A Game Named Life

Serious Games Final Essay

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Challenges and problems aren't deterrents to living a happy and fulfilled life, they are the cause of them. Don't complain about how difficult or impossible your challenges are. Bask in the realization that these challenges are the entire reason you are playing the game of life. Without these challenges life would be a dull, pointless activity. Zig Ziglar put it best, "Happiness is not pleasure. Happiness is victory."

- Anonymous

1   We play because.. Why do we play?

Many people still view video gaming as a wasteful way for high school kids to spend their leisure time. Through the mindless shooting away at zombies or their friends, it would presumably corrupt their souls and consume their hobbies and interests. The slightly overweight, loser with no girlfriend that solely survives on a diet of nacho's and mountain dew directly springs to mind. Although such individuals wasting away behind their computers probably exist, they do not paint the entire story behind gaming.

Playing games is not exclusively a human endeavour. Anyone with a pet knows that most mammals and birds engage in playful behaviour. However, it has been incredibly difficult to pin-point why these animals play in the first place and why evolution has favoured playing animals over those who don't. The most intuitive answer to most is that animals play to hone their skills - in for example - catching prey or defending themselves from others. However, research showed that playing in animals does not necessarily improve behavioural results. On top of that, many animals that do not catch prey or are actual prey themselves - like elephants - play as well. Many other candidate functions have arisen over the years, but one in particular is resilient to scrutiny, namely the stress-response (Meaney et al., 1991). When a baby animal experiences stress, its brain changes in such a way that it is subsequently less sensitive to stress hormones. This is an obvious biological advantage, as the animal will recover more quickly from future stressful situations. Play, in all animals, usually consists of exciting 'flight or fight' behaviours, such as trying to catch each other or engage in play-fights, which activate the same neurochemical pathways as a genuine stressful situation. It could therefore be, that animals are using play to prime or fine-tune their own stress response to prepare themselves and inhibit an exaggerated response in the future (Siviy, 1998).

## 2	The Onset of Dreams

In this sense, dreaming - a biological function that most advanced brain-sporting animals employ - actually resembles the act of playing. Since only a limited amount of possible situations can be simulated by means of physical play without harming another playmate, it might be possible that dreaming during rest filled in the gap for the things that are so highly unlikely to occur, that re-enacting them during wakefulness would prove wasteful. Dreams however, are characterized by absurd combinations of knowledge representations stored within our brain, often defying the laws that govern our reality and enabling animals to prepare for truly unnerving situations. This is especially apparent in human dreaming, where it is not unusual to wake up from a terrifying night terror, trembling and covered in sweat, clear signs of a strong stress response.

Another lesson we can learn from the animal kingdom, is that rats who are raised with many other rats within a stimulating environment, develop larger brains than those reared in barren surroundings (Ferchmin & Eterovic, 1982). Since these enriched rats especially showed a heavier cerebral cortex, they of course learned more quickly too. The researchers identified the factors that promoted this brain growth and found that arousal and sensory stimulation, even taken together, couldn't increase cortical growth unless they were coupled with interactive behaviour such as play or training. Surprisingly, it was play, not training, that showed the biggest impact.

As the basic design and function of the mammalian brain are very much alike across species, one can easily draw a parallel to human development. A trained psychologist for example, can readily differentiate between a stimulating and austere environment for kids to grow up in. It thus seems, that the act of playing, has a clear evolutionary explanation and provides an advantage for the individual that plays often over those that do not.

## 3	Technological substitutes for dreams

Like humans differ from other animals in many things, we have also transcended the primitive way of play. Although many children still play the games hide and seek or tag (that strongly resemble the most basic forms of playing behaviour in our mammal neighbours), video games have replaced many typical human play-like activities. Like dreams, our current video games present us with an infinite variety of possible scenarios, narratives and experiences. Unlike dreams, we have the privilege to design our games, before being blindly subjected to it. Like dreams, they do not necessarily have to correspond with reality.

Herein lies the true power and attraction of video games. Although earlier forms of art and fiction, like verbal stories, drawings and books could defy the laws of our perceived reality, none (could) have taken this to such an extent as video games. Our technology constrained us to the 2D world of pen and paper. Their 2D analogue within videogames such as Super Mario already opened many doors to human creativity, but it was not until 3D videogames like Zelda : The Ocarina of time arrived, that we truly felt as if we were actually wandering around and immerging ourselves in a different world.

With the rise of such videogames, we have also seen the rise of rich alternate universes within these games with far stretching histories and lore. Millions of fans are dedicated in studying such fabricated histories, but however compelling and immersive a universe like Warcraft might be, for some type of games, it might not be best to pursue such fantastical settings. I will have to come back to this later in order to accurately explain why such a pursuit might prove less than satisfactory.

4   Hold on, whats the difference?

`   We have now seen that humanity has come far from the point where we played (games) to calibrate our stress-response, only to find ourselves in the current situation where most people think of gaming as just a 'fun' , but definitely not a beneficial way to pass the time. This is where most people are probably mistaken. Even though clear positive effects on human ognition have already been shown (Feng et al., 2007, Boot et al., 2008), one should not discard the benefits of gaming by merely looking at the (often shallow and money driven) entertainment industry. Instead, one should look at the potential of gaming when approached differently. This approach is called serious gaming. To clarify the changes we have been through in the world of playing (games), I will use a classification made by Mike Zyda (2005).

- *Game (or play in the animal setting): "a physical or mental contest, played according to specific rules, with the goal of amusing or rewarding the participant."*
- *Video Game: "a mental contest, played with a computer according to certain rules for amusement, recreation, or winning a stake."*
- *Serious Game: "a mental contest, played with a computer in accordance with specific rules that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives.*

Zyda postulated these definitions rather formally, but one can easily see the difference between a video game and a serious game. A videogame is made with amusement and recreation as its main purpose, whereas serious games use amusement to serve a purpose on its own. Taken from his definition, some of these purposes are already clearly defined.

Since the beginning of the 21st century, we've seen multiple industry fields such as the military or healthcare that are trying to adopt serious gaming in order to reach such purposes. Usually, this involve bettering people in doing what they do, be it in responding to a dire military situation, or successfully performing a surgery or interacting with a patient. These examples of serious gaming application coincide on the fact that they are primarily used to train marketable hard skills that are either boring, difficult, costly or repetitive to engage in in real life. Less focus is directed towards the development of soft skills, such as cognition and inter-and-intrapersonal awareness. Since most of our day to day encounters rely more on successfully applying soft skills than hard skills, this is an extraordinary thing to witness. Like hard skills, we learn soft skills by observation, practice and learning, why would it be any different?

5   Are games *just* games?

Before answering this question, we must first address the popular argument that by definition, you cannot learn anything worthwhile from a game, be it a serious or non-serious one. The main problem that we encounter here, is not the ability of games to influence behaviour, but that most videogames do not correspond closely enough to reality for people to actually notice beneficial learning or training effects in similar real life situations. For many entertainment based videogames, it is even the sole aspiration to not resemble reality at all. Even though we know that surgeons and pilots that play videogames perform better on average, it is hard to qualify that what exactly leads to this change, as its effects are elusive (Rosser et al., 2007). Even more demanding, is to demonstrate how a person engaged in a 3D fantasy adventurous role playing game viewed from a 2D screen might possibly train their interpersonal skills within real life.

It seems that people need some persuasion to actually see the potential of (serious) gaming to influence our behaviour. That persuasion might just be around the corner is the form of virtual reality (VR). The same way technological improvements has opened doors before, instigating the transition between pen and paper, 2D and 3D virtual environments, so we need new technology to bypass the problem of true immersion, a condition necessary for many learning tasks. For the brains of many people, it might be too much of a stretch to

accurately represent learnt principles from an (often unrealistic) 3D game environment, viewed from a 2D screen, within real life situations. In situations of real life stress, people tend to throw most of these learnt experiences outside the window in favour of a handful of simplistic sets of behaviours. This barrier would diminish, the closer the subjective experience of the serious game gets to the actual real life situation. Of course, this principle is already used extensively by simulation methods for learning skills such as driving or flying. However, these techniques still suffer from the immersion problem, are very expensive and are still only simulations, not actual serious games. A serious game is not a simulation alone. It may be a simulation combined with elements of game-play, specifically a chance to win or complete a task or quest. The environments however, can correspond to non-game events or processes from the real world.

6   Activating unlocked potential

Let us return to the surprising absence of training in soft skills. Serious games are made to provide an engaging, self-reinforcing context in which to motivate, educate and train an individual. These serious gaming principles, combined with well-designed VR environments seem to provide an infinite amount of possibilities, just like our dreams provide us with an infinite variety of scenario's. Hard skills can be expensive to train repetitively (bullets and corpses don't appear out of thin air), but interpersonal soft skills can be just as costly when practiced in real life. Many times, people regret saying or doing the things they do within relationships deeply. Others, are simply too scared to speak out due to the outlook of ruining everything. The act of wishing one had a time machine to turn back made awful decisions is familiar to most of us. A fully immersive VR environment, complemented with functional serious games elements that motivate people in an engaging manner to fulfil certain acts or quests within might be key for people to improve their own behaviour and self-knowledge by gradually lowering their stress response to certain situations. Like rats, learning within a sufficiently complex environment and engaging in interactive behaviour (albeit A.I's, NPC's or other players Avatars) at the same time, might result in a strong type of learning. Note that these environments should be notoriously hard, but doable with practice. Since serious games can be seen as controlled simulations of certain aspects of life, the same rule of video games applies : remove all the challenges in a game and it becomes a pointless activity.

A virtual reality application available for Google Cardboard called VirtualSpeech is already heading towards the direction serious gaming applications could find itself in the

future. VirtualSpeech enables you to practice presentation skills in front of a dynamic, virtually generated audience. Within the realistic virtual environment, you can upload your own presentation, which makes it feel as if you are truly there and actually practising in front of people. VirtualSpeech might seem more like a virtual simulation, than an actual serious game. However, if you see life as an analogy to a game, you could basically simulate every aspect of our lives, gamify it for engagement, and train yourself before trying it out for real.

Although this last form of training might seem promising, there are of course some difficulties realising this. If we are talking about training soft skills with serious games in full immersion VR, we would by definition need incredibly sophisticated in-game A.I. Although training hard skills with serious games comes with its own difficulties with regards to game design, sophistically interacting with an in-game A.I to an extent that you actually learn from the experience instead of getting frustrated, as is the case with your average chat bot, will provide a formidable challenge.

More realistically, our virtual environments will start out rather abstract and simplistic, like older games viewed from a 2D screen, and will gradually become more life-like and ultra-realistic. The latter will probably be completed by providing not only truly realistic environments within the virtual world, but also providing haptic feedback, realistic audio input and a brain computer interface that lets you control the elements within your environment by thought alone. All these factors will contribute towards making the environment as realistically complex as possible, providing maximum learning effects, while minimizing the actual costs seen in real-life practicing. In essence, we have then created a controlled way of biological dreaming, and like dreams acted as facilitators to many world shattering ideas, the societal importance of such a technology cannot be overstated.

Keeping this in mind, it is no surprise to see that Google's new VR platform has been named *Daydream.* Although most of us already indulge in occasional fits of daydreaming, in the future, this might prove to be an entirely new way of looking at what it means to live life.

Ah, the 21st century. What a time to be alive.

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