"Write an essay on a current medium and discuss its prominence on a gamut that ranges from a dead to imaginary medium, arguing where it lay on that scale in the past, in the present, and where it may be in the future. Ask yourself the same questions as listed on that assignment sheet in order to develop an argument."

Virtual Reality… from what strain does it come? Is it a medium for entertainment, immersion, or didactic purposes? Is it a future technology, or a technology of the past taking a different form? Is it a transient "Google Glass" fad or a more sustained '3D movie experience" type of phenomenon? Is it one that will transform the very way we experience augmented and organic worlds? This essay will attempt to uncover what it is that defines the term "virtual reality" and its potential pertinence to artificial experiences as a medium, exploring both the past and future possibilities, looking at current applications, trends, and exploring the ideas that the very existence of virtual reality propagate.

Something that is virtual simply refers to "something that is similar to something else but without some of the properties of that which it is similar"[1], which usually refers to the fact that the material object or experience once may see is not physically existing or isn't able to be manipulated by at least one of the five senses. Virtual reality (VR), as an extension of this denotation, would then simply refer to "a reality that is similar to another without some of the properties of that which it is similar", which can be more eloquently be stated as "an alternate pseudo-reality." While modern denotations of VR tend to slate along the idea of "computer-generated 3D real-time environments where users interact with the simulated environment[1]", the broad definition I created in the beginning shows that the term itself may not have to refer singularly to the modern computer-minded boundaries that currently exist but can be applied to any type of gestalt experience that is able to instill upon a person the feeling of being placed in another reality.

Caillois, in his discussion of talking about the concept of play, proposed the idea that all play games fall into four main categories: competition (agôn), chance (alea), simulation (mimicry), and vertigo

[1] Glenn Harrison, "Remarks on Virtual World and Virtual Reality Experiments," *Southern Economic Journal* 2011, 78(1), 87-94.

(ilinx)[2]. This would place VR into the category of simulation, for which Caillois describes as "incessant invention", in which "the subject makes believe or makes others believe that he is someone other than himself… [forgetting, disguising, or temporarily shedding] his personality in order to feign another.[2]" This description seems more along the lines of mimicry than simulation, which has a negative connation as something that is obviously copied rather than something that is able to act as a cinema of attraction for the viewer. This means that the idea of virtual reality can be traced back to the precursor for immersive experiences that was developed in the 1700s: the panorama.

Griffith describes panoramas "as a form of mass entertainment that immersed spectators in a spectacular virtual reality… as hyperrealist representations on vast canvases"[3] that fully immersed viewers into the scene depicted. A wide portrait that, when wrapped in a loop around a centrally tangent viewing space and the ceiling vision blocked, gave rise to a horizontal 360 degree viewing spectacle. The huge portraits were painted into great detail such that people could often see objects such as people 'miles away' (in regards to the perceived spatial depth the portrait suggested) using binoculars or telescopes. "The panorama—like the cinema—manufactured a new reality, condensing time, editing the visual field, amplifying certain aspects of perceived reality while diminishing others." This, undoubtedly, fits our general description for a virtual reality. These panoramas could depict scenes multitudinous and far-ranging, from sea-scapes that could yield feelings of sea-sickness to battlefields that could produce feelings of nausea from the grotesque scenes and actions displayed. This empathetic response from viewers serves as the harbinger of my argument for this essay.

While Caillois defines simulation, the umbrella under which virtual reality sits, as "incessant invention", in which the only rule is "in the actor's fascinating the spectator [whom must] lend himself to the illusion"[3], I believe it's actually the opposite. It isn't invention, but the ability to recreate so absolutely and accurately that it is mistaken for the real thing. The spectator shouldn't have to lend himself to the

[2]Roger Caillois, *Man, Play and Games* (Indianapolis: University of Illinois Press, 2001), 3-27.

[3]Alison Griffiths, *Shivers Down Your Spine* (New York: Columbia University Press, 2013), 34.

illusion, but actually partake in the illusion without knowledge of it being just that: an illusion. If the viewer can, under full pretense that what they are experiencing is fake yet still feel an emotional response akin to if the experience was real, how far is the illusion from reality?

I believe one day virtual reality will have its own Turing Test. The original Turing Test was theorized by Alan Turing in 1950 to question whether machines can think on a level equal to humans by observing a conversation between a machine and human and attempting to determine which converser the machine is[4]. If under a majority of cases the observer cannot determine the machine, the Turing Test has been passed. This can be generally applied to the idea of virtual reality, where the machine is our pseudo-reality and the person is actual reality. For example, if one can go to sleep, be woken up in a panorama and mistaken it for the real thing, then the panorama passed the Turing Test. In a similar way, if a person can wake up in a virtual world thinking it's a real dream or that they are awake, then the virtual reality has passed the Turing Test. I believe the classification of simulation encompasses not only imitations but recreations, ones that can lend itself to the viewer as almost as much as reality itself, if not just as much.

This idea of total immersion will therefore be a tale that parallels technological progress. While movies and television sets displayed new shows and creations of cinema, these instances instantiate new universes rather than realities, providing an alternate look instead of attempting to simulate. The potential counter-argument to this may be the attempt by movies to incorporate three-dimensional (3-D) screening effects, which may not be too far from the idea of immersion that VR attempts to create. Yet, why has progress in three-dimensional technology stagnated since 2010 while virtual reality has continuously, if not exponentially, innovated?

To answer this question, we must look past the scope of the 1700s panoramas and early 20th century film and television to the 1960s. From A Furness's flight simulator for the US Air Force to the "Ultimate Display" paper written by Ivan Sutherland as well as his head-tracking system 'Sword of Damocles', this decade was characterized by technological innovation in new forays funded by the

[4] Stanford Encyclopedia of Philosophy, "The Turing Test"

military (most likely by incentives for Cold War military technology)[5]. It would eventually go on to spread as an idea of popular culture through Star Trek's *Holodeck* and many video games that attempted to foray into the field (i.e. Nintendo's Virtual Boy, Virtuality's 1000 Series), though most would commercially fail due to limited accessibility, technological limitations and inconvenience. Innovation in VR stymied due to the video game crash of 1983, exemplified by the Atari video game burial legend and caused many investors to pull out. Why is it that progress in virtual reality prospects parallel those of video games and fall prey to issues like funding?

As Kirby explains, "The presentation of science within the cinematic framework can convince audiences of the validity of ideas… create public excitement… provides an open, 'free' space to put forward speculative conceptualizations… and allow scientists and film-makers to visualize specific methods and technologies within the social realm of the fictional world.[6]" It is being increasingly seen that the progress of VR seems to link to the ebb and flow of culture and politics, telling of their influence in the domain of technological innovation and acceptance. In the 1960s, catalysts existed for allowing such innovation to flourish yet the 1980s saw barrage curbing it from spilling over as the markets took a hit and technology innovation in general was stagnating. At this point, technology focused more on efficiency (making products that were bigger and prettier, but not necessarily ground-breaking) rather than trying to revolutionize technology in paradigm shifts. Virtual reality was giving the every-day working class citizen innocuous doses of its existence through movies that toyed with the idea and exposure through others with various projects that attempted to replace other high expenditures, especially through military training exercises. Yet once these stimulators vacated, the only thing left was for the technology that drove VR to improve rather than VR itself. This is why the period from the late 1980s to the early 2000s witness little change in the concept of VR until the next generation of gaming consoles peaked in the late 2000s and Avatar released in 2009 to critical acclaim for its 3D special effects

[5] Ian Evenden, "The History of Virtual Reality," Virtual Reality The Complete Guide, 2016, 9-13.
[6] David Kirby, "The Future is Now: Diegetic Prototypes," Social Studies of Science, Vol. 40, No. 1 (February 2010), 41-70.

and technological breakthrough in special effects, becoming the highest grossing movie of all time. This intense success seemed to provide the VR community with enough reason to reboot its push. While three dimensional effects may exist as additional layers on top of an already filmed movie to provide an extra degree of realism, it is something that could be considered visual experience additives, whether it be a VR experience or a movie or even a music video. Therefore, the progress and technological innovation of 3D is independent to that of VR yet can have an influence in its popularity, modeling the idea of complementary goods in macroeconomics. With that in mind, the success of James Cameron's film caused VR to take a leap forward to where we stand now: Oculus.

The Oculus Rift prototype released in 2010 primarily to the gaming community and developers, to increasing popularity. Whereas previous VR products had many hurdles to overcome in pricing and difficulty in usage, this generation of VR headset technology was much more affordable and started becoming more ubiquitous. As one VR expert put it, "Today it's lighter and cheaper and more accessible for customers and users with less expertise in programming and coding… to develop VR content. It's only now that technology has become cheap and accessible enough that virtual reality has another chance to shine.[5]" Released to the public in 2016, it's been just a short few years since its inception yet has suddenly become a force to reckon with, where "combined revenue for head-mounted displays (HMDs), VR accessories, and VR content will increase from $453.6 million in 2015 to $35.0 billion worldwide in 2021.[7]" Currently, the Oculus Rift faces competition from the cheaper Google Cardboard and gaming console versions of this (PlayStation VR), which is but a sign of the growing market for VR. And the competition, instead of being a detractor, is only a persuading reason to stay on course, as the onset of the beginning of any market is usually the most rewarding. Facebook, who acquired the Oculus VR, is at the forefront of what potential things can be done with VR, planning to release a $199 Oculus Go by 2019, miles cheaper than the $1000s it used to be only a decade or two prior to this. Clearly, our current time is not only a period for innovation in making this experience more accessible to the general public but doing

[7] Tractica, "Virtual Reality for Consumer Markets"

it quick. Ultimately, the best way to phrase the future of VR is this: "The ultimate goal for VR gaming… is to get to a point where we're talking about experiences instead of the technology that enables them.[5]"

Caillois defined play to be "an activity which is essentially:

1. Free: in which playing is not obligatory… 2. Separate: circumscribed within limits of space and time… 3. Uncertain: the course of which cannot be determined… 4. Unproductive: creating neither goods, nor wealth… 5. Governed by rules: under conventions that suspend ordinary laws… and 6. Make-believe: accompanied by a special awareness of a second reality or of a free unreality, as against real life.[2]" Of the rules stated, the one that VR seems to toy the hardest with is number 6.

More and more, virtual reality is becoming something commonplace and well-known to the general populace by virtue of exposure. Yet that spread also comes with a complement of advances that hope to turn the viewer away from the medium of the experience towards the experience itself, the way we don't discuss the material of paper that a book uses but rather the story it tells. While the second reality is something we are aware of when we put on the Oculus Rift, whether the weight of the headset or the primitive graphics or limitations in viewpoint, we have made progression towards more complete experiences that incorporate more elements of realism whether it be full range of motion or larger attention to detail when zoomed in on. While we may not yet have reached the technical achievement of Star Trek's *Holodeck*, the general progress that we are on may mean we aren't awfully far from it.

Returning to the question of 3D, however, even if visual additives aren't on par to the revisualization of a whole experience, why isn't 3D advancing if technological improvements tend to occur on an exponential scale? It may very well be that there exists a ceiling on what more can be accomplished with it at this point. Virtual reality, on the other hand, has such a high ceiling that there are no limits to the experimentation for what we can do to VR as well as what we can do with VR. From military training exercises to surgical practice, gaming experiences to therapy treatments, ways to broadcast people to rooms or create new locations and worlds to imagine, VR has only scratched the surface of each of these domains for what is possible. Whether the ebb and flow tide against the progress of VR at some point in the future, it will be retracted even sooner.

So virtual reality… from what strain does it come? It is a medium for all entertainment, immersion, and didactic purposes. It is both a future technology and a technology of the past taking a different form. Instances of it may be transient "Google Glass" fads or a more sustained movement. Though it has been only roughly half a century since its first modern precursor, the last decade has shown how much change can be made with enough motivation and public response. Virtual reality, I believe, will one day become do advanced that the spectator won't have to lend himself to the illusion, but actually partake in the illusion without knowledge of it being just an illusion. Virtual reality will soon need the Turing Test as people realize the world they created and inhabit are actually indistinguishable from reality. Once that door is opened, it is one that can never be closed. And just as the future of artificial intelligence is one that holds as many fears as dangers as potential benefits, the same applies with virtual reality. Though we can safely say that the test doesn't need to be administered any time soon, it is something that we should keep in mind. Although the future of virtual reality is something that excites many people in its potential, it may be a double-edged sword that its wielders must take care to handle well. Virtual reality is far from a dead medium but will be subjected to our imaginations in many ways that it may branch out, spawning technological offspring that become more successful than its parent, causing previous versions to become outdated. But in the end, virtual reality will always be the same: Callois's definition of simulation play, where the sixth rule becomes dangerously close to obscurity.

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