the game already. Whether you are blind or have one hand to play with, the game developers will have options to fit your disability. "Designing Universally Accessible Games" is an article that actually takes a look at four universally designed games as case studies. Each of these case studies has good control schemes or options that game developers could use to make their games more accessible for everybody. A good example of a universally designed game is *UA-Chess*. It was nominated for the European Design for All Award by the European Commission in the category of AT/Culture (Institution of Computer Science and The University

of Crete, 2009). *UA-Chess* offers different accessibility profiles to select when you start up the game. They are Default, Blind, Motor MultiSwitch, Motor SingleSwitch, and User 1 and User 2. All accessibility issues are covered in the startup screen. Another example of a universally designed game is *Access Invaders.* *Access Invaders* is a fully universal, accessible multiplayer and multi-platform of the game *Space Invaders.* The game supports user profiles to adapt the game to make it more accessible for all types of handicapped people. Any or all of the following devices can control the user interface: keyboard, mouse, joystick, game pad, and lastly a binary switch.

Some game developers will not consider accessible controller functions in their games so luckily there are companies that make modified controllers to make them accessible such as Evil Controllers (www.evilcontrollers.com) and One Switch (www.oneswitch.com.uk). These modified controllers are arranged according to a person's disability. For example, a person who can only use their left hand will have a controller that has buttons which are added to the left side as well as an analog stick which is a knob on the left hand side. These companies offer many disabled gamers, who cannot play with the regular PlayStation or Xbox controllers, websites from which they can purchase an accessible controller for their use in playing games.

The Ablegamer Foundation together with the universal design of games, has brought an awareness to game developers of the need to consider disabled gamers as an important group of consumers. Also the addition of game design accessibility guides, such as "Includification" and others, make it easier for game developers to know what needs to be done to make their game more accessible for everybody. Games like *Beyond Two Souls* are a step in the right direction by allowing players to control the video game by an app on an iOS or Android device. With next

generation consoles right around the corner and with the second screen experiences that these

consoles will have, game accessibility for the disabled gamer will become the norm.

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