HOW REAL IS THE VIRTUAL?
AN ONTOLOGICAL INTROSPECTION INTO VIRTUAL REALITY

MASTERARBEIT

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Dedicated to

My beloved Pappa

Who left for his eternal reward
on 5th July 2017
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General Introduction

The world of ours is passing through a new epoch of revolution, which materializes itself through the so-called digital revolution. The digital revolution substitutes some of the established social structures. In order to suggest a concrete example in this regard, consider the currency note. It was the only medium to buy and sell things across the globe and now due to the emergence of online transactions, it is being replaced slowly by a currency-less economy. The replacement would be complete, if the popularity of the virtual money, namely the so-called Bit Coins, were to gain prominence across the globe. Given that this turns out to be true, the probability of a time in the near future cannot be ruled out, when the virtual (currency-less economy) overtakes and declares the real (the present economy of currency notes) outdated. This example already situates the topic of my work, namely, “How Real is the Virtual? An Ontological Introspection into Virtual Reality” in context. For, in the context of a digital revolution one should not let oneself to be swept away on account of the way how digital reality manifests itself but rather an introspection into what digital reality is beneath its manifesting face, as it helps one to engage in an appropriate and reasonable estimation of digital reality. Therefore, the topic of this work is an invitation not to be easily carried away but to judge for oneself the justifiability of the virtual reality from the perspective of an ontological introspection. Hence the general motive running through the dynamics of the three chapters of this work is to help the reader see for himself/herself as to what extent the existential claim of virtual reality is justifiable.

The first chapter under the heading “Probing Virtual Reality” incorporates two different concerns. On the one hand it depicts a brief sketch of the historical background, discussing the various milestones leading to the development of the idea of virtual reality. In developing this theme of the historical background of virtual reality, its evolution is highlighted as a metaphysical revolution, pointing to the time to time evolution of meaning that seemed to be forming part of its historical dynamics. The second concern of the first chapter is to define what virtual reality is from the perspective of a few leading thinkers. Though there are innumerable definitions regarding virtual reality, special efforts are made to keep the discussion precise by analyzing the selected perspectives of the respective thinkers in the light of the key notions of virtual reality as proposed by David Chalmers.

The second chapter, namely, “The Reality of the Virtual; Pros and Cons”, is an elaborative
reply to a disputed question. The title of this chapter itself suggests the dynamics of this disputed question, as it is portrayed in the backdrop of arguments in support of either conferring or denying an existential status for virtual reality. The vast majority of literatures available on virtual reality argue against the existential claim of virtual reality by denying reality status to it. Whereas the claims arguing in support of granting existential status to virtual reality cannot be ignored simply because they do not have a majority backup. Therefore, the pros and cons of both these claims are scrutinized at length to see for oneself in what way these claims could be justified. In developing the dynamics of this chapter the perspective of David Chalmers is resorted and hence the perspective of Chalmers becomes decisive to understand in what sense the existential claims of virtual reality is justifiable and to see how virtual reality is different from the non-virtual reality.

The third and the final chapter, namely, “Some Ontological Lessons from Virtual Reality” establishes a connection with its preceding chapters. It could be understood as an extension of the second chapter in the sense that it devotes special care to elaborate the notions of second chapter which needed a detailed treatise. Though the major chunk of the third chapter complements and elaborates the issues of second chapter, its connection to the first chapter is justified in the fact that it analyzes whether the findings of the third chapter are in tune with the key notions discussed in the first chapter. However, its relation to the first and second chapters in no way sidelines its very own contribution, as it provides a theoretical basis justifying the existential claim of virtual reality.

In short, this work shows that getting to know virtual reality from an ontological point of view along with Chalmers throws open an alternative vantage point of appreciating virtual reality, which neither overemphasizes nor undermines the role virtual reality plays in assisting human imagination to flourish beyond limits.
CHAPTER ONE
PROBING VIRTUAL REALITY

Introduction

It would be a herculean task to facilitate an all-encompassing and completely exhaustive definition of virtual reality. However, in this introductory section of probing into what virtual reality is, my thrust would be to depict a more or less clear picture of virtual reality. Therefore first of all, this section, where getting to know virtual reality is the prime concern, explicates virtual reality as a metaphysical revolution, which of course, serves as a primary background enabling to delve in to the definitions of virtual reality proper.

1.1 Virtual Reality as a Metaphysical Revolution

Virtual reality, as we understand it now in our present world context, cannot be interpreted as an outcome of a sudden outburst. For, considering the process how an idea evolves right from its conception leading to its fruition, one has to presuppose that years or even centuries of efforts must have been gone into its making. So, considering the 'Metaphysical revolution of virtual reality', I try to identify those glimpses of historical moments assumed to have played a decisive role in shaping virtual reality. To set the survey of 'Metaphysical revolution of virtual reality' in motion, one has to first dig deep into the genesis of the words involved, therefore an etymology of the term 'virtual reality' could be a possible starting point. The etymological overview helps us to understand not only the nuances implied in the 'Metaphysical revolution of virtual reality', but also in turn it foreshadows the actual study of defining virtual reality.

1.1.1 Etymology of Virtual Reality

The usage of the term 'virtual' in English is thought to have a long history of evolution. Its origin is associated with the term 'virtue'. The term 'virtue' itself has been borrowed and

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1 Here I wish to acknowledge that a complete exhaustive survey of the historical dynamics of virtual reality is not what is meant. Instead I would be very selective in describing the historical dynamics, so as to drive home the invisible line of connections extending across generations. I suppose a detailed study of all the events and the persons contributed to virtual reality, does not come under the purview of providing preliminary background knowledge. For, the way Jaron Lanier explains virtual reality as a gigantic uncharted territory, there could always be a feeling that some or other important events or persons are left out and not well represented. Lanier writes, “virtual reality feels a little like a new gigantic uncharted territory, summoning ones inner conquistador. Everyone who becomes involved wants to coin their own new term or stake out priority to bear their memory”. See Jaron Lanier, *Dawn of the New Everything: A Journey Through Virtual Reality*, (The Bodley Head: London, 2017) p. 42.
incorporated into English from a Latin term ‘virtus’ already back in the 13th Century.\textsuperscript{2} The Latin root for ‘virtus’ is ‘vir’ which means man and ‘tus’ is a suffix referred to mean manliness.\textsuperscript{3} It is interesting to see how the term ‘virtus’ is encompassing a different variety of meanings.\textsuperscript{4}

There is another more ancient etymological survey of the term ‘vir’ about which David Porush makes a mention. According to him the word ‘vir’ could be traced back to Indo-sanskrit root ‘virah’ which means man or hero whose root meaning is ‘rod’ or ‘Phallu’. The Phallu worship, still prevalent in the indian sub-continent, is a cultic expression of paying homage to the power behind fertility. Thus ‘vir’ is considered as the source of fluid essence in man, which in turn seems to have been through a process of abstraction later evolved to mean manliness. He also gives a short description of how virtue came to be associated with chastity in women. Eventually, it also came to be meant as the divine influence.\textsuperscript{5} Though this word ‘virtus’ initially designated the meanings “of “strength” and “valor”, then generalized to “excellence,” “worth,” “quality,” or other special, inherent properties that gave something its “potency” or “efficacy.” French – and later, English – copied the vast and varied virtues of this word virtue’.\textsuperscript{6} All these meanings, if summarized, state that virtue is a quality, power or a potency. Therefore one could drive home that the infrastructure of virtue is not something material and hence the possibilities it offers is immense. So, having seen the robust dynamism of the word ‘virtue’, we see also the etymology of the word ‘virtual’.

1.1.2 The Evolution of meanings of the Term 'Virtual'

The term ‘virtual’ is derived from the Latin term ‘virtualis, ‘which is an adjective of ‘virtus’.\textsuperscript{7} The Oxford English Dictionary credits John Trevisa of having translated the Latin term ‘virtualis' to ‘virtual' as he undertook a translation of ‘De Proprietatibus Rerum' authored by a medieval Franciscan scholar Bartholomeus Anglicus.\textsuperscript{8} Thus the french word 'vertual' is loaned
and adapted to English as 'virtual'. And thus the Oxford English Dictionary defines virtual as “Inherently powerful or effective owing to particular natural qualities”. Another source to which the evolution of the term 'virtual' could be traced, is associated with the contribution of Thomas Aquinas. Aquinas refers to the adverb 'virtualiter' from the noun 'virtute' which means “by power” in order to elaborate how substantial forms are present in mixed substance. Having seen the etymological evolution of the terms 'virtue' and 'virtual' one may ask, on what basis can we assume that the term 'virtual' has its roots in the term 'virtue'? From what we have discussed so far, there are two ways of establishing the connection. The first way seems to be ancient, which goes to the details of the meaning of the root word. The following table summarizes its evolution.

| Virtual → from 'Virtualis' → adj of 'Virtus' → 'Virtus' a combination of 'Vir' → meaning 'man' and 'tus' → meaning 'hood' and 'manliness refers to a 'power' or 'quality'. |

Thus the meaning that we have discussed in the term 'vir', though it immediately refers to 'man', indirectly it hints on an inherent power. The second explanation goes in line with that of Thomas Aquinas, which could be summarized in the following table.

| Virtual → from 'Virtualiter' → adverb of 'virtute' → which means 'by power'. |

It is interesting to note that both these explanations enshrine a similar nuance of meaning, namely 'power' and hence it legitimizes one to assume that the term 'virtual' does have its roots in the term 'virtue'. David Porush puts it beautifully, as he describes a 12th century rending of the term 'virtual' by the Oxford English Dictionary: “Virtual means “to be possessed of the power to influence, to have the potential to affect.”

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1.1.3 Metaphysical Twist Involved in the Etymology of the Term

Going through the etymological evolution of the word 'virtue', we have seen, how the generalization of the root word 'vir' got glorified, as it traversed the different stages of meanings. The following table shows the metaphysical twist involved in the evolution of meanings.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Meaning 1</th>
<th>Meaning 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Rod or Phallus</td>
<td>Bodily Organ</td>
</tr>
<tr>
<td>2nd</td>
<td>Source of liquid essence</td>
<td>Polished version of the former</td>
</tr>
<tr>
<td>3rd</td>
<td>Manliness/heroism</td>
<td>Masculine Quality</td>
</tr>
<tr>
<td>4th</td>
<td>Moral quality</td>
<td>Moral Quality applicable to all</td>
</tr>
<tr>
<td>5th</td>
<td>Divine Influence</td>
<td>Virtue as 'Power' received from a divine agent</td>
</tr>
</tbody>
</table>

The table above clearly distinguishes at least two clearly evident shifts in the meaning, whereas the passover from one stage to another shows only a subtle nuance of meaning involved in the evolution. To flesh it out more concretely, from a very mundane meaning of stick or Phallus the word 'vir' transfigures itself as the source of essence and then it is absolutized as manliness. Later, in the course of time, it is idealized as a moral quality and finally virtue is interpreted as a Divine influence, as a sheer gift from the divine agent. The trajectory of the meanings evolved so far, testifies a metaphysical transformation as the meaning of virtue progresses from one stage to another. This sort of metaphysical twist noticeable at each stage of evolution of the word 'virtue', according to David Porush entails a

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13 Regarding the first two stages mentioned in the table, given the antiquity, we do not have supporting evidences but only hypotheses. The term 'virga' in latin means 'rod', therefore the term 'vir' is assumed to be highlighting masculinity on account of the term virga. Secondly, fertility cult is still rampant in the Indian sub-continent and one of the sects worshipping 'Phallu', call themselves as 'virah saivism' and surprisingly the meaning of the term 'virah' designates 'heroic' or 'masculine power', which in fact coincides exactly with the meaning of the latin term 'vir'.

14 Ibid.
paradox, if seen in the light of the post-modern idea of deconstruction proposed by Derrida. In the discussion of the etymology of the term 'virtue' we have already seen how this paradox is unfolding. The paradox of meaning may seem to be very subtle where two different meanings fuse together to serve as a connecting link in the chain of meanings, but the paradox becomes all the more evident, as the initial meaning is compared with the final meaning. For example, in our context discussed so far, consider the comparison of the initial meaning of 'vir' as rod, stick or phallus with the final meaning of Divine influence. The paradox between these two meanings are crystal clear as the initial meaning refers to a concrete reality of a bodily organ, whereas the final meaning brings into picture the interference of a supernatural agent. Having seen this metaphysical twist involved in the etymological survey of the term 'virtue', we now undertake a historical survey so as to pin point the metaphysical revolution that forms part of the historical dynamics.

1.1.4 Art Forms Replicating Virtual Reality

The way we understand virtual reality today, we may be inclined to opine that the virtual reality is essentially a technology, but a historical exploration can reveal its relation to art. The relation of virtual reality to art could be figured out, as similar tendencies are noticed in the forms of art. For, the capacity of the art forms were admired from time immemorial to take people temporarily away from the real life situations and swing them to emotional outbursts as if in real life situations. Perhaps this must be the reason why some thinkers do not hesitate to brand virtual reality also as a form of Art. I quote two of such thinkers who highlight virtual reality as a form of Art. First of all, in the words of Jaron Lanier virtual reality is “A twenty – first – century art form that will weave together the three twentieth – century arts: cinema, jazz and programming”. Another thinker Michel Heim, however seems to explore the further details of this point so much so to call it as an art form of the highest order:

Perhaps the essence of VR ultimately lies not in technology but in art, perhaps art of the highest order. Rather than control or escape or entertain or communicate, the ultimate promise of VR may be to transform, to redeem our awareness of reality—something that the highest art has attempted to do and something hinted at in the very label virtual reality, a label that has stuck, despite all objections, and that sums up a century of technological innovation.

Here Michael Heim, tracing the roots of virtual reality, identifies that in Art already a rudimentary form of virtual reality is unveiled. For, Michael Heim calls virtual reality as an

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15 Ibid.
art of the highest order. In order to explicate this point he is referring to Richard Wagner.\(^ {18}\) Richard Wagner in his final work 'Parsifal' wanted to create another reality. Through this work of Art Wagner “meant a seamless union of vision, sound, movement, and drama that would sweep the viewer to another world, not to escape but to be changed. Nor could the viewer be a mere spectator”.\(^ {19}\) Michael Heim is referring to Wagner's work of art as trumpeting the emergence of virtual reality, because 'Parsifal' unlike the traditional work of arts, makes sure the active participation of the spectator which not only involves the sense of vision and sound but also that of touch.\(^ {20}\) In this sense, virtual reality for Michael Heim, is a higher order art form as it engages all most all the senses of perception as if in the real world. Though Wagner may not have directly influenced virtual reality, what is important is the fact that he revolutionizes art to take it to another realm and thus his contribution could be considered as that epoch in history, in which the idea of virtual reality is somehow coming alive, which falls short only of a technological backing. So far we have identified virtual reality as a form of art in essence and how it got transformed over the years and now we will see a dispute over the coinage of the term virtual reality.

### 1.1.5 Who Coined the Term 'Virtual Reality'?

If one were to google this question as to who coined the term virtual reality, Jaron Lanier is credited to be the one who coined this term.\(^ {21}\) Jaron Lanier himself admits that there exists a controversy on this issue and he mentions the names of two persons, namely that of Antonin Artaud\(^ {22}\) and Susanne Langer\(^ {23}\), who are thought to have preceded him in coining the term virtual reality. Concerning Artaud, Lanier writes:

> Before World War II, the radical dramatist Antonin Artaud used the French phrase réalité virtuelle in his discussions of a “theater of cruelty.” This wasn't a nasty notion; what Artaud meant was a nonverbal form of theater that was intense enough to rouse depths of human experience and understanding beyond the reach of conventional language.\(^ {24}\)

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\(^{20}\) Ibid.


\(^{22}\) Antonin Artaud (1896-1948) was a french dramatist, poet, actor and theatre director. Through his works he tried to form a language which is superior to words with the help of sounds, unusual sceneries and lighting. See Wikipedia, [https://en.wikipedia.org/wiki/Antonin_Artaud](https://en.wikipedia.org/wiki/Antonin_Artaud). Accessed on 19 October 2018.

\(^{23}\) Susanne Katherina Langer (1895-1985) was an American philosopher, writer and educator. She was well known for her writings on the influences of art on mind. See Wikipedia [https://en.wikipedia.org/wiki/Susanne_Langer](https://en.wikipedia.org/wiki/Susanne_Langer). Accessed on 19 October 2018.

It is in 1938 that Artaud uses this term *réalité virtuelle* which means a reality that is purely illusory and fictitious.\textsuperscript{25} Given the period of time in history at which Artaud makes the mention of *réalité virtuelle*, it could be argued clearly that at that time Artaud himself would not have visualized what would become of virtual-reality later, because the way virtual reality is understood today, it must have been completely foreign to Artaud and hence his ownership concerning the coinage of the term 'virtual reality' could only be partially true. However, his indirect contributions towards the evolution of virtual-reality today, cannot be ignored. Lanier, hinting on his indirect contributions, happily acknowledges the fact of being connected across generations, though he did not realize such a connection\textsuperscript{26} as he began using the phrase virtual reality for the first time in 1970s.\textsuperscript{27}

The other person Lanier makes a mention regarding the coining of the term virtual reality is Susanne Langer. Langer uses the term 'virtual' in her work 'Feeling and Form; A theory of Art published in 1953' to speak about several art forms of architecture, sculpture and dance.\textsuperscript{28} Jaron Lanier describes how this term 'virtual' is taken over by Ivan Sutherland to refer to the new experience of vision made available through a head mounted device he invented, through which one could see a world sustained by computer.\textsuperscript{29} Getting inspired from Susanne Langer, Sutherland described this new experience as 'virtual world'. Jaron takes over this idea of Sutherland and began to use it with a slight modification, namely, 'virtual reality' to denote an extension of virtual worlds, transforming the head set experience to include one's own body.\textsuperscript{30} What is important here is to note that there is a shift taking place. The device made by Sutherland does give a visual experience, may be like the other art forms, but it does not ensure free movement of the body, whereas the virtual reality as foreseen by Lanier ensures the free movement of the body in a virtual environment. While going through a short historical background of how virtual reality evolved, we were taking stock of the historical dynamics of the metaphysical evolution of virtual reality from the point of view of its etymology, from the point of view of its evolution through art and from the point of view of

\textsuperscript{27} Ibid. p. 238
\textsuperscript{29} Jaron Lanier, *Dawn of the New Everything: A Journey Through Virtual Reality*. p. 42. This device made by Sutherland in 1965 is famously known as 'the Sword of Damocles'.
its evolution involved in the coinage of ‘virtual reality’. These background informations set the stage to delve into a few definitions concerning virtual reality.

1.2. Towards a Definition of Virtual Reality
There are many factors contributing to the synchronization of a definition. The sub-title, “Towards a Definition of Virtual Reality” already gives allusion to a process implied in arriving at a definition. In the previous section, where we have discussed the historical dynamics of the evolution of the term virtual reality, we have tried to unearth, how this underlying process is slowly unfolding. In doing so we were preparing the way for getting introduced to the definitions of virtual reality. In this section, however, no extensive discussions on the definitions of virtual reality will be entertained but rather I would restrict discussing the views of three persons.31

1.2.1 Virtual Reality in the View of Jaron Lanier
Lanier32 devotes a whole book in explaining what virtual reality is. His definitions on virtual reality could be found scattered all throughout his book titled, *Dawn of the New Everything: A Journey Through Virtual Reality*. Here, what I attempt is, to provide a classification of the way Lanier defines virtual reality thematically.

**Comparison with Dream**
In his assessment of what virtual reality is, Lanier is often found comparing it with dream, especially with lucid dreaming. In lucid dreaming one becomes aware within the dream itself that he is dreaming.33 If we were to ask what makes Lanier compare virtual reality with lucid dreaming, the answer is clear that it is the concomitant awareness within the dream that fascinated Lanier to compare virtual reality with lucid dreaming.34

Like lucid dreaming, except that (a) more than one person can take on roles in the same experience, (b) the quality is not as good, and (c) you have to work to program VR if you want to be in control, which you should want. Dreams, meanwhile, are often best if you don't seek to control them. Even Stephen LaBerge seeks to be nonlucid in most of his dreams, since it is in

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31 What has been narrated under footnote 1 is applicable here too. For, there are plenty of definitions explaining virtual reality but I would like to restrict this discussion regarding the definitions on virtual reality to three authors, namely Jaron Lanier, Michael Heim and David Charlmers.
32 Jaron Lanier is a philosopher, a computer scientist and an artist. He is one of the pioneers contributed to the digital revolution called virtual reality.
34 The virtual reality devices that Lanier and his colleagues developed could not however detect faint movements as it is tested on the lucid dreamers. He does not rule out the possibility of detecting faint movements through virtual reality devices. See Jaron Lanier, *Dawn of the New Everything: A Journey Through Virtual Reality*. p. 148.
untethered dreams that the brain surprises and renews itself.\textsuperscript{35}

However, as we read through this quotation it is evident that the comparison fails at least in some instances, as the quality of virtual reality does not match up with that of the dreams\textsuperscript{36} and thus making it fall short as an ultimate comparison. At the same time the possibility of this shortcoming to serve as an incentive to match up with dream cannot as well be ignored. For, a constant effort to upgrade virtual reality to the quality of dream will some day be materialized. If that happens hopefully we could unfold the mysteries of the world of dreams. Thus virtual reality, as Lanier opines, could be a “hope for a medium that could convey dreaming”.\textsuperscript{37} Another advantage of virtual reality in the context of dream would be to extend the dream experience to more than one person at a time, making it a communicative and collaborative endeavor.\textsuperscript{38} Finally towards the end of his comparison with lucid dreams Lanier mentions the possibility of untethered dreams to renewing and surprising the brain. Replicating virtual reality in the line of dreams will only increase its popularity as it could serve as a medium to nourish and refresh the brain.

**Virtual Reality as a Form of Art**

While discussing the historical dynamics of virtual reality, we have mentioned its relation to the forms of arts. Lanier, in his exposition of virtual reality as an art form, seems to include virtual reality devices, though not explicitly, as a necessary component, without which the virtual reality experience would be incomplete. For example, in the following definition on virtual reality Lanier reveals the dynamics of both. “Entertainment products that create illusions of another place, another body, or another logic for how the world works.”\textsuperscript{39} In this definition the words 'entertainment' and 'illusion' are indirectly referring to some of the characteristics of forms of art. Perhaps what he means is that the entertainment device revolutionizes or substitutes the public forum of a stage to a private forum of a device, which then in turn, is capable of entertaining the user. Giving a detailed explanation on virtual reality devices Lanier would say that these devices are appealing to the human sensory and motor organs; “an ever growing set of gadgets that work together and match up with human sensory or motor organs. Goggles, gloves, floors that scroll, so you can feel like you are walking far in

\begin{itemize}
\item \textsuperscript{35} Ibid. p. 149.
\item \textsuperscript{36} Ibid. p. 151.
\item \textsuperscript{37} Ibid. p. 45.
\item \textsuperscript{38} Ibid. p. 296.
\item \textsuperscript{39} Ibid. p. 133.
\end{itemize}
the virtual world even though you remain in the same physical spot.” What is interesting to note here is that, these devices are designed to win the attention of human sensory and motor organs so much so that they induce people involved to a virtual world, temporarily substituting the interaction with the present physical environment and enabling interaction with the virtual world. If it were to be asked as to what ensures one to feel at ease with the seemingly real world, it could be answered that the gadgets attached to the body make sure that the necessary measures are taken in detaching the person from the present physical world and at the same time immersing him/her to the interactive virtual world. This process of detaching and immersing is also part of forms of art. Take for example a cinema hall, there are two factors indicative of immersion and detachment. As the movie is played on the screen, the fact that the lights are switched off and that the cinema hall is well protected from the noises of the outer world, are the factors which automatically immerse one to the sequences of the movie. Thus by nature, virtual reality gadgets assume the role of a theatre or cinema hall, to make the persons using these gadgets, feel plugged in to another world. Thus I consider that, Lanier is justified in emphasizing virtual reality as “a new art form that must escape the clutches of gaming, cinema, traditional software, new Economy power structures, and maybe even the ideas of its pioneers.”

**Simulated Reality**

Virtual reality is an imitation of the physical world around us. In the previous section we have already seen that it is the virtual reality devices that connect a person to a simulated world. In the same way our external organs of perception connect one to the physical world outside, the virtual reality devices take charge of the organs of perception and introduce one to a simulated world; therefore Lanier calls virtual reality as “a media technology that prioritizes stimulating the cognitive dynamics by which the world is perceived over accurately simulating an alternate environment”. To the question as to what Lanier means by 'stimulating cognition', the meaning could be assumed from some other definitions he discusses about virtual reality. For, he writes, “Reality, from a cognitive point of view, is the brain's expectation of the next moment. In virtual reality, the brain has been persuaded to expect virtual stuff instead of real stuff for a while.” In another definition he describes virtual reality as a “technology that

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40 Ibid. p. 48.
41 Ibid. p. 47.
42 Ibid. p. 237.
43 Ibid. p. 171.
44 Ibid. p. 54.
rallies the brain to fill in the blanks and cover over the mistakes of a simulator, in order to make a simulated reality seem better than it ought to.” I have placed these two quotations together to show how virtual reality devices succeed in persuading the brain through the external organs of perception. So in one sense the virtual reality devices trick the brain to believe in the reality of the world introduced by the devices, which when reflected once the virtual reality devices are taken off, may be revealed as an illusion. In another sense as the simulated reality fosters appreciation of the depth of physical reality, its usefulness cries out, if at all its entertaining aspect is bypassed, not to rule it out as mere illusion as it helps us find the depth in physical reality. Thanks to the special purpose-simulated reality, like that of flight simulator and surgical simulator, because of which a great deal of time and resources are saved. For example, in a flight simulator one learns the art of flying an aircraft without actually flying it in the sky. The flight simulator, being animated by computer, makes a person feel as if he/she is flying an aircraft and thereby the person feels accustomed to the art of flying, thus because of the assistance of this virtual reality simulator, the amount of fuel and time that is saved is enormous. So the concrete practical application of virtual reality cancels out, to a great extent, the assumption that virtual reality is illusive, as it is capable of exerting changes in the physical realm. Having seen a short summary of the way Lanier defining virtual reality, we will now see how Michael Heim defines virtual reality.

1.2.2 Virtual Reality in the View of Michael Heim
Michael Heim in his book, The Metaphysics of Virtual Reality, attempts to depict what virtual reality is, by way of identifying various divergent concepts part of the virtual reality research. We will see each of those concepts so as to understand virtual reality better.

The Concept of Simulation
According to Heim computer graphics plays a significant role in delivering virtual reality. Due to the high degree of precision, the images pictured through computer graphics, seem to be three dimensional so much so that the users can even navigate through the graphic images. The genesis of such a revolution in computer graphics began with the military simulation and then extended and applied to medicine, entertainment, education and training. The three dimensional realism in imaging along with the three dimensional audio perfectly complement

46 Ibid. p. 50.
47 Ibid. p. 137.
each other that the simulated reality appears virtually real. This sort of realism is achieved by controlling every point of the acoustic and visual space in the digital world.48

The Concept of Interaction

Heim picks up examples from electronic representation to explain two important points; first of all to explain that the electronic representations exist virtually and secondly its existence is thanks to the interaction between the user and the reciprocal computer applications. In order to substantiate the first point he brings in the example that the computer screen is not a real desk but we treat it as though it were a desk, for example, consider one of the applications on the computer screen, namely, trash can, which could be used for cleaning up the desktop. The files on the screen which exist as bits and bytes are not real paper files but we dump them to the trash can as though it were paper files. These examples underline the first point that the concepts of desktop, file and trash can, do exist virtually. In order to highlight the second point, Heim distinguishes television programmes from that of the applications in computer. The one who watches a news or a cartoon in the television can only be a passive spectator but whereas the computer applications are concerned, the user can interact with the applications.49 Take for example, the application of trash can, in the same way one would interact with a real dustbin, the user can interact with the trashcan on computer. “The trash can is real in the context of our absorption in the work, yet outside the computer work space we would not speak of the trash can except as a virtual trash can.”50 The issue here is not that the trash can blindfolds the eye to make an illusion real, but the trash can is real in the context of how we are absorbed in our work with the digital space. Therefore the reality of the trash can exists through our interaction, but it would be explained as 'virtual' outside the context of digital work space.

The Concept of Artificiality

The sense of meaning that Heim wants to communicate through this characteristic of virtual reality is that it is a human construct.51 The designing and execution of the virtual reality programmes are developed as a consequence of human effort and hence it does not occur as a result of a natural process. The fact that virtual reality is making itself foolproof through a constant process of trial and error basis, is indicative that it is artificial and purely human.

49 Ibid. p. 111.
50 Ibid. p. 111.
51 Ibid. p. 112.
The Concept of Immersion

Michael Heim speaks in the similar line that of Lanier that the accompaniment of virtual reality devices (head mounted devices, gloves, treadmills etc.) are to be taken for granted to establish sensory immersion into the virtual reality. The fact that these virtual reality devices introduce one with a feeling submerged into a virtual environment, is on the one hand, as explained by Heim, an illusion and on the other hand it is an augmented reality (mixture of real and illusive reality). The immersion is explained as illusion, because once the virtual reality devices are taken off, one is back in the natural environment. The immersive tools through which simulation is made possible, are also cases of augmented reality, as it can exert concrete effects on nature. The concrete example he refers to highlight virtual reality as an augmented reality, is the case of pilots flying supersonic flights. Given the speed of the flight, the less a pilot sees the world outside, the more increased is his control of the flight. With this aim in view, the virtual cockpit filters the real world and makes it readable for the pilot. Here the data that is available to the pilot in the virtual cockpit is that of an augmented reality, which enables him to have better control of the flight.52

The Concept of Telepresence

The fact that the scientists are able to move robots in a distant planet like mars and command them to pick up things and collect samples is a case in which telepresence comes alive. The scientist being here on earth, is virtually present there in a distant planet and it is through the remote control that the robot is taken to task. In the words of Heim, “Robotic telepresence brings real-time human effectiveness to a real-world location without there being a human in the flesh at that location”.53 The same technology is applied to medical science also. The surgeon can with the help of robotic telepresence place himself within the body of the patient without major incisions. As the telepresence surgery does not inflict much harm to the body, the healing is ten times faster than the traditional practice of surgery. Perhaps to the question whether telepresence is virtual reality at all, Heim would answer that virtual reality shades into telepresence. As to how virtual reality shades into telepresence could be fleshed out from the contexts of above mentioned examples of scientists surveying another planet and surgeon placing himself with in the body of the patient. In both the cases the “impossibility of

52 Ibid. p. 113.
53 Ibid. p. 114.
physically being there” is overcome with the help of telepresence, making it possible for the
scientist and the surgeon “to be there virtually” through the medium of telepresence. In this
sense telepresence itself by nature is indicative of virtual presence of the operator in another
place, though remotely, as if the operator is physically present.54

The Concept of Full Body Immersion

While describing the characteristic of 'full body immersion', Heim refers to a radically
different approach to virtual reality introduced by Myron Krueger, at a time virtual reality
devices were gaining prominence.55 The approach of Krueger is radically different from his
contemporaries that he considered the use of virtual reality headset or any other devices
attached to the body are confining the body of its free movement. For, it was clear for Krueger
that people would eventually reject any physically uncomfortable technology, as the head
mounted display popularized by Sutherland arrested the free movement of the body. Thus he
came across the idea of designing a virtual reality environment which replaces the virtual
reality devices attached to the body. Krueger believed that this radically different approach is
possible as he banked on the ability of the computer to respond in real time, in which “the
computer perceives a participant's actions and responds in real-time with visual and auditory
displays”.56 Thus the virtual reality environment of Krueger is a computer controlled
responsive environment, in which the body could easily interact with the computer, being
freed of the uncomfortable virtual reality devices attached to the body.57

The Concept of Networked Communication

Though initially, virtual reality devices were designed to suit to single individual use, later
banking on the ability of computers to make networked connections possible, the pioneers of
virtual reality like Jaron Lanier introduced devices connecting virtual reality worlds,58 which
is popularly known as RB2, namely, “Reality Built for Two”.59 Going beyond this

55 Ibid. p. 115.
56 Myron W. Krueger, “‘VIDEOPLACE”: A Report from the ARTIFICIAL REALITY Laboratory”, Leonardo, Vol. 18,
https://www.jstor.org/stable/pdf/1578043.pdf?refreqid=excelsior%3A3f8d32932690c787566e88156ceeced0
57 Myron W. Krueger, “Environmental Technology: Making the Real World Virtual”. Accessed on23 November 2018,
available at http://delivery.acm.org/10.1145/160000/159563/p36-
krueger.pdf?ip=138.232.236.11&id=159563&acc=ACTIVE%20SERVICE&key=9074CF143665B1C6%2E322AD1
19C014B8D2%2E4D4702B0C3E38B35%2E4D4702B0C3E38B35&__acm__=1542963048_8d29ddacbf104d66b
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breakthrough technology Lanier speaks about another new concept, which he calls as post-symbolic communication. Speaking of it Lanier recalls the evolution of virtual reality from spoken language and how it passes through written and printed language over to photography, cinema and computer and finally to the present stage of virtual reality.60 Through this concept he highlights a possible transition where language as symbols may no more be required for facilitating communication. Michael Heim makes this concept clear within the context of virtual reality. Virtual reality being a shared platform, the users could shape objects and activities in this world on their own, so much so that they can even introduce such a mixture of sight, sound and motion that could defy the traditional logic and language.61

As a concluding remark to the various divergent concepts in virtual reality as presented by Michael Heim, what is important is the fact that, as these concepts are not monopolized, virtual reality throws open a vast possibility, so that the ignited minds from every corner of the world could modify and revive it from time to time. Now we will see how David Chalmers visualize virtual reality.

1.2.3 Virtual Reality According to David Chalmers

With regard to the definition of virtual reality, Chalmers begins by saying that there is no universally accepted definition, but what is commonly agreed upon is that “virtual reality environment is an immersive, interactive, computer-generated environment”.62

1.2.3.1 The Three Key Notions of Virtual Reality

Chalmers elaborates immersion, interaction and computer-generation as the three key notions to make the definition of virtual reality clear. These notions, for Chalmers, could be made use to identify virtual reality. We will see each of these notions in detail.

Immersion

According to Chalmers an immersive environment, with the assistance of virtual reality devices, generates perceptual experience and the user has a sense of “being there”. This “being there” involves at least a visual experience, similar to what occurs in an ordinary three-

60 Ibid. p. 298.
dimensional environment of everyday life, it could also have elements appealing to auditory and other sense organs. What is also important for the “being there” in the virtual world is that the user is plugged in with the virtual reality devices.63

**Interaction**

Chalmers defines an interactive environment as follows; “An environment is interactive when actions by the user make a significant difference to what happens in the environment”.64 Perhaps a further elaboration of this point is possible from the context of what Chalmers calls as non-interactive virtual reality. What he proposes as an example of it is a computer generated movie presented on virtual reality headset.65 Though the user uses a virtual reality headset, there is hardly any interaction taking place. So in this example what is presented through the head set remains as it is, giving the user no room for making any significant difference to the movie played through the virtual reality headset, whereas in the interactive environment the user does effect a change. It would be interesting to note that Chalmers on the one hand highlights interaction as one of the characteristics of virtual reality, and on the other hand taking lessons from the example, if non-interactive virtual reality were to be counted one among the list of virtual reality, as in the case of computer generated movie presented on virtual reality head set, the question that could arise in this regard is that, how is it that a non-interactive environment be called virtual reality. Then it would turn out that Chalmers is accommodating a loose definition, namely, that even in the absence of interactive environment, because of the fact that the user finds himself/herself immersed in the virtual reality (that it fulfills one of the notions of virtual reality) the non-interactive environment is also included in the list of virtual reality. However, we will suspend this question for moment so as to deal with it in detail, while discussing the delimitation of virtual reality, whether Chalmers succumbs to such a loose definition.

**Computer Generation**

Chalmers defines this particular characteristic of virtual reality as: “An environment is computer-generated when it is grounded in a computational process such as a computer simulation, which generates the inputs that are processed by the user’s sensory organs”.66 It does not matter as to what computational source is used in connecting the headset, for it could
be a fixed computer or it could be a smartphone. At the same time Chalmers also refer to Non-computer generated virtual reality devices like that of “immersive and interactive camera-generated environment, such as the remote-controlled robotic VR sometimes used in medicine”. So what makes such devices still to be called a virtual reality despite the fact that they are non-computer generated, is the immersive and interactive environment made possible through them.

1.2.3.2 The Issue of Augmented Reality
Chalmers presents the augmented reality or the mixed reality as intermediary which is a combination of physical and virtual objects so as to generate experiences of a mixed environment. In his opinion though in a strict sense augmented realities are contrasted with virtual reality, in an extended sense they could also be considered as virtual reality. However, Chalmers seems to rule out this extended sense because of the fact that the natural physical environment could also become virtual reality, provided it is viewed within the purview of an extended sense, as one could identify the elements of immersion and interaction in the physical environment also.

1.2.3.3 Delimitation of Virtual Reality
As to the question whether Chalmers delimit virtual reality as he gets along defining it, one could seriously doubt whether he commits to such an attempt on a peripheral reading of his article, but on a deeper reading, it could be assumed from the way Chalmers develops his definitions on virtual reality, that he attempts to draw clear boundary to present the concept of virtual reality with clarity. However, first of all, it needs to be substantiated as to how one bypasses the strict sense and be mislead in appropriating that Chalmers hold on to a loose definition of virtual reality. In order to avoid such confusions one needs to distinguish the different grades of virtual reality that Chalmers refers to be part of the current usage. For, Chalmers states clearly that,

the term “virtual reality” is often used in looser ways than this—sometimes so loose as to include almost any nonstandard means of generating experiences as of an external environment. To allow distinctions between grades of VR, we might say that “VR proper” is virtual reality that satisfies all three conditions above.

67 Ibid.
68 Ibid.
69 Ibid. p. 314.
70 Ibid. p. 313.
So the notions such as Non-immersive VR, Non-interactive VR environment and Non-computer generated VR are attempts to show that they are interpreted as virtual reality as part of the loose definition, even though each of them falls short of one or two key notions of virtual reality. Given this standpoint of loose definition, one would be under the impression that even in the absence of one or two key notions, virtual reality does not cancel itself out, but for Chalmers “VR proper” or the strict sense of defining virtual reality has to satisfy all the three conditions. This is a clear evidence that Chalmers does orient himself in delimiting virtual reality. Secondly, from the way Chalmers distinguishes virtual reality with that of augmented reality, he applies the above mentioned strict and loose sense of defining virtual reality and from this distinction what could be assumed is that by taking recourse to the strict sense the augmented reality cannot come under “VR proper”. Thirdly, while distinguishing virtual reality from virtual world, he divests one of the key notions, namely immersiveness condition, and is of the view that the virtual world does not necessarily require the immersive condition whereas the virtual reality does require it as one of the key notions.71 So in a nutshell on the one hand, all the above mentioned reasons point to the underlying effort from the part of Chalmers to delimit virtual reality but on the other hand, going by the loose definition, in which all the three key notions are not a pre-requisite for delimiting virtual reality, the scope of virtual reality remains wide.

1.3 A Comparative Analysis in the Light of Chalmers’ View
Concluding the first chapter would be incomplete, if a comparative analysis of the three different views that we have discussed in detail are ignored. I plan to undertake this analysis in the light of how Chalmers define virtual reality. To be precise, it would be examined whether the three key notions of virtual reality are agreeable to both Lanier and Heim and secondly to see whether all the three key notions are necessary pre-requisites at all, to define virtual reality.

1.3.1 Appropriating Lanier in Chalmers’ View
As we discussed Lanier we saw first of all that Lanier explains virtual reality through the metaphor of Dream. Regarding this point, if we were to ask which of the key notions Lanier tries to highlight through this metaphor, the first notion that comes to the forefront is the notion of immersion as the person who dreams does have a sense of “being there”. Computer

71 Ibid.
generation may be questionable issue given the context of dreams, however insofar as the virtual reality devices induce a dreamlike environment, the notion of computer-generation also cannot be ruled out. Considering the third notion, namely that of interaction, within the context of dream, we could say that interaction is taken for granted, because quite often the person who dreams is left with an immense power to influence and change the environment of his/her dream. We have already seen that it was the concomitant awareness that prompted Lanier to compare virtual reality with lucid dreams. This aspect of concomitant awareness refers to the element of control bestowed on the lucid dreamers which is nothing but the notion of interaction remaining at the disposal of the user of virtual reality devices. So by explaining virtual reality through the metaphor of dream, Lanier seems to abide by the three key notions of virtual reality proposed by Chalmers.

The second point of Lanier, through which he tries to explain virtual reality from the point of view of a form of art, one of the three key notions that becomes evident through this comparison is that of immersion, as a particular form of art is thought to have an ability to induce its spectators to a sense of “being there”. Taking virtual reality one step ahead of art, Lanier credits virtual reality with an additional element of interaction, which makes virtual reality different from the forms of arts. Thirdly, virtual environment, unlike the environment of a drama, is computer generated. So from the way Lanier finds a comparison of virtual reality with that of the forms of arts we could conclude that all the three notions are entailed in this explanation of virtual reality.

From the way Lanier explains virtual reality as a simulated reality, the key notion upon which Lanier hints is computer generation. The example of flight simulator subsequently testify to the presence of the other key notions of immersion and interaction. So from this analysis what could be understood is that, Lanier seems to approve the key notions of virtual reality as developed by Chalmers. With regard to the second question whether Lanier agrees to credit virtual reality status even when one of the three key notions is absent, we will have to say that the position of Lanier in this regard, seems to be ambiguous. This point could be fleshed out from the example of surgical simulators. There is no doubt that Lanier admits surgical simulators as virtual reality devices72 but Lanier explains surgical simulators as a computer-generated technology. Chalmers on the other hand refers to a camera based technology in

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72 See for details the sub-title 'Simulated Reality', where we see Lanier, describing the special-purpose simulated reality as virtual reality.
It would be ambiguous if it is interpreted that both Lanier and Chalmers refer to the same device, but both of them seem to refer to two different medical devices. So from the way we have discussed the definitions of Lanier we cannot conclude that Lanier agrees to defining virtual reality even in the absence of one of the three notions as the loose definition of virtual reality would have defined it.

### 1.3.2 Appropriating Michael Heim in Chalmers' View

With regard to the first question as to whether Heim agrees to the three key notions of virtual reality, we could without doubt say that as Heim discusses in detail the diverse concepts in virtual reality, his explanation entails all the three key notions mentioned by Chalmers. May be more clarity is required with regard to the second question as to whether Heim gives room for defining virtual reality in the absence of at least one of the three key notions. The concept of telepresence as explained by Heim would be a confirmation to define virtual reality even in the absence of one of the key notions. The example given by Heim to explain telepresence is the case of scientists moving robots in a distant planet. This technology of telepresence is basically a camera-generated technology rather than a computer generated technology and hence the notion of computer generation is absent in this virtual reality example. The other two notions, namely that of immersion and interaction could be deduced from the respective expressions of scientists' “being there” in the distant planet (immersion) and the fact that the robot is taken to task (interaction). So this example clearly states that Heim has no objection in defining virtual reality even in the absence of one of the three key notions. Thus what is evident is that Heim seems to accommodate not only what Chalmers calls “VR proper” but also the loose definition and hence the scope of virtual reality in the view of Heim would be wide.

### Conclusion

It is beyond doubt that the explanations by Chalmers has simplified in defining virtual reality as he sorted out and highlighted the three key notions of immersion, interaction and computer-generation. We have also seen that how well Lanier and Heim accommodate the “VR proper” as proposed by Chalmers, even though Heim keeps the possibility of loose definition open. Such a scrutinization is important and decisive so as to easily distinguish and label what forms part of virtual reality list and to sort out what does not necessarily belong to “VR
Thus the picture of defining virtual reality becomes all the more clear, being able to define virtual reality under the purview of the parameters of three key notions proposed by Chalmers.
CHAPTER TWO
REALITY OF THE VIRTUAL; PROS AND CONS

Introduction
In the first chapter the focus of our attempt was to explore what virtual reality is. We had undertaken an etymological survey of the origin of the term and tried to define it from the point of view of some important contributors who wrote about virtual reality. In this chapter a disputed question is taken up so as to shed more light to see for oneself whether the claim that virtual reality is fictional, is justified or the claim that virtual reality is real, is justified. It is very important to address this question for two reasons. First of all, this question is of ontological nature and hence it calls for an explanation so that there remains no room for confusion regarding 'its being there' or 'its being not there'. Secondly, the above-mentioned question alludes to an existing tension between the vast majority of literature describing the virtual world as fictional and the literature claiming that the virtual world is real. Therefore, it is important to see for oneself the nuances of both the claims so that one is not easily carried away by the lures of these claims, without analyzing the rational grounds. For, the moment one is confronted with the respective claims in the backdrop of reason, the clouds of biased perspectives will give way to clarity. In developing this question I depend on an article “The Virtual and the Real” written by David J. Chalmers, which almost exhaustively deals with the question of our concern. To begin with, one needs to familiarize first of all with the position that virtual reality is fictional.

2.1 The Concept of Virtual Fictionalism
According to Chalmers, owing to the fact that the majority of literature available, concerning virtual world, is written by virtual irrealists and they in turn tend to project the virtual world as fictional, Chalmers calls such a view as virtual fictionalism.74 According to fictionalist's view, virtual worlds and objects “do not exist in reality, but only in fiction. Likewise, the things that are supposed to happen to them do not happen in reality, but only in fiction”.75 It is interesting to see how the virtual irrealists have come to such an assumption regarding the fictional nature of the virtual world, therefore, in order to acquaint ourselves with the idea of world of fiction, the views of two thinkers might be helpful.

75 Ibid.
2.1.1 World of Fiction in the View of Jesper Juul

Jesper Juul in his book 'Half Real: Video Games between Real Rules and Fictional Worlds' elaborates the idea of fictional world in the context of video games as it is contrasted with the rules forming part of every game. The title of the book already alludes that the world of a video game is partly real on account of the rules and partly fictional on account of the element of imagination, a combination of which constitutes the fabric of a game. For Juul writes, “A statement about a fictional character in a game is half-real, since it may describe both a fictional entity and the actual rules of a game”.76

Distinction between Rules and Fictions

According to Juul a player interacts with real rules and the winning or losing of a game is understood as an event testifying to the reality element of rules. This event of winning the game may be characterized by a killing of a dragon, a fictional character. Therefore, due to the presence of rules, a game is half real and due to the presence of imaginary characters the remaining half is fictional and thus he defines the video games as a set of rules as well as a set of fictional worlds.77 The concept of a game, being half real and half fictional, does in a way describe the contradictory properties unique to both rules and fictions. At the same time it is also interesting to know that it is their attraction despite the opposite reasons, that intertwines the contrary properties to be a single unit of a game. For, Juul elaborates this point by shedding light on the properties of rules and fictions; “rules are designed to be objective, obligatory, unambiguous, and generally above discussion. With fiction in games, we find the opposite to be true: a strong part of the attraction of fiction in games is that it is highly subjective, optional, ambiguous, and generally evocative and subject to discussion. Rules and fiction are attractive for opposite reasons”.78 Given the contradictory properties of both rules and fictions, Juul opines that though they rarely match perfectly, they generate a positive effect so much so that it fulfills the player's expectations and it also grounds the video game as a real-world activity.79 However, there is an element of discomfort when we say that rules in the video games are real. This discomfort is perhaps due to the fact that a game is separated

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77 Ibid. p. 13.
78 Ibid. p. 227.
79 Ibid. p. 301.
from the rest of the world. For example, the rules of playing football is applicable only with in the context of a football game. Outside the context of the game of football the rule does not prohibit a person to hit the football with the hand. Similarly Juul agrees with Roger Caillois as he underlines the element of separation noticeable not only in rules but also in fiction. To express it through the words of Juul, “Rules separate the game from the rest of the world by carving out an area where the rules apply; fiction projects a world different from the real world. The space of a game is part of the world in which it is played, but the space of a fiction is outside the world from which it is created”. What becomes evident through this quotation is that rules in games, though separate from the rest of the world, do have a space in this world whereas fictions in games do not have a space in this world and hence they are considered to be outside of this world.

Fiction Applied in Video Games

Having seen the distinction Juul makes between rules and fictions, we also see the way he describes a fictional world and how it is applicable to video games. First of all, he argues that the theoretical basis of fictional worlds is derived from the philosophical concept of possible worlds in the analytical philosophy. In the words of Thomas Pavel, “possible worlds can be understood as abstract collections of states of affairs, distinct from the statements describing those states”. Banking on the definition of possible worlds, Juul ascribes the same sort of similarity to the fictional worlds, by identifying a similar sort of distinction between what is described in the fictional world and what is imagined. In other words, what is described by the author may not be what is imagined by the reader (especially in the context of a fictional writing) or what is experienced by the player (especially in the context of a video game). Juul elaborates this point in the context of a fictional writing.

The text of Hamlet directly describes a rather small world, mostly a castle in Elsinore with some hints of foreign countries. At the same time, the fictional world of Hamlet is presumed to be as large and detailed as the actual world. The work not only cues the reader to imagine the states of affairs described by the play, but also to make inferences about the larger world of Hamlet on basis on the text. Thus, the reader performs much work in order to imagine a fictional world, and consequently different readers and game players will imagine a fictional world differently.

Now a question may be asked as to why a reader or a player enjoys the freedom of imagining a much more elaborate world, going beyond the framework of what is described by the author.
and how is it that, different readers and different players imagine one and the same fictional world differently. Pavel answers that the incompleteness of the fictional worlds throws open the possibility of multiple point of views. “For several writers, incompleteness constitutes a major distinctive feature of fictional worlds. About complete worlds, one can decide whether for any proposition p, either p or its negation non-p is true in that world”. \(^{85}\) Because incompleteness is fused into a fictional world as one of its features, there are innumerable ways of filling the gap, left to the imagination of the readers and game players, and it could differ from person to person.

Thus, we have seen in a nutshell an overview of the way how Juul presents the fictional world in video games. Whether the element of fiction in video games as elaborated by Juul could be applied to virtual reality, is a question and that question would be taken up as we discuss the response of Chalmers.

### 2.1.2 Fictional World of Video Games According to David Velleman

David Velleman, analyzing a video game called 'Second life', tries to highlight the fictions involved in the world of virtual reality. First of all, to this end, he summarizes as to what 'Second life' is all about.

Most mornings thousands of computer users log on to a virtual world called second life. Their computer screens show scenes of a nonexistent world, peopled by human like figures. Each user sees the world from the perspective of one of those figures, which is his avatar in the world and whose movements and utterances he controls through his computer keyboard and mouse. The other figures on his screen are being controlled by other users, all of whom witness one another's avatars doing and saying whatever their owners make them do and say. Through their avatars, these users converse, buy and sell things, and have all sorts of other human like interactions. \(^{86}\)

In order to establish that the virtual world is fictional Velleman has two claims; a major claim that the avatars, taken to be the agents of human participants are fictional and a subsequent claim, an obvious outcome of the former, that the actions claimed to be the actions of human participants are also fictional.

**First-person References are Fictional**

The argument to substantiate the second claim is comparatively simple as it depends on the credibility of the first claim. Therefore Velleman paraphrases the fictionality of the action

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claimed to be that of the human participants as follows: “What a participant causes his avatar to do in the virtual environment, he will report as his doing. “I went up to the professor after the class”, he may say, describing an encounter between a student-avatar that he controlled and an instructor-avatar controlled by someone else. In reality, the speaker went no where and encountered no one, since he was sitting alone at his computer all along”. It is quite usual that almost every player makes first-person references to denote their respective interferences in this world of ‘Second life’. In order to explain as to why almost every participant of ‘Second life’ undergoes such an experience, Velleman answers that the relation that a player establishes with his/her avatar is real. It is on account of the element of relation that the player makes first-person references, which however cannot be considered as a strict identity. Therefore such first-person references are meant to refer to the fictional identities or fictional bodies. Having seen that the claim of first-person references in the world of ‘Second life’ are fictional, we now move on to the major claim of Velleman that the avatars as agents of human participants are fictional.

**Avatars as Agents are Fictional**

The major claim of Velleman could be explicated referring to two examples narrated to substantiate this claim. First of all, Velleman refers to the example of Non Player Character (NPC), as “a graphical figure whose behaviour is controlled by software rather than by a human player. If the software behind an NPC is sufficiently sophisticated, it can generate behaviour similar enough to that of a player-controlled character that other players may be unable to tell the difference”. This idea points to the smartness of computer software to facilitate a spontaneous interaction with the sophisticated human intelligence. Though this idea is presented only as a possible hypothesis in the context of ‘Second life’, in the second example, Velleman refers to an actual case in which he cites a system designed by a group of computer scientists of Memphis University for the Navy. This system is programmed in such a way that it negotiates with the sailors, assisting in their new posting, once the tenure of their current assignment expires. From the moment the sailor inquires about the possibility of new assignments, the software takes charge of responding to the needs of the sailor. In order to make the sailor believe that he is communicating with a human agent and not with a

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87 Ibid. p. 5.  
89 Ibid. p. 15.
computer, the software has to incorporate many details. Velleman gives a short description of the tasks incorporated into the software, giving a short glimpse of the complexity associated with this sophisticated software. “The software needs an impressive degree of intelligence, including the ability to process natural language and the ability to optimize multiple parameters at once. But the detailer must also perform the very human task of negotiation – advising, cajoling, bullying, and ultimately persuading the sailor to accept an assignment”. The end result of this case is that the sailor, after a series of negotiations with the software, takes away a new assignment without knowing that a computer facilitated the negotiations. Each stage of negotiations carried out by the computer was perfectly unified that the sailor never ever had suspicion that he was not interacting with human agents. The success of the computer was due to the unified and prompt answers, without contradicting the context and nature of the questions presented to it. In the course of interactions with the computer the sailor undergoes different emotions of dejection, as some of his suggestions are rejected, and happiness, being able to negotiate a consensus finally. So in this case the computer is acting as a human agent, who is not existing and hence is fictional. Drawing lessons from the conclusions of these examples, Velleman is of the opinion that the video game 'Second life', being an animated software, neatly succumbs the participant to a deception, forcing the participant to take the avatar to be real on account of its behaviour to be believable, as it perfectly portrays all the required traits of the character in question. An animated character in 'Second life' is designed in such a way that it enthuses the human mind to extend its self conception to that of the avatar, for, a similar sort of situation persuaded the sailor to accept a computer software as a real human agent. Therefore according to Velleman a character in 'Second life' is “a chimerical creature in which a fictional, virtual-world body is joined to a literal, real-world mind. That real mind hold a self-conception of the hybrid creature, to which it belongs, a creature whose personality, thoughts and feelings it can know introspectively, unify among themselves and with his appearance, and communicate directly through its fictional body”. So the smartness of the artificial intelligence is so perfect and fine that the user or participant will not ever agree that he/she is deceived. Thus the major claim of Velleman has it that the avatars, understood as representing the human agent are fictional, as they are based not on the fantasies of the human participant but on the design of a particular

91 David J. Velleman, Foundations for Moral Relativism, p. 16.
92 Ibid. p. 21.
software. The other claim of Velleman follows from the major claim that the actions of a fictional avatar are also fictional and hence the first-person references to these actions do not actually take place.

2.1.3 Chalmers Responding to Virtual Fictionalism

Chalmers assumes that both Juul and Velleman have drawn these conclusions based on the findings of an analysis of video games. Most of the video games are designed, based on fictional stories. For example, the popular video game called 'Middle Earth' is designed after the model of a fictional writing titled 'Middle Earth' by Tolkein. Similarly, there are also video games, based on fictional historical incidents which in reality did not take place. For example, the video game designed so as to depict the events of second world war includes the assassination of Hitler, which in fact, was not a real incident. Therefore, the conclusion drawn by the virtual irrealists is that, if books and movies discussing fictional stories and events are termed fiction, then the same is applicable to virtual world too. Chalmers finds discrepancies with such a view and he underlines the discrepancies highlighting two important reasons.

The First Discrepancy Associated with Virtual Fictionalism

First of all, Chalmers highlights one important point, which seems to have been neglected and ignored by virtual irrealists. He writes, “There is, of course, a close connection between any role-playing game and an associated fiction, but this connection holds whether the game is virtual or non-virtual”. To make this point of Chalmers clear, we take a fictional character in a movie for example, more concretely, the character of Sherlock Holmes played by an actor in a movie. The story of the movie and the character of Sherlock Holmes are fictional but that which connects both the character and the story, namely the actor, is real and so are his movements. So the virtual irrealists have ignored the reality of the connection. In this case, the actor who makes the fictional character of Sherlock Holmes comes alive through the movie. Similarly, any player, taking on the role of a fictional character in any video game, cannot be ignored, as his/her movements are really taking place in the underlying digital reality and hence by virtue of the 'being there' of the player of the video game and that of the corresponding movements in the digital reality, virtual reality cannot be considered fictional.

94 Ibid. p. 316.
95 Ibid.
The Second Discrepancy Associated with Virtual Fictionalism

Secondly, according to Chalmers it is misleading to generalize video games as the prime model of virtual reality.96 He legitimizes his reasoning by saying that, though video games happen to be the most popular virtual reality world as of today, they “are just one among many possible uses of virtual reality technology. . . There are already many virtual worlds that are not especially game-like in character”.97 For example, consider the virtual platform that the present day social media is providing, which is definitely another virtual world like that of the video games. The interactions taking place through the social media platforms can never be considered as fictional. Referring to the other possible uses of virtual reality technology other than video games, Chalmers is of the view that, “When a virtual world is used for non-play purposes such as socializing, gathering information, or communicating with colleagues, it is much harder to discern fictionality in the virtual world”.98 Besides this, Chalmers goes even to the extent of exposing the possibility of communication inherent within the purview of a video game, namely, 'Second life', which is characterized more as a platform for communication than as a video game. In order to enter into the world of 'Second life' I will have to adopt a virtual body (avatar) but I do really enter into a real conversation with my friend. Even the virtual body I posses is real, insofar as it inhabits digital space in that virtual world.99 For example, “If I pick up a virtual coin in Second Life, I really use my virtual body to take possession of a virtual coin”.100 Through such an understanding we are not negating the reality of virtual world but what is meant, is to say that, virtual body is different from the physical body and virtual space is different from physical space.101 Virtual irrealists instead of taking stock of this distinctive nature of physical and virtual realities, have hastened to a false conclusion that virtual reality is fictional. With these preliminary observations against the position of virtual fictionalism, we will see how Chalmers is defending his position of asserting that virtual reality is not fictional. As we proceed along we also discuss the tenability of his position in the light of the counter positions.

2.2 Virtual Objects and the Illusion Associated with Them

In order to introduce this heading straightaway, free of unnecessary speculations, I suppose an
appropriate example will explain what is what. For, John Danaher mentions an appropriate example suitable to highlight illusion associated with virtual objects:

There is an apple in front of me. I can see it, but I can’t touch it. The reason is that the apple is actually a 3-D rendered model of an apple. It looks like an apple, but exists only within a virtual environment — one that is projected onto the computer screen in front of me. I can interact with the apple. I have an avatar that I can control on the screen. That avatar is a virtual projection of my self. It can pick up the apple, throw it around the virtual room, or eat it. But I can’t touch it and interact with it using my own physical hands.\(^\text{102}\)

If a person who have had the experience of eating the apple from the context of a non-virtual world but responds to this example without any prior knowledge of the virtual world, would definitely evaluate the 3-D rendered model of apple as non existent or as an illusion as the parameters of a non-virtual world, like being able to hold the apple in hand, to bite and eat its flesh, do not seem to correspond to that which govern the virtual world. Therefore the initial response of a first timer in virtual-world would presumably be in the negative. On the other hand, this question becomes all the more intriguing, if it is posed in the context of the virtual online interactions that every one is familiar with or in the context of the online transactions, through which buying and selling of things become a reality.\(^\text{103}\) Will anyone doom the real communications, taking place as a result of the online life or can anyone deny the reality of online markets, given the result of the fact that goods are being delivered and sold on account of the live transactions taking place? It is obvious that the elaboration of the second case would consider a response with haste, to be premature and lacking reason. This point becomes clearer, as we consider the way Chalmers defends the legitimacy of virtual objects.

### 2.2.1 Legitimacy of Virtual Objects

In order to substantiate the reality of virtual objects Chalmers first of all identifies that the basis of virtual objects is in the digital objects and the virtual environment displayed through a computer screen is the effect of the internal interaction taking place behind the curtain of the internal structure of the digital world. He develops this point by way of two arguments.

### 2.2.2 The Argument from Causal Powers

In order to argue the legitimacy of virtual objects, Chalmers, first of all, argues from the point of view of causal powers detectable in the physical components of computers. To make his argument intelligible, we see the various points of his argument step by step. In the first step...
Chalmers begins by explaining how the virtual objects are constituted. For, he says, virtual objects “are digital objects, constituted by computational processes on a computer”. He elaborates this point by saying that the digital objects “can be regarded as data structures, which are grounded in computational processes which are themselves grounded in physical processes on one or more computers”. In order to make the picture clearer, shedding light on the concreteness of digital objects and virtual objects may be helpful. Philip Brey defines digital objects as follows:

The software that runs on a computer and the data structures used by software programs consists of strings of symbols that ultimately are represented in the form of bits and bytes. Many of these symbols remain invisible to users, as they are ‘machine code’ that is interpreted by the machine. Larger symbolical structures, that rely on these lower-level symbols, may however be made accessible to users as objects that they can manipulate. They are usually made visible on the screen, where they are represented by an icon (e.g., one that depicts a folder) or a symbol string (e.g., ‘prog.exe’ representing a program). Such symbolical structures I will call digital objects.

Thus digital objects are symbolical structures which ultimately exist in the form of bits and bytes. This, however is a machine language which is interpreted by the machine in such a way that it appears as a larger, interactive user-friendly structure on the screen. In order to understand the relation of digital objects with virtual objects one needs to see also how Brey defines virtual objects. “A virtual object is a digital object that is represented graphically as an object or region in a two or three dimensional space and that can be interacted with or used through a computer interface. . . . An example of a virtual object is a folder on the desktop of a PC”. So digital objects concern the internal structure to which the user interacts indirectly even though the language of this structure may not be intelligible to the user and the virtual objects concern the external structure on the computer screen with which a direct interaction is possible. A folder on the desktop is one of the examples of virtual object which could be opened, items could be added to it or removed from it. The following table depicts how inseparably both digital objects and the virtual objects are connected:

| Virtual objects are → digital objects regarded as → data structures grounded on → computational processes which in turn based on → physical process in → computers. |

105 Ibid.
107 Ibid.
So from the table above one would agree that what is immediately accessible to the external senses of the viewer would be the first and the last, namely virtual objects (images) and the computers. The other constituting internal structures and the processes mentioned, are not visible or remain hidden to the external senses of the viewer. Take for example images of two persons, namely that of Angela Merkel and Donald Trump, appearing on the computer screen or on the television. In order to bring an image of a person alive on the computer screen, one or more data structures may be involved. Again the distinction that we are able to make out between Merkel and Trump is due to the differences in the properties the data structures resort to, to project the images of both these persons. Chalmers elaborates this point referring to the context of the video game Second Life:

When I see an avatar, it is this data structure that brings about my perception. What I perceive directly reflects the properties of this data structure: the perceived location of the avatar reflects one property of the data structure, while the perceived size, color, and so on reflect other properties. When my avatar interacts with a coin, the two data structures are interacting. . . . Data structures are causally active on real computers in the real world; the virtual world of Second Life is largely constituted by causal interaction among these data structures.\(^{108}\)

Through this quotation, Chalmers highlights that the virtual world is constituted due to the interaction among the data structures and hence virtual world is projected as an effect of causal interactions, taking place among the data structures. So in order to defend the assumption that virtual objects are digital objects, Chalmers argues on two fronts; first of all on account of the causal interactions that makes the virtual world what it is, and secondly on the fact that the data structures do really have causal powers. Perhaps a practical problem associated with this explanation is that one perceives the virtual world but not the causal activity. For example, for a person who perceives a ball being kicked and its movement towards the goalpost, he/she does not require further explanations to establish the cause effect relation between the person kicking the ball and the ball in motion. Whereas when one interacts with the virtual world, one is on the one hand unaware of the underlying processes that bring alive the virtual world, and on the other hand the effect of this causal interaction is so rapid that the underlying data structures are bypassed as if they were nonexistent. But this in no way cancels out neither the reality of causal interaction among the data structures nor the fact that they have causal powers. Therefore the internal causal activity really taking place within the arena of data structures cannot be ignored on account of its interaction not being noticed. This in turn prompts us to say that Chalmers is justified in his claim that the virtual objects are the digital objects.

2.2.3 The Argument from Perception

Another argument Chalmers puts forward in support of the claim that virtual objects are digital objects is the argument from perception. This argument is closely related to the argument from the causal powers, because in the former, Chalmers tried to assert that the digital objects are the causal basis for the virtual objects and here in this argument he takes a step further by saying that the digital objects are the causal basis of our perceptual experiences, while using virtual reality. He fleshes out this argument in the context of an opposing question namely as to why the images can't be the basis of our perceptual experiences. If it were to be assumed that the images are the basis of our perceptual experiences, then it would be difficult to explain as to why the same image of an actor is seen by multiple viewers in different screens. For, it would mean that every computer or television would have to have copy of the image of that particular actor and added to this, when the computer or television displays images of a large number of people, the images of all the persons appearing on the screen would have to be supplied to each machine, as it was the case with the film-based movie technology used in cinema halls. Had digital objects not revolutionized in computers and televisions, probably a film-based technology would have supported computers and televisions for the perceptual experience. This is exactly what is meant, when it is said that images are the basis for our perceptual experiences. One knows for sure that such a technology would have amounted to a practical impossibility. This practical impossibility is easily overcome by a digital object, a necessary component, distributed in the machines like computer and television, acting as a data base to project all sorts of images and texts so as to elicit the perceptual experience in the viewer. So through this argument Chalmers argues that digital objects are the basis of our perceptual experiences and because we encounter virtual objects in our perceptual experiences it could be emphasized that the virtual objects are digital objects.

2.3 The Reality about Virtual Events and Properties

There are more subtle objections arguing that virtual objects are fictional. To be able to do that one needs to prove that the virtual events and properties are fictional. Before proceeding to present his case against this view Chalmers describes as to how virtual events and properties are argued to be fictional. For, he writes, “In a virtual world, a virtual dragon flies through the air. In the real world, the corresponding digital object does not fly through the air.

If so, then either the virtual dragon is not real, or it is real but it does not really fly through the air”. Pertaining properties in virtual worlds, Chalmers identifies the same issue being highlighted. “A virtual flower may be red, while the corresponding digital object is not red. Indeed, no object in the real world may have the precise shade of red that the virtual flower has. If so, then either the virtual flower is not real, or it is real but it does not really have the property of being red”. The reason why Chalmers claims that the underlying issue, concerning virtual events and properties, is same, is because of the fact that, in both the arguments the virtual is compared with its non-virtual counterpart to see whether the virtual events or properties match the criteria applicable to their non-virtual counterparts. However, basing on the same point Chalmers frames his case to argue against the claim that virtual events and properties are fictional. For, in the same way we have seen how virtual objects are different from the non-virtual objects, a distinction at the realm of conditions, catering peculiarly to virtual events and properties, are to be fleshed out to establish the tenability of virtual events and properties. Chalmers makes the point clear with an example, “A virtual flower is not red in the ordinary sense (non-virtually red), but it is virtually red. The corresponding digital object is also not red in the ordinary sense, but it is virtually red.” However, this statement alone does not establish the difference between virtual and non-virtual properties, to a great extent things become clear in the following nuances of thought but a complete picture behind the reason of this position of Chalmers would be clear in the third chapter. The procedure focused further to flesh out this point would be restricted to analyzing virtual properties, with the assumption that the findings then in turn could be applied to the virtual events as well.

2.3.1 The Nature of Conditions Enabling Virtual and Non-virtual Perception
In order to establish that there exists a distinction between virtual objects and non-virtual objects, one needs, first of all, to take into consideration the noticeable differences in the conditions under which reddish experiences in the virtual world and the reddish experiences in the non-virtual world are produced. For example, we have seen that the causal basis of a virtual object, namely that of a virtual red rose, is due to the digital object. First of all, it is true that one cannot see the digital object, namely the data structure, under the non-virtual conditions, namely with the naked eyes, but if at all they were visible, one would never have

111 Ibid. p. 321.
112 Ibid. p. 321.
113 Ibid. p. 321.
reddish experiences. On the other hand with the assistance of virtual reality head set, the
digital objects do produce reddish experiences. Though the reddish experience in the non-virtual world and in the virtual word is same, the conditions under which the perception in virtual and non-virtual worlds depend, are different. Therefore, Chalmers argues that, “using a virtual reality headset is not (yet) a normal condition for ordinary human perception, so this is not enough to make the digital object count as red in the ordinary sense. But it is enough to make the object count as virtually red”. Through this statement Chalmers identifies that there exists a distinction between a normal condition for ordinary human perception (namely the perception with naked eyes) with that of a normal condition for perception in virtual reality (namely the perception with the aid of virtual reality head set). Since the nature of conditions, enabling reddish experience in the virtual and non-virtual world is different, the criteria with which the perception in non-virtual world is judged, cannot be the criteria to judge perception in the virtual world.

2.3.2 Are there Virtual Properties?
To begin with, first of all, it is to be defined what properties are, take for example property of redness. Chalmers refers as to how redness is defined traditionally; “the property of redness is picked out in virtue of a certain sort of effect: in particular, the fact that red things normally cause red experiences. On one version of this view, redness is just the power to cause red experiences in normal circumstances”. Banking on these traditional definitions, Chalmers defines what it means to be virtually red. Virtual redness could be explained “either as the power to cause reddish experiences in normal VR conditions, or as the property that normally causes reddish experiences in those conditions”. Concretely speaking, that which causes reddish experiences (namely the property of redness) in a VR environment is a certain value added to an entry in a data structure. In other words a virtual red rose is virtually red, when its corresponding digital object has an entry whose value is in the right proportion so as to cause reddish experience. Therefore to the question whether there are virtual properties, one could say that in the case of a virtual red rose, virtual property of redness is the value of redness added to an entry in a data structure. Similarly what we have discussed about the property of redness could be extended to other properties as well. For, any non-virtual

114 Ibid. p. 322.
115 Ibid. p. 322.
116 Ibid. p. 321.
117 Ibid. p. 322.
118 Ibid.
property could have its corresponding virtual property, provided its certain value is added to an entry in a data structure. As to the question why one property is called “non-virtual redness” and its counterpart being called “virtual redness”, one may naturally suspect whether there exists a distinction on the realm of the way they are properties. Though it is difficult to distinguish such a difference on account of the nature of virtual and its corresponding non-virtual properties as both the properties, irrespective of the difference in their names, have the same appeal on our faculty of perception to cause reddish experiences, therefore the distinction is more likely to be based on the respective VR or non-virtual reality conditions, in which they tend to be properties. Nevertheless, Chalmers does make a distinction by calling them respectively as digital property and non-digital property\textsuperscript{119}, simply because of the fact that digital property cannot bring about reddish experiences in a non-virtual environment and the same does not hold vice versa also. For, Chalmers writes;

\begin{quote}
For any property X, there will be a corresponding virtual property virtual X. When a non-virtual object has X, the corresponding virtual object will have virtual X. In cases such as those above, when X is picked out as what normally plays a certain functional role, then virtual X will typically be distinct from X. Virtual X will be a digital property that normally plays the role in virtual environments, while X will be a nondigital property that normally plays the role in non-virtual environments.\textsuperscript{120}
\end{quote}

\subsection*{2.3.3 Virtual Reality Replicating Causal Organization}

Chalmers, referring to the examples of a virtual library and a virtual calculator explains why they are not merely 'virtual' but really 'real' with regard to their non-virtual counterparts. The basic idea for Chalmers to argue in favour of this point, is the fact that being a library or being a calculator entails an organizationally invariant property and this underlying organizational property can be replicated. Thus, it is based on this principle that the digital objects corresponding to the respective virtual library and virtual calculator are designed, replicating the abstract causal organization of the underlying system of their non-virtual counterparts. Because of this reason a virtual library and a virtual calculator are not merely virtual but real.\textsuperscript{121} At the same time as against these two examples of virtual library and virtual calculator Chalmers states that a virtual kitten may not be as real as a real kitten, though it may be real in the virtual world.\textsuperscript{122} So analyzing these two cases there emerges a question as to why there is a discrimination in classifying some virtual objects to be really real, as they are not merely virtual (for example, a virtual calculator and a virtual library) whereas some other virtual

\textsuperscript{119} Ibid. p. 324.
\textsuperscript{120} Ibid.
\textsuperscript{121} Ibid. p. 325.
\textsuperscript{122} Ibid. p. 326.
objects cannot be really real, as they have a mere virtual existence in the virtual world (for example, a virtual kitten). Philip Bray provides an answer to this troubling question, which in turn is also endorsed by Chalmers.\(^{123}\) Therefore, a quick glance at the dynamics of the arguments put forward by Philip Bray, will not be a diversion in the sequence of our discussion but rather would be complementing and substantiating what Chalmers left without saying.

2.3.4 Philip Bray in Support of the Ontological Status of Virtual Entities

As to the question why some virtual reality entities are equal and some others are not equal to their non-virtual counterparts, Bray comes with a fascinating analysis. He analyzes this question in the light of the thoughts of John Searle. Bray distinctly identifies and highlights a distinction between the 'real' and 'unreal' meanings attached to the virtual entities. For he writes;

virtual environments can contain real (electronic) money and real documents, and people can play real chess games in them, and trade real insults. An electronic document on a computer is just as real as a paper document in the physical world: it can be moved, lost, and destroyed, and it can serve most of the same functions. On the other hand, virtual entities can also be recognized as unreal, as mere simulations or representations of real-world entities. Virtual rocks and trees are not normally interpreted as real rocks and trees, but as simulations of rocks and trees. It seems, then, that there is a distinction between virtual entities that are accepted as mere simulations of real-world entities and virtual entities that are accepted as being, for all purposes, as real as non-virtual entities.\(^{124}\)

So, Bray highlights electronic money, documents on computer etc., as having real counterparts in the non-virtual world and contrasts them with another set of virtual entities such as virtual rocks and trees which unfortunately are treated as mere simulations of its non-virtual counterparts. By the way, these examples given by Bray are strikingly similar to the examples of Chalmers, through which Chalmers draws a clear distinction between the metaphysical status of a virtual calculator and a virtual kitten. According to Bray the former, namely the virtual entities existing as real as its non-virtual counterparts, have not only perceptual and interactive features but they are ontological reproductions of the real-world entities, on the other hand the latter, namely a virtual tree, kitten or rocks, have perceptual and interactive features but they are not ontological reproductions of the real-world entities and

\(^{123}\) Ibid. p. 325. Here, Chalmers refers to Philip Bray and endorses that their arguments on the metaphysical status of the virtual objects do not contradict each other.

hence the latter virtual entities exist merely as simulations.\textsuperscript{125} In order to illustrate this distinction, Bray depends on the way how John Searle is classifying different types of things in accordance with their respective mode of existence, especially based on the relation of things to the human interpretation of them.\textsuperscript{126} Based on this principle Searle identifies two basic divisions, namely physical reality and social reality. “Social reality is the set of all entities that are not genuinely objective but are the outcome of a process of social interpretation or construction. Physical reality is genuinely objective and includes entities that exist independently of our representations of them”.\textsuperscript{127} Physical realities exist independently of human interpretation, take for example Mt. Everest, a tree, or a kitten etc. These physical realities exist even without there being a human intellect to conceptualize them. Whereas social realities are the results of human construction or human interpretation. Searle classifies social realities further into ordinary social reality and institutional reality. The basic distinction between the two social realities entails on account of the functions assigned to them. The entities coming under ordinary social reality physically perform the functions imposed on them, for example a screwdriver physically performs the function of driving screws, on the other hand the entities coming under institutional realities are created by assigning status functions, which need not be performing its functions physically.\textsuperscript{128} “Institutional reality consists of entities such as dollar bills and weddings, whose identity is derived from that fact that some status function has been collectively imposed on them according to the rule "X counts as Y (in context C)".\textsuperscript{129} Thus Bray, having laid the theoretical foundations based on the ideas proposed by John Searle, explains why some virtual entities can exist only as simulations, as they either represent physical realities like a tree or kitten, while the other sorts of virtual entities are not merely virtual as they are ontological reproductions of the institutional reality. Therefore in the light of this analysis one could say that Chalmers is justified, when he says that a virtual library and a virtual calculator are not merely virtual as they are ontological reproductions of the respective institutional realities in question.

\textbf{2.3.5 Plausibility of Perceptual Illusion in Virtual Reality}

So far we have tried to figure out as to how one could intelligibly drive home the claim that

\begin{flushleft}
\textsuperscript{125} Ibid.
\textsuperscript{126} Ibid. p. 270.
\textsuperscript{127} Ibid. p. 271.
\textsuperscript{128} Ibid. p. 274.
\textsuperscript{129} Ibid. p. 276.
\end{flushleft}
virtual objects, virtual events and properties are real. Of course, this claim has been analyzed within the purview of its contradictory claim, that refutes each topic concerned, at various levels. However, the issue of discussion under this title involves a far reaching consequence so much so that, if perceptual illusion in virtual reality is established, the credibility of all the aforementioned claims, namely the claims concerning the credibility of virtual objects, virtual events and properties, could easily be washed out. Keeping this point in mind, Chalmers opens his discussion on the perceptual illusion in virtual reality, highlighting the issues about belief rather than the issues about perception.  

**Are Users in Virtual Reality Forming False Beliefs?**

While discussing perceptual illusion, it may seem as though Chalmers is taking a detour by focusing on the issue of belief rather than directly taking on the issue of perceptual illusion. However, this indirect way of responding to perceptual illusion cannot be regarded as missing the point or as something out of context. The effort from the part of Chalmers, to see whether the case of deception or false belief holds with regard to experiencing virtual reality, is in a way an attempt to substantiate whether or not there is perceptual illusion. It would be a clear evidence of perceptual illusion, if all the users in virtual reality, without exception, end up forming false beliefs, whenever they are in virtual world. On the contrary, if there are exceptions, namely, if there are virtual reality users who do not form false beliefs, the arguments on account of perceptual illusion in virtual reality would be much more shallow and weak. It is true that Chalmers yields to saying that the naive users of virtual reality may succumb to form false beliefs as they interact with the virtual reality, but the point of importance is that whether the same case is applicable to the experienced and sophisticated user of virtual reality as well. For example, consider the Müller-Lyer illusion in the following diagram:

![Müller-Lyer illusion diagram](https://en.wikipedia.org/wiki/M%C3%BCller-Lyer_illusion)

A person naive to seeing the images of Müller-Lyer illusion will ascertain that the lines in the

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131 Ibid.
132 This image depicting the Müller-Lyer optical illusion is accessed on 01 March 2019. Available at Wikipedia, [https://en.wikipedia.org/wiki/M%C3%BCller-Lyer_illusion](https://en.wikipedia.org/wiki/M%C3%BCller-Lyer_illusion)
image are not in proportion, whereas an experienced person who really had the opportunity to analyze personally the length of the lines in question, will not raise questions against its proportionality. The reason for the experienced viewer does not lie in the fact that he/she has an improved perception but rather the point lies in the fact that the experienced viewer has a rectified belief. This being the point to be clarified, Chalmers opines that the experienced and sophisticated users of virtual reality are out of danger of forming false beliefs. For, concerning such users Chalmers writes; “Given that the user knows they are using VR, they will not form the belief they are interacting with non-virtual objects in physical space. They will know full well that they are interacting with virtual objects in virtual space”. Therefore, this example of Müller-Lyer illusion testifies to the possibility of there being cases of perceptual illusions, however one needs to caution oneself that the experience of deception is not what is to be highlighted but the possibility of withstanding perceptual illusion, in so far as one is not deceived at the realm of forming belief. In order to place the credibility of this argument on stable grounds two more cases could be discussed where the belief formed by an experienced viewer foils the claim of perceptual illusion.

The Issue of Perceptual Illusion Associated with Mirror

Maarten Steenhagen in his article 'False reflections' argues against the so called perceptual illusion allegedly attributed to the Mirror reflections. He describes the claim of specular illusionist as follows; “regardless of our awareness of the fact that we see something reflected in a mirror, it will invariably appear visually as though the object we see is located behind the surface of the mirror. In this sense, she claims, mirror appearances are illusory”. Steenhagen argues against the position of specular illusionist by discussing a simple example of a person traveling in the train in a moonlit night. The person sitting at the window can see the face of her fellow traveler sitting beside her through the window. She can simultaneously see the sceneries outside, through the same window. Though, here in this context the same window is functioning on the one hand as a transparent window which make her see the objects outside, located in the direction of looking, on the other hand the same window functions as a mirror, reflecting the fellow traveler beside her. In this example the person sitting near the window will never consider his fellow traveler being located in the direction

134 Ibid.
136 Ibid. p. 1238.
of looking and hence there is no perceptual illusion either. Therefore, it is on account of the experience of forming belief, while looking at the mirror, that one is able to judge with discretion the location of the objects reflected or seen through the mirror. In other words, the belief of the viewer will remind her not to be carried away by what is seen in the mirror but rather to be conscious of the nature of the mirror. For, the nature of the mirror is such that, it reflects the objects lying near side of the glass not the objects lying far side of it. Similarly in virtual reality, belief credits the viewer with the awareness of being in a virtual world, which in turn safeguards from giving in to perceptual illusion.

**The Case of Rear-view Mirror**

The best example to refute the perceptual illusionist is probably the case of rear-view mirrors in cars. Going by the theory of perceptual illusionists, though they hold that the objects appearing in the mirror seem to be in the direction of looking, they may not even by mistake believe while driving a car, that the vehicles appearing in the rear-view mirrors are in front of the car. If so, the perceptual illusionist would unnecessarily be inviting accidents while changing lanes as she drives along. Chalmers describes some important features which make the plausibility of rear-view mirror perception to be a case of non-illusion. The first feature is that of knowledge in which the viewer knows that a mirror is present.\(^{137}\) This feature is all the more evident in the example we discussed by Steenhagen in which the same window is assumed to carry out two different functions; namely, as mirror, as it reflects the fellow traveler sitting aside and as window through which the countryside is made visible in the moonlight. It is on account of the knowledge that there is mirror (here in the context of window functioning as mirror) that one is able to distinguish the location of moonlit countryside (as that which is located in the direction of looking due to the window, functioning as a transparent glass) from that of the fellow traveler (due to the fact that the same window functioning as mirror delivers another experience of location that, what is being seen reflected on the mirror, is assumed to be on the near side of the glass). The second feature which argues for the non-illusion of rear-view mirror perception is familiarity.\(^{138}\) It is on account of the amount of familiarity that a naive viewer is transformed into an experienced viewer. Again it is important to note that the transformation that is referred to, is not in terms of perception but in terms of the experience of forming belief. The third feature according to Chalmers is action-dependence. Depending on what is seen in the rear-view mirror the driver

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138 Ibid.
accelerates or slows down or else the driver changes lane. On the other hand, if what is seen in the rear-view mirror were to be taken to be an illusion, the driver would not have resorted to the corresponding actions like accelerating, slowing down or changing lane. Therefore the fact that the driver resorts to any of the corresponding actions on seeing vehicles through the rear-view mirror testifies not to the alleged perceptual illusion associated with reflections on the mirror but rather confirms the belief in accordance with the nature of mirrors that the vehicles seen reflected on the rear-view mirror are on near side of the glass. The fourth and final feature is naturalness. In order to elaborate this point on naturalness, Chalmers poses contradictory possibilities and asks as to which is natural, namely, either to take what is seen reflected on the rear-view mirror as the vehicles behind, or to take them to be ahead of my car. The obvious and the natural answer would be to assert that the cars are behind or at the near side of the mirror. If the driver were to interpret that the cars are ahead of her then such an interpretation would be termed unnatural. So all these features argue quite systematically that the plausibility of rear-view mirror as a case of perceptual non-illusion.

2.3.6 Controversy Associated with Perceptual Non-illusion

While arguing the plausibility of perceptual non-illusion in the light of examples associated with mirror reflections, Chalmers underlines knowledge to be an important feature. For, it is knowledge that keeps the experienced user out of danger of being overtaken by perceptual illusion. This feature, however, leads to a controversial issue as to whether cognition influences perception or not. Actually we have argued the plausibility of perceptual non-illusion, banking on the assumption that cognition does influence perception. The question whether or not cognition influences perception is a controversial issue in so far as there are pro and contra arguments concerning the influence of cognition on perception. We will analyze these positions in the light of the articles by Macpherson (2012) and Firestone and Scholl (2016) so as to see whether the nuances of these positions adversely affect the issue of perceptual non-illusion in virtual reality.

2.3.6.1 Cognition Influencing Perception in the View of Macpherson

Macpherson in her article, 'Cognitive Penetration of Colour Experience: Rethinking the Issue in Light of an Indirect Mechanism', refers to an experiment of Delk and Fillenbaum in order

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139 Ibid.
141 Ibid. p. 330.
to highlight the possibility of cognitive penetration on perception. Macpherson paraphrases the experiment of Delk and Fillenbaum as follows;

The experimenters took a sheet of paper of a uniform orange colour. They cut out shapes of various objects from it. Some of these objects were characteristically red: a heart (a love-heart shape), a pair of lips, an apple. Some were not characteristically red: an oval, a circle, a square, an ellipse, a horse’s head, a bell, a mushroom. One at a time, the cutout shapes were placed in front of a coloured background that could be altered. The background could be changed from a yellow colour through orange to a red colour by twisting a nob. The subjects were told to instruct the experimenter to make the background colour more yellow or more red until it was the same colour as the cutout shape in front of it, so that the cutout shape could no longer be distinguished from the background.\(^\text{142}\)

It is interesting to note the outcome of this experiment. Even though the cut out images were of a uniform orange colour, the people who underwent the experiment surprisingly chose a red colour background to say that the orange cut out images of a heart, a pair of lips and an apple match perfectly to the red background as they seem to them to be of the same colour. Whereas on the other hand, they chose more of an yellow background when the other cut out images, which were not characteristically red, were to be placed. This experiment clearly reveals an error that the characteristically red cut out images, though they were of a uniform orange colour, were falsely assumed to be matching a red colour background. However this perceptual error did not happen in the case of judging the other cut out images which were not characteristically red.\(^\text{143}\) Therefore this is taken to be a case of cognitive penetration on perception. For, Macpherson writes, “what is happening is that the subjects’ beliefs, that certain of the cutout shapes were shapes of objects that were characteristically red, penetrated their perceptual experience of those cutout shapes thereby altering the content and phenomenal character of those experiences”.\(^\text{144}\) In order to explain the question as to how cognition penetrates perception, Macpherson points to a plausible two step psychological mechanism, which in turn explains the cognitive penetration. She calls this process \textit{indirect} as this mechanism involves a two step process.\(^\text{145}\)

\begin{center}
| I\textsuperscript{st} Step – Cognitive States | Imaginative experience | Phenomenal Character |
\end{center}

In the first step our cognitive states initiate an imaginative process resulting in an imaginative


\(^{143}\) Ibid.

\(^{144}\) Ibid. p. 39.

\(^{145}\) Ibid. p. 49.
experience with phenomenal character. What is decisive in this psychological mechanism is that both the imaginative experience and the perceptual experience have a phenomenal character in common.

<table>
<thead>
<tr>
<th>146 II\textsuperscript{nd} Step – Phenomenal Character in Imaginative exp. → Interacts with → Phenomenal Character in Perceptual exp.</th>
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In the second step it is this phenomenal character belonging to the imaginative experience interacting with the phenomenal character of the perceptual experience. In order to state how this psychological mechanism functions concretely, Macpherson considers once again the example of Delk and Fillenbaum. The participants of this experiment must have imagined quite naturally that the characteristically red cut outs have red phenomenal character and the same phenomenal character of imaginative experience interacts with the perceptual character, drastically altering the end result of perceptual experience in favour of the imaginative experience. The subject, being unaware of this psychological dynamics, involving a two step interaction between imagination and perception, accounts the combination of these two phenomenal characters to be a single phenomenal state. Though this theory of Macpherson may not be the ultimate answer for explaining all cases of cognitive penetration, but the fact that her theory addresses some cases, suffices to establish plausibility claim of cognitive penetration. We will now see in a nutshell the claim of impenetrability of cognition so that we are better equipped to analyze the issue of perceptual illusion in virtual reality.

2.3.6.2 Impenetrability of Cognition According to Firestone and Scholl

Firestone and Scholl in their article, 'Cognition does not affect perception: Evaluating the evidence for “top-down” effects', argue against the top down effects on perception, namely, against the claim that some extra-perceptual state can literally and directly alter what we see. In the light of an overwhelming number of research papers published in support of the influence of cognition on what we see, Firestone and Scholl caution about the underlying motive to be a threat or conspiracy to vanish the line of distinction between cognition and perception. For, they state “at issue is the extent to which what and how we see is functionally

146 Ibid. p. 50.
147 Ibid. p. 51.
independent from what and how we think, know, desire, act, and so forth”. Hence they try to highlight the pitfalls of these studies as there are no evidences to support the claim of cognition influencing perception. Therefore it is evidently clear from their thrust that they defend the modular nature of the visual perception, namely, that the early vision is encapsulated from the rest of cognition. However, it is also to be noted that this encapsulation of visual perception does not mean complete isolation. There is mutual interaction of mental process as it forms part of the whole system of brain functionality. On the one hand, Firestone and Scholl do hint on the possibility of such an interaction as follows; “there is now considerable evidence that brain regions that were initially considered “higher up” in a processing hierarchy can modulate “lower” regions, through so-called re-entrant processing from descending neural pathways – and these sorts of modulation are often also commonly called top-down effects”. On the other hand, they deny this sort of interaction taken to be construed as penetration of cognition on perception. For, they write, “this type of “top-down” influence has no necessary implications for cognitive penetrability”. Therefore from the way Firestone and Scholl explain the mutual interaction between perception and cognition one has to drive it home in such a way that it does not put in danger neither the unique role of visual perception to provide inputs nor it stakes the independency of visual perception due to the interruption of the brain processes involved. Given this particular context of their explanation, the answer to the question as to why Firestone and Scholl favour the impenetrability of cognition on perception, is to argue against revolutionizing how we think about the organization of mind. They ratify this position by saying that “there are no top-down effects of cognition on perception, in the strong and revolutionary sense wherein such effects violate informational encapsulation or cognitive impenetrability and so threaten the view of the visual system as a functionally independent (modular) part of the mind”. In so far as the thematic sequence of perceptual non-illusion in virtual reality is concerned, there is no point to elaborate at length what Firestone and Scholl discuss and hence we directly get into seeing whether perceptual non-illusion as highlighted by Chalmers is challenged either by the position of Macpherson or by the position of Firestone and Scholl.

149 Ibid. p.3.
150 Ibid.
151 Ibid. p. 4.
152 Ibid.
153 Ibid. p. 13.
2.3.7 Analyzing the Challenge to Perceptual Non-illusion

What Chalmers tried to underline regarding the perceptual non-illusion in virtual reality, analyzing the case of naive and experienced users, is that the experienced users are not deceived at least at the realm of forming belief. Hence, depending on this reason Chalmers argues that there is perceptual non-illusion in virtual reality. In the light of what Macpherson (2012) and what Firestone and Scholl (2016) have presented, the position of Chalmers is to be scrutinized so as to see to what extent perceptual non-illusion could be justified.

1. First of all, such a scrutiny could be initiated with a question so as to see whether the views proposed by Macpherson stand in opposition to the views proposed by Firestone and Scholl, provided a comparison is undertaken. Take for example, the phenomenal character of imaginative experience interacting with the phenomenal character of perceptual experience. Macpherson underlines that the subject takes these two to be one single phenomenal state and thereby she highlights the cognitive influence. The decisive point to be noted here in this case is that the phenomenal character of perceptual experience is not eliminated or altered completely but rather it is subsumed or overshadowed by the phenomenal character of imaginative experience, while appropriating it as a single phenomenal state. Therefore the position of Firestone and Scholl, that the early vision remains encapsulated from the rest of cognition, is in no way opposed by the position of Macpherson. At this juncture, it is also good to see how the position of Chalmers fits into that of Macpherson and that of Firestone and Scholl. In the same way Macpherson argues the plausibility of cognitive penetration on perception, Chalmers also takes recourse to such a plausibility to argue the case of perceptual non-illusion in virtual reality by telling that the belief formed, depending on the rich source of experience from the part of experienced user does prevent him from being deceived. This position of Chalmers does not oppose the position of Firestone and Scholl either. For, Chalmers does not argue the possibility of naive users being deceived, through this what Chalmers indirectly communicates is that the early vision remains encapsulated from the rest of cognition. Therefore, concerning the case of naive users if at all the awareness that they are in the virtual world is absent, as this awareness do not have the back up of forming belief from the rich source of experience. Therefore the phenomenal character of their perceptual experience (in the terminology of Macpherson) remains in tact which is nothing but what Firestone and Scholl considers to be the encapsulated nature of early vision.

2. As a second point, we take up the nuances of the respective motives evident in the papers of Chalmers, Macpherson and Firestone and Scholl. The motive of Macpherson is not to apply the cases she discusses as a paradigm to generalize cognitive penetration on all cases of
perception, but to state that there are exceptions against the tendency of generalizing cognitive impenetrability. Firestone and Scholl on the other hand take a stern position against generalizing cognitive penetration on perception, making it applicable to all cases. If such a view is applied in all cases of perception, it promises a revolution in how we think about the organization of the mind.\textsuperscript{154} In applying cognitive penetration to all cases of perception, the credibility of what we see is at peril. Therefore the motive of Firestone and Scholl is to safeguard the encapsulated nature of early vision. Having seen the respective motives of Macpherson and Firestone and Scholl what is common to them is that both of them argue against the tendency of generalization in the respective topics of their concern. The fact that they are against generalizing, positively affirms that there may be cases of exceptions. Hence, if the position of Macpherson is compared from the point of view of the respective motive that of Firestone and Scholl, their positions are not opposing each other. Turning on to the motive of Chalmers, it is evident that his motive is to defend the perceptual non-illusion in virtual reality. We have already seen how Chalmers establishes perceptual non-illusion basing on the mirror reflections, discussed at length. This position of Chalmers does not manipulate or cancels out the encapsulated nature of early vision. For example, the perceptual experience of a driver, no matter how experienced one is, is such that the reflections seem to be at the far side of the rear-view mirror. It is the subsequent belief, springing from the knowledge of there being a rear-view mirror, which safeguards the driver from being deceived, confirming that the reflections are at the near side of the glass.\textsuperscript{155} Thus from the point of view of the respective nuances of motives, the plausibility of cognitive penetrability cannot be ruled out, in so far as the uniqueness of early vision remains in tact. The fact that both Chalmers and Macpherson argue their case of cognitive penetration, without challenging such a nature of early vision, indirectly provides sufficient reasons to vouch for perceptual non-illusion in virtual reality.

3. The third and final point in this regard has its inspiration from the encapsulated nature of early perception. Such a provision is enshrined in the fundamental nature of perception, so that a protection is guaranteed against the possible adulterations to its nature. However, this fundamental guarantee does in no way isolate perception from the other interconnected systems of cognition. Thus the various systems of cognition operative in an individual complement each other harmoniously binding the individual as a unitive whole, not as a unit.

\textsuperscript{154} Ibid. p. 4.
\textsuperscript{155} Chalmers opines that his position does not contradict the cognitive impenetrability of early vision which is championed by Firestone and Scholl. For more clarifications see Footnote number 13 of David J. Chalmers, “The Virtual and the Real” p. 330.
divided in itself. Similarly, Firestone and Scholl, while describing the encapsulated nature of early perception, seem to insist on the protective elements so as to safeguard the uniqueness of perception and this in turn does not mean that they undermine the unifying elements in order to isolate and segregate perception from the rest of cognition. On the other hand the arguments of Macpherson and Chalmers seem to fall in the sphere of what concerns the unifying elements of perception with the rest of cognition. Therefore, from the point of view of such a holistic explanation, in which the protective and the unifying elements are incorporated, all allegations of unnecessary encroachments are pointless. Thus there is nothing wrong to assume that belief comes to the aid when perception seems to fail or deceive a person, which in turn bases the claim of perceptual non-illusion on safe grounds.

2.4 The Primacy of Digital World over the Fictional

As the title of this section suggests, Chalmers uncovers a dilemma that supposedly help identifying the virtual world as a fictional world and thus according to him once this dilemma is clarified the primacy of digital world is settled once and for all. The case in most of the virtual worlds, take for example the case of video games, is that, the fictional world is intertwined so intrinsically with virtual world that it seems almost difficult to separate virtual world from the fictional world. Therefore, the co-existence of the two cannot be decisive in determining the primacy but only that can be decisive, which sustains despite the absence of the other and thus can be the legitimate candidate upholding primacy. Hence when we say that Chalmers reconciles the dilemma, what is meant is that, he not only succeeds in separating its seemingly inseparable co-existence, but he also establishes that the fictional world may not be present in all cases of virtual world.

2.4.1 Compartmentalization of Digital from the Fictional

It has been already pointed out that the first challenge towards establishing the primacy claim is to see whether it is possible to testify to the cases where digital world could continue to survive independently of the fictional world. Chalmers substantiates this point through suggesting concrete examples and hence he classifies the elements belonging to the digital world and the elements belonging to the fictional world in the context of a video game named, 'Second World War'. A participant of this video game interacts with real digital objects and with real digital colours which occupy space in the digital world, which certify to the existence of an underlying digital world. There is also an associated fiction which makes the
participant feel that the context of this game dates back to Europe in the 1940s. By playing this video game what catches the immediate attention of the participant is that he/she is transported from the present context to that of 1940s, a time which he/she must have never witnessed and thus one could easily ascertain that the video game projects a fictional world. It is precisely this fictional element, namely, that which makes possible a journey back in time, that enthuses the participant to involve earnestly in the game. One could still play the game even when the entertainment element (the fictional world in the context of this video game) were to be dropped out. For, Chalmers clarifies, “one could treat the game as involving simply virtual objects in virtual space. . . . When one “sees Hitler” in the game, I would say that one actually sees a digital object, but one sees it as Hitler. In effect, there is a digital world (with virtual space) that one interacts with, and a fictional world (with physical space) that one represents”. This distinction between digital world and fictional world that Chalmers underlines is very important for understanding the primacy of digital world. It is possible that one could overlook the digital world as it is an infrastructure or in other words a database on which the fictional world of 'Second World War' is constructed and on account of which alone this particular video game is able to cast its spell on the participant. Before we proceed to discuss the priority of digital world over the fictional world it is good to consider the reasons on what basis the digital world could be overlooked. The fact that the fictional world is posing a serious challenge on the digital world, even to the extend of putting at stake its primacy, shows its seemingly irresistible influence. The way Chalmers classifies the fictional contents in the fictional world gives, on the one hand an idea about the depth of dilemma concerning primacy questions and on the other hand, it offers some possible hints to solve this dilemma.

### 2.4.2 The Relevance of Classifying Fictional Contents

A superfluous and a general analysis of the fictional world will not give an adequate picture of its reality. Therefore an in-depth study by way of a classification will shed light on the reasons as to why the primacy of the digital world is often bypassed or overlooked. To this end in view, Chalmers classifies the fictional contents in the virtual world into two, namely, specific fictional content and generic fictional content.

#### Specific Fictional Content

According to Chalmers, “specific fictional content involves specific physical spatial locations

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157 Ibid.
(e.g. Germany), times (e.g. 1945), and individuals (e.g. Hitler). . . . it can also play a role in other uses of VR: say, training and navigation uses of VR where a city such as New York is depicted”.

It is specific because it refers to a particular place, time or individuals and hence its meaning cannot be exhausted to a second source other than what it refers. It is fictional because it is only a representation or a simulation of the place, time or the individual being referred and hence in no way the original and therefore its meaning could be exhausted to a second source as is the case with simulation. The peculiarity of specific fictional content is that such fictional contents are not inevitable and therefore such fictional contents could be dropped from the virtual world. To substantiate the claim that the specific fictional contents could be dropped, Chalmers is referring to the video game 'Second Life' in which the specific fictional contents like spatial locations, times and individuals as in the video game 'Second World War' are absent. The fact that the specific fictional contents could be optional is on the one hand an advantage favouring digital world to establish its priority claim and on the other hand it is a limitation discrediting the fictional world to wield its arguments against the priority claim of digital world.

**Generic Fictional Content**

From the fact that Chalmers defines the specific fictional content to be optional, one could already assume as to how inevitable the generic fictional content could be. According to Chalmers, generic fictional content is “the representation of objects as occupying physical space and as having shapes, sizes and relative positions, along with other primary and secondary qualities such as colors and perhaps masses and sounds”.

While discussing specific fictional content Chalmers notified that the video game 'Second Life' does not contain specific fictional contents and in the context of explaining generic fictional content he makes again a mention to the same video game to say that especially those video games like 'Second Life' involving immersive experiences of three-dimensional environments can have generic fictional contents. His reason to argue as to why generic fictional contents in most of the virtual environments are not real, is due to the given fact that “in real physical space, there are no objects arranged in this way, it seems that this interpretation of a virtual world must involve fictional content”.

Therefore it would mean that the objects that are found to be

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158 Ibid.
159 Ibid.
160 Ibid. p. 335.
161 Ibid.
162 Ibid.
representing the physical objects in virtual environments are fictional representations.

2.4.3 Priority of Digital World

The priority of the digital world could be argued on account of some implicit and explicit reasons running through the thought of Chalmers.

1. First of all we consider an implicit reason arguing the priority of digital world. In order to comment on the priority of digital world over the fictional world Chalmers seems to refer to the very ontological nature of the fictional world. For, the nature of the fictional world demands that it cannot exist on its own but it needs a pre-existing structure to lean on for support. Though this point is not obvious in the words of Chalmers, one could easily assume the need of a support base for the fictional world to exist. Consider the following quote from Chalmers; “When one brings a fictional interpretation to bear, a pre-existing digital world is being interpreted as having a certain fictional content, just as pre-existing physical objects might be interpreted as having fictional content in a non-virtual role-playing game”.\textsuperscript{163} Through this quotation Chalmers affirms the inevitability of a support base while referring to 'pre-existing digital world' and 'pre-existing physical objects' and he considers it necessary so that the respective fictional content in the virtual and the non-virtual world can stake an existential claim for themselves. In other words, the bearing of a fictional interpretation cannot be sustained, if a database is not presupposed. Hence on account of the nature of fictional world, it has to depend on a database for its support and for its existence. This implicit reason itself is a valid proof that the digital world has priority over the fictional world.

2. An additional reason to highlight the priority of digital world is that “every VR environment involves a digital world, while only some of them involve an associated fictional world”.\textsuperscript{164} However, to elaborate on this point one has to first of all, have an overview as to how the virtual reality environment is constructed and to this end Chalmers gives a clear picture of it in the following statement. “Every virtual reality environment can be associated with both a digital world (with virtual space) and a fictional world (with physical space). However, the digital world is always present. The fictional world involving physical space is optional”.\textsuperscript{165} What becomes evident from the statement of Chalmers is that digital world with virtual space is very much salient to the virtual reality environments but the virtual reality environments

\textsuperscript{163} Ibid. p. 334.
\textsuperscript{164} Ibid.
\textsuperscript{165} Ibid. p. 335.
could still be conceived without fictional worlds involving physical space. The important point to note is that the dropping out or accommodation of fictional world with physical space depends on the interpretation of the viewer.\textsuperscript{166} Chalmers presents some concrete cases in which the viewers are reluctant to ascribe physical space to the fictional world. First of all, “the game of Pong can be interpreted as representing a game of tennis in physical space, but few users will interpret it this way”.\textsuperscript{167} Similarly, the users of 'Second Life' may not ascribe physical space to its fictional contents, as they know that in non-virtual world objects are not arranged in the way it is seen in 'Second Life'. Here it is the knowledge or the intentional stance of the viewer that helps him/her drop the element of physical space to the game of Pong as well as to 'Second Life'. Chalmers expresses the same with other words, “Environments that involve unusual forms of embodiment and unusual laws of physics maybe be especially apt for being interpreted as virtual rather than as physical”.\textsuperscript{168} This means that the digital worlds can exist independently as its presence is unceasing in comparison with the fictional world, but the fictional world cannot but depend on a data base for its support. Hence on account of these reasons Chalmers is justified in his claim that the fictional world does not threaten the primacy of the digital world.

3. There could be a criticism against Chalmers as he leaves the element of physical space in fictional world to be decided on account of the attitude of the viewer. The problem associated with such cases is that what depends on the attitude of a person may not yield objective results, as it varies from person to person and hence the accusation could be that such explanations make the issue more ambiguous instead of clarifying the dilemma. It is precisely because of this reason an exception is foreseen that only the experienced users could be expected to conceive the absence of physical space while interpreting the fictional contents in virtual reality environments. Therefore an extreme point of this criticism against Chalmers is the allegation that he is resorting to the induction of experienced users in defense. It is a sort of anticipatory excuse which could mean that Chalmers runs away from his responsibility of defending his case. I think, that this allegation is pointless as we have already discussed the role of experienced and expert users as credible resources not as a case of anticipatory excuse.

\textit{2.5 Life in Virtual Reality; Its Value}

It is interesting to note, as to why Chalmers quotes an example from the book of Robert

\hspace{1em}166 Ibid.
\hspace{1em}167 Ibid.
\hspace{1em}168 Ibid.
Nozick to introduce the topic of the value of life in virtual reality. Nozick narrates the case of an experience machine as follows:

Suppose there was an experience machine that would give you any experience you desired. . . . All the time you would be floating in a tank, with electrodes attached to your brain. . . . After two years have passed, you would have ten minutes or ten hours out of the tank, to select the experiences of your next two years. Of course, while in the tank you won’t know that you’re there; you’ll think it’s actually happening. . . . Would you plug in?

The book of Nozick was published already back in 1974, a time Nozick would not have imagined of virtual reality. Added to this, the thrust of Nozick was to propose a theory of political philosophy especially to learn lessons from anarchy. Therefore the theme of Nozick has nothing to do with virtual reality. In spite of all these, if one were to substitute the experience machine for virtual reality, the supporting reasons of Nozick seem to be perfectly placed to question the value of life in virtual-world as against the value of life in non-virtual world. It is precisely because of this reason that Chalmers considers the experience machine as a possible starting point to discuss the value of life in virtual-world.

### 2.5.1 Appropriating Experience Machine to Virtual World

According to Nozick, a person will not exchange the life in a real world for a life floating in a tank, if one were given a choice whether he/she were to plug into the experience machine for a second time. He proposes three reasons to substantiate his position. We try to apply these three reasons of Nozick into the context of virtual reality to see whether they safeguard the life in non-virtual world and if they do not, it could be assumed that their threats are not binding the life in virtual-world either. Such an attempt, however, would enable us to see whether these worries positively or negatively influence life in virtual reality.

#### 2.5.1.1 Value of Experience in the Context of Activity

In the experience machine one spends his time floating in a tank and the speciality is that without doing anything or without undertaking any physical activity one has experiences. Even the experiences understood to be bound with an activity could be experienced while floating in the tank. Take for example, thinking of writing a great novel, and the person in the experience machine feels as though it were a reality. Therefore in order to distinguish the value of experience, a question is to be asked. Which experience is more valuable, the one experienced as a result of an activity or the one experienced floating in the tank without the

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170 Ibid. p. 42.
accompaniment of an activity? In the backdrop of this question Nozick argues that what we prefer is “to do certain things, not just have the experience of doing them”.\footnote{171} Therefore, according to Nozick the experience that comes with the accompaniment of an activity is much more valuable than the experiences achieved through the mere stimulation of brain. If we apply this thought experiment to virtual reality, it means that virtual reality can deliver experiences without the backup of activities, if that is the case people would prefer non-virtual world over virtual-world.

**Chalmers on Value of Experience in the Context of Activity**

Chalmers responds to this criticism by saying that it does not apply to virtual reality as the user does really undertake activities in the virtual-world. He underlines his argument by referring to a virtual reality environment, “even in limited existing environments such as Second Life, a user can genuinely write a novel, or make a friend, or read a book”.\footnote{172} According to Chalmers the criticism of Nozick is associated with a presupposition of illusion, as Nozick wants to highlight “what seems to happen in the Experience Machine does not really happen”.\footnote{173} Regarding illusion in virtual reality we have had an elaborate discussion and seen that an experienced user has reasons to consider his/her actions in virtual reality to be real. For example, in the virtual environment of social media one does really enter into a conversation and can exchange ideas, hence the experiences in this virtual environment of social media have sufficient backup of actions. Nozick also refers to another related worry, namely, ignorance. For, Nozick writes, “while in the tank you won't know that you are there; you'll think it's all actually happening”.\footnote{174} The person in the tank is disillusioned by ignorance that he/she has a false belief that they are in the normal physical environment which in turn lead them to perceptual illusions. But we have already seen that the users in virtual reality enter it with the belief that they are inhabiting virtual worlds and this belief continues to be with them until they exit out of this world.\footnote{175} Because of these reasons the first criticism of Nozick does not apply to virtual reality as the user in virtual-world is free to make choices and perform various actions and therefore he/she does not feel the experiences as perceptual illusions but a consequence of his/her willful choices and actions which in turn act as an incentive for them to inhabit the virtual world quite often. Having discussed the first reason of

\footnote{171 Ibid. p. 43.}
\footnote{172 David J. Chalmers, “The Virtual and the Real”. p. 339.}
\footnote{173 Ibid.}
\footnote{174 Robert Nozick, *Anarchy, State and Utopia*. p. 43.}
\footnote{175 David J. Chalmers, “The Virtual and the Real”. p. 339.}
Nozick and the way Chalmers responds to it, we proceed to the second reason of Nozick.

### 2.5.1.2 The Issue of Personhood in the Experience Machine

The second reason of Nozick stems from a deep concern that may put the very identity of a person in question. His concern is very evident from the way he poses a question, “why should we be concerned only with how our time is filled, but not with what we are”. The meaning that this question resonates is that, the life in the experience machine is considered as a means to while away our time and therefore what we are (identity/personhood) is put at stake. What we are, namely, whether we are courageous, kind, intelligent, witty, and loving evolves through the concrete actions in the context. Because there is no scope for these actions in the experience machine, Nozick is of the view that “plugging into the machine is a kind of suicide”, a temporal termination of one's own identity. Therefore, as no-one wants to compromise with one's own identity, it is unlikely that a person for a second time opts to be plugged into the experience machine. This argument of Nozick if applied to the virtual reality, carries a similar implication as that of the first argument. For, we saw Nozick defining the way we are, in the context of certain actions. Therefore actions become a decisive point both for the first and second arguments. Thus the claim of Nozick in this regard would be that one cannot be the way one is, meaning to say that the identity of the person is at stake, if one is plugged into a virtual environment. We will now see how Chalmers responds to this criticism.

### Chalmers on the Issue of Personhood in the Virtual Environment

It is difficult to clarify whether the issue of personhood/identity could be defined as a general theme, merely on the basis of a restricted explanation of what *we are*, namely to define it on the basis of actions alone. However, we will have to suspend further clarifications on this point for the moment, as Chalmers confines his response precisely to the allegations of Nozick, and therefore a detailed discussion could only be entertained in the third chapter. The first comment of Chalmers, namely, that the second argument of Nozick does not apply to the virtual world, is already an allusion that the response of Chalmers is directed to the criticism of Nozick alone and not to handle a general theme of personhood/identity. Chalmers elaborates the second argument from the point of view of Nozick's own stipulation that the experience machine “is preprogrammed, so that one’s life experiences are programmed in

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177 Ibid.
178 Ibid.
advance rather than depending on one’s choices along the way”. It is true that Nozick considers the experience machine to be completely pre-programmed but Chalmers establishes its connection to the second argument by stating that if everything is determined, the choices and actions of the user do not make any sense, which in turn forces one to assume along with Nozick, what one is, is at stake. As a response to this criticism Chalmers refers to one of the core elements of virtual reality, the absence of which makes the virtual reality fall short of its status. To put in the words of Chalmers; “our definition of core VR requires that it is interactive: a user’s actions make a difference to what happens. . . . Perhaps there are some constraints on actions, but there are also constraints in the non-virtual world. One’s life in a virtual world certainly need not be preprogrammed”. Therefore the decisive point to draw a clear line of distinction between virtual reality and the experience machine is to see whether they are interactive or not. Though the experience machine of Nozick may be interpreted as a sort of virtual reality, Chalmers has his reasons that it could only be a passive virtual reality, in which the other two features like immersion and computer generation could be present but the possibility of interaction is absent. The possibility of interaction makes a significant change to what happens and hence the interactive environment is different from an environment where only immersion and computer generation is possible. Take for example the experience of an actor acting out a particular scene in a movie and compare it with the experience of a person who watches this particular scene. From two respects the inadequacy of their experiences could be measured. On the one hand, the experience of the actor, as he exploits the possibility of interaction, is unique, whereas because the viewer is passive he/she can in no way claim to have the same experience as that of the actor. On the other hand, the possibility of interaction vested on the actor does really matter as to what happens to the environment of movie, whereas the person watching the same movie can in no way influence as to what is happening in the movie. Similarly the possibility of interaction gives virtual reality advantage over the experience machine proposed by Nozick and hence the second argument of Nozick does not apply to virtual reality. We will now take up the third reason of Nozick.

180 See Robert Nozick, Anarchy, State and Utopia. p. 42.
183 Ibid. p. 340.
2.5.1.3 Confinement to a Man-made World

The third reason of Nozick which may prompt one to opt against the experience machine is that it is designed and constructed by humans and therefore, “there is no actual contact with any deeper reality, though the experience of it can be simulated. Many persons desire to leave themselves open to such contact and to a plumbing of deeper significance”.\footnote{184} The first part of Nozick’s argument is clear, namely, the experience machine is a human-made entity, whereas the second part of this argument, namely, establishing actual contact with a deeper reality, invites troubles, as this itself is a controversial and ambiguous issue. It is controversial in the sense that Nozick refers to two contradictory views; one which lures the user of experience machine to benefit such an experience by plugging into the machine, as it opens avenues to the deeper reality, and the other viewing it merely as local experience machines, which cannot facilitate contact with the deeper reality.\footnote{185} Such claims arguing the pros and cons are not conclusive and thus remain controversial. It is ambiguous as it is not clear from the way Nozick explains whether the natural entities which are not human-made can take people to establish contact with the deeper reality. It is also difficult to distinguish the deeper reality about which Nozick makes the mention is the same as what is preached by various religions across the globe. Therefore there is no surprise as to why Chalmers does not entertain a discussion on the latter part of the third reason of Nozick, other than summarizing it to a general theme of meaningfulness.\footnote{186}

Chalmers on Confinement to a Man-made World

Chalmers agrees that the virtual environments are human-made environments,\footnote{187} but what he disagrees in this regard, points to a danger. The danger is associated with a tendency of generalization. For, the explanation of Nozick seems to generalize that only through the natural environment, a contact with a deeper reality (Chalmers construes contact with deeper reality as meaningfulness) can be established. If the natural environment (as against human-made environments) were to be the criteria on account of which the meaningfulness or meaninglessness of life is to be decided, such a generalization applies not only to the virtual environment but extends to all human-made environments. The words of Chalmers make this point all the more evident, “if this is an objection to living in virtual reality, it is also an objection to living in a modern city such as New York. But billions of people lead meaningful

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\begin{itemize}
\item \footnote{184}{Robert Nozick, Anarchy, State and Utopia. p. 43.}
\item \footnote{185}{Ibid. p. 44.}
\item \footnote{186}{David J. Chalmers, “The Virtual and the Real”. p. 338.}
\item \footnote{187}{Ibid.}
\end{itemize}
lives in human-made environments such as cities”. The fallacy of this criticism by Nozick becomes noticeable in the context of including the other human-made environments. From this perspective, namely from the perspective of including other human-made environments like cities, it becomes obvious that the naturalness of an environment could be understood as an optional value only and not as a fundamental criteria to distinguish meaningfulness or meaninglessness of life. So because of these reasons Chalmers considers that the arguments of Nozick are not reasonable enough to prompt one not to opt against living in virtual environments. However Chalmers identifies some other potential worries which may affect the value of life in virtual reality.

2.5.2 Potential Worries Affecting Value of life in Virtual Reality

Chalmers gives a list of potential worries which can affect the value of life in virtual reality. It is also interesting to note that he classifies these worries into three categories. Some worries are such that it could be overcome in the course of time as virtual reality keeps itself improving. The second category of worries are applicable to both the virtual and non-virtual realities. The third category of worries are hard to avoid. Discussing the potential worries in their respective categories will make the task of responding to the worries easier.

2.5.2.1 The First Category – Improvable Worries

Chalmers classifies two technological worries under this category, namely, the worries associated with quality and disembodiment. According to Chalmers these two worries cease to be a worry in the future, in so far as a rich virtual reality, complex enough to compete with the complexity of ordinary physical reality, is developed in the future. Given the pace of development noticeable in virtual reality, Chalmers is hopeful of ruling out these worries. We will see in nutshell what these two worries are.

Virtual Reality Lacking Quality

The quality of virtual reality is assessed in comparison with the physical reality and in the light of such an assessment it is found that virtual reality has to upgrade itself constantly at various respects to be on par with the physical reality. In order to have an idea of the areas

188 Ibid.
189 Ibid.
190 Ibid. p. 343.
191 Ibid.
where virtual reality is lagging behind physical reality, we see Chalmers referring to some of them; “it has lower visual resolution, it has less fine-grained detail, there are fewer modalities of perception, and so on”. Since these worries on quality are issues concerning technology, there is scope for improvement even though it involves a longer period of research. Therefore, in the course of time we could expect that in future virtual reality may even outdo the physical reality. As to the question whether one is legitimized to entertain such hope about the future virtual reality, one needs to look for answer into its past, namely the way it has evolved so rapidly over the years and hence its steady progress in the past will vouch also for its development in the future to be on par with physical reality. Though there is uncertainty, as to how the virtual reality in the future appears to be, the same uncertainty acts as a catalyst for the researchers to upgrade virtual reality so that it appears indistinguishable from the physical reality and because of this reason Chalmers is justified in classifying this worry as a worry pertaining to the current virtual reality researchers.

**The Worry of Disembodiment**

It is because of the givenness of a physical body that we are able to undertake many activities in the physical world. Though our avatars in the virtual environment are meant to signify the element of embodiment in the virtual environment, certain functions the physical body is capable of like, “eating, drinking, exercising, and having sex, for example, are either impossible or at least extremely limited in current VR. One’s physical body can supply some of these things, but then one is relying on physical rather than virtual reality”. In the context of the above mentioned physical functions, the embodiment (avatars) in the virtual environment seems limited or almost impossible. But if it is understood as an event happening in the virtual world, take for example my avatar eating a virtual apple, the impossibility of this physical function turns out to be an event registered in the virtual environment. Thus the impossibility claim of this criticism, which scores on an undue comparison with physical and virtual could be overcome. Added to this a positive stroke is necessary to perfecting the researches concerning the embodiment in the virtual reality. To this end, the fact that avatars do affect changes in the virtual environment could be a point of departure, from which a much more sophisticated virtual bodies could be developed so as to make virtual body appear indistinguishable from the physical body. In this sense the issue of embodiment in virtual reality concerns technological up-gradations and hence this worry could be improved in the

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192 Ibid. p. 342.
193 Ibid. p. 341.
course of time.

2.5.2.2 Second Category – Worries Applicable to Both Virtual and Non-virtual

The potential worries that we discuss under this category are such that they are not distinctive to virtual reality alone but such worries affect the non-virtual life too. The advantage of this argument is that, if this worry remains unsolved in the non-virtual realm, such worries raised as a criticism cannot exert its force against virtual reality also. The worries that Chalmers mentions in this regard are relationship and interference. We will see why they are worries in the non-virtual domain also.

The Worry Concerning Relationships

This criticism could be better understood from the context of experience machine. For, the person in the experience machine will miss his/her loved ones as the life in experience machine is confined to a tank, curtailing all relationships for a stipulated period of time. The issue here is, in the experience machine one has to be alone and hence one's loved ones cannot be present in the experience machine. To the question whether one's loved ones could be present in virtual reality, Chalmers answers as follows; “there are some virtual realities in which other people are not present: perhaps at most there will be a few “non-player characters” that are not genuine people at the current level of technology. But many VRs have multiple users who are people, and it is perfectly possible to enter a VR with specific loved ones”.¹⁹⁴ The answer of Chalmers states the possibility of entertaining relationships in the virtual world. On the one hand establishing relationship is not possible in some virtual realities but on the other hand there are also virtual realities into which one could enter with his/her loved ones. To the question whether it is a worry in the non-virtual world, we need to first of all make sure whether there are cases in the non-virtual world in which relationships are possible and also the cases in which the possibility for building relationships are restricted. I assume that there is no confusion concerning the former, as people could take their loved ones to a new country or to a new city without much restrictions. But if the latter is also proved true, it would imply that the worry concerning relationship be equally applicable to the non-virtual world also. There are places in our society, where one cannot enter with the loved ones, for example, consider prisons, hospitals and certain places of work due to high security concern, where the inmates are not permitted to take their loved ones along. These

¹⁹⁴ Ibid.
examples suggest that relationship is not a worry distinctive to virtual reality alone but it concerns non-virtual domain also.

**The Worry of Interference**

One of the main allegations against virtual reality is that life in virtual reality has a negative impact on the life in non-virtual world. To make this point clear, namely as to how virtual reality interferes with non-virtual life, Chalmers mentions some examples; “Perhaps it will distract one from responsibilities and duties; perhaps one will neglect one’s non-virtual health; perhaps violence in VR will make one more violent outside VR”.\(^{195}\) It is quite natural for a person who spends hours of time in social media interacting with friends, that he/she will have no time for the family, nor to address his/her health concerns, like exercising on a regular basis. These examples show concretely how life in virtual world is taking a negative toll on non-virtual life. However, the point that is to be highlighted is not the negative impact of virtual reality on non-virtual life, but to show that the same sort of harm is applicable to non-virtual realities as well. Chalmers mentions examples to show that non-virtual realities do interfere with life and can exert negative impact on it. “A new relationship may distract one from responsibilities, a desk job may be bad for physical health, a job involving violence may desensitize one”.\(^{196}\) Thus both these examples discussed on account of virtual-reality and non-virtual reality respectively, bring about the same sort of worries and hence the criticism that virtual reality has a negative interference with life is not distinctive to virtual reality alone but it applies to non-virtual realities also. Because these two criticisms are equally applicable to both virtual reality and non-virtual reality, the force of these criticisms remains neutralized and hence it is not binding on virtual reality alone.

**2.5.2.3 Third Category – Unavoidable Worries**

Chalmers identifies three worries to be harder to avoid and they are artificiality, transience and lack of birth and death. These worries are hard because it is extremely difficult to get their values replicated in the virtual world. For, it is difficult to translate the value of naturalness (as one could expect only human-made objects in virtual reality), the value of history and the value of birth and death in a virtual environment.\(^{197}\) Of these three worries we have already discussed in detail artificiality, as we have discussed the implications of human-made

\(^{195}\) Ibid.
\(^{196}\) Ibid.
\(^{197}\) Ibid. p. 343.
realities, while going through the criticism of Nozick. Therefore we would take up the remaining two for our further discussion.

**Virtual Reality is Transient**

We have already seen that we really fail to replicate history as a source of value into virtual environment, but in the physical environment we are indebted to the past for enjoying the value of life in the contemporary world and therefore we could even say that the value of life in the physical world, to a great extent, is constructed on the past or on the rich heritage of history. On the one hand virtual reality itself does not have a long history, as it is of a recent origin, and on the other hand the life in virtual reality is transient. Chalmers makes this point clear; “Many virtual worlds are in effect created at the moment one enters them and disappear when one leaves them. Even older virtual worlds are typically only a few years old, and most have a limited future”.198 Take for example one of the popular social media communications of today, namely the mobile application called, 'Whats app'. Your conversations with a friend is accessible from the moment you downloaded the app and registered yourself as a customer. If you happened to delete the app, all your previous communications also will be lost. Even if you were to reinstall the app for a second time, the earlier conversations cannot be accessed again. This clearly indicates that the history in a virtual reality environment is only for a short span therefore history in virtual reality cannot be considered as a source of value for meaningful life. Chalmers accepts this criticism as a worry which is very hard to avoid but he has his justification by mentioning that, “Plenty of people live meaningful lives in environments with little relevant history”199. This would imply that history is not inevitable to determine the meaningfulness or the meaninglessness of life, therefore the issue of history may be important in other respects but it is not significant as far as the value of life is the concern.

**Birth and Death not Possible in Virtual Reality**

Birth and death as understood in the physical world is once and for all, as there is absolutely no possibility of repeated births and deaths. Whereas in a virtual environment birth could be understood, as that moment when one enters the virtual environment and death could be understood as that moment when one exits from the virtual environment. Hence several births and deaths are possible in a life time, in the sense of inhabiting and exiting the virtual world.

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198 Ibid. p. 342.
199 Ibid.
Another way of understanding birth in virtual reality denotes to the beginning of one's identification with avatar and the death could be the destruction of the avatar. “When an avatar is destroyed, one can typically “reincarnate” in another avatar”. However this interpretation of unlimited births and deaths in virtual environments does not in fact reiterate the fact of birth and death but highlights life alone. Therefore the beginning and end of life (birth and death) is not an important issue in so far as the value of life in virtual world is concerned, but what adds value to the life in virtual environment is a sustained existence. It would invite troubles, if one were to understand 'sustained existence' as we understand it in the context of non-virtual world. For in the non-virtual world 'sustained existence' is understood as a continuous sequence of life without breaks or interruptions and hence this is normal and natural to non-virtual world. The moment of break or interruption is normally explained to be the termination of life. There is a difference between 'what is normal in non-virtual world' and 'what is normal in virtual world'. Therefore if 'sustained existence' is understood in terms of what is normal in the virtual world, the meaning becomes all the more clear. It is quite normal and natural to understand the 'sustained existence' in virtual reality with periodical abruptions, which are popularly termed as 'being on-line' and 'being off-line'. 'Being on-line' and 'being off-line' are very much natural to the virtual reality, therefore on account of what is normal to virtual reality, it designates to life or in other words it is indicative of 'sustained existence' and taking periodical intervals (being off-line) are quite natural.

Under this section, as we have discussed the value of life in virtual reality, we must have noticed that Chalmers shifts focus from value of life to meaning of life. This shift of focus is resorted to especially when the criticism is hard to digest. I think, Chalmers resorts to such a style not to divert the attention but to simplify the explanation, and therefore it should be understood as an effort to make the explanation all the more intelligible in the light of hard criticisms.

**Conclusion**

We began this chapter, describing a general orientation, namely by situating two different claims side by side, that virtual reality is fictional and that virtual reality is real. While analyzing these two claims, a question that was running all through out the chapter was, as to
which claim could be justified on account of the reasons provided. Having weighed reasonably the pros and cons of both the claims, it is assumed that the claim that virtual reality is real could be justified. An important assumption that led to the justification of this claim is that by nature virtual reality is quite different from the physical reality. When one overlooks this distinct nature of virtual reality, one becomes vulnerable to emphasize the claim that virtual reality is fictional. Therefore this chapter is a call to consider one's reasons more seriously, before jumping into hasty conclusions.
CHAPTER THREE
SOME ONTOLOGICAL LESSONS FROM VIRTUAL REALITY

Introduction
In the previous chapter a detailed discussion was invested to weigh the pros and cons framed to target virtual reality so as to see for oneself whether the rational grounds are sufficient to justify the existential claims proposed in support of virtual reality. While progressing with the discussion in the previous chapter some points were identified to be requiring a separate treatise and there were also some other points which needed to be elaborated for the sake of obtaining further clarity. Thus the focus of this concluding chapter, first of all, will be to elaborate those unattended points and secondly to see whether they offer some ontological lessons.

3.1 Probing into the Similarity in Appearance

While describing the tension between the claims of virtual fictionalism and virtual realism Chalmers points to the fact that if one were to take stock of the difference that virtual body has from physical body and the difference virtual space has from physical space, one will not end up ascribing virtual reality to be fictional. So according to Chalmers if virtual body and virtual space are analyzed under the parameters in which physical body and physical space are analyzed, such a comparison amounts to ditch virtual reality as fictional and hence this comparison will not bring justice to virtual reality. At the same time there is an equally intriguing question as to how the apparent similarity of a virtual object to its non-virtual counterpart could be explained. Take for example, a three dimensional virtual apple and its non-virtual counterpart. Leaving the distinctions apart, how is it that the virtual apple seeming to be replicating its non-virtual counterpart in its appearance. Chalmers answers the nuances of this question as he explains the theory of conceptual structural realism. Therefore the answer of the above mentioned question becomes all the more clear as the theory of conceptual structural realism is explicited. In order to situate conceptual structural realism, its context of origin cannot be ignored and hence it is necessary to have brief background knowledge concerning the general picture of structural realism.

202 For a detailed explanation on this point see pp. 28-29.
203 A detailed study regarding structural realism is not what is meant, as our concern is restricted to answering the question already mentioned. As it is already made clear that Chalmers unveils the implications of this question through conceptual structural realism, we will see how conceptual structural realism, fitting into the system of structural realism.
3.1.1 A Brief Picture of Structural Realism

Chalmers gives a rough idea of what Structural realism is; “Standardly, structural realism is understood as a claim about scientific theories, including especially physical theories, holding that roughly that those theories are equivalent to structural theories”. The following diagram situates conceptual structural realism in the system of structural realism.

![Diagram of Structural Realism](image)

This diagram classifies (the very long arrows pointing downwards, seen proceeding from 'structuralism' are meant to highlight its classifications) the structural realism into three, namely, epistemological structural realism, ontological structural realism and conceptual structural realism. The double arrows, pointing downwards, seen proceeding from the respective classification of structuralism describe a brief definition of each classification. Whereas the very long arrows seen proceeding upwards from conceptual structural realism

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are meant to suggest as to why conceptual structural realism is different from the other two classifications. It is on account of the fact that all the three classifications make structural claims that they are understood to be belonging to structuralism. However, it is also important to see why each of them are different, as a brief explanation of their definitions are undertaken. For, as per the general explanation of ontological structural realism (OSR), the reality is wholly structural as it is described by science, whereas epistemological structural realism (ESR) holds that what is knowable through science are the structural aspects of reality. So the claim from the part of science that reality 'is' structural refers to OSR whereas the claim of science that only structural aspects of reality is 'knowable' refers to ESR. Hence it is on account of the emphasis on the terms 'is' and 'knowable' respectively that makes the distinction between OSR and ESR clear. The third classification, namely, conceptual structural realism (CSR) “holds that scientific theories are equivalent to structural theories, and that scientific claims are equivalent to structural claims”. So what is evident from the definition is that CSR does make structural claims along with that of OSR and ESR and thus they all belong to the family of structuralism. Perhaps a preliminary overview of CSR may not reveal the novelty of it, if its distinction from the other two classifications were to be ignored. Chalmers elaborates its distinction quite precisely in a single sentence by maintaining that CSR makes structural claims but such claims should not be interpreted as epistemological or ontological claims. “Conceptual structural realism is not the same as epistemological or ontological structural realism, since it does not make claims about knowledge or ontology”. The first impression of this statement, describing the distinction of CSR, may evoke another question; if CSR does not make claims about knowledge or ontology, should we require an additional classification at all or are not OSR and ESR sufficient to describe structural realism? Or in other words, what is the special role that CSR represents?

3.1.2 The Peculiarity of CSR

The special role of CSR lies in the fact that it is intermediary to OSR and ESR. Its intermediary association to OSR and ESR is first of all based on an implied relation, about which a discussion is initiated in the following paragraph. Another important reason to highlight CSR to be intermediary to OSR and ESR is because of the fact that the implied

207 Ibid.
relation is not reciprocal. The fact that the relation of CSR with OSR and ESR is not reciprocal, becomes clear as an assessment of its relation is carried out separately.

3.1.2.1 Non-reciprocity of CSR with OSR

It is implied that OSR plausibly entails CSR in the sense that the ontological claims of OSR are considered valid by CSR, as these structural claims and theories function as a resource base for CSR. However this implied relation from OSR to CSR involves only a one way traffic as a reversal of this plausible implied relation cannot be sustained. For, one cannot say that CSR entails OSR for two reasons. First of all, in so far as OSR is concerned, one could say that in OSR all physical properties are identical to structural properties which cannot be applied to CSR with the same force. Hence if CSR were to entail OSR, it would mean that the physical properties are to be interpreted to be identical to structural properties. Such a relation of identity cannot be held to be true of CSR, as CSR maintains a difference between physical properties and structural properties. For, in CSR physical properties identify with those properties playing a certain structural role. It is quite clear that there is a difference between 'properties playing a certain structural role' and 'structural properties' which testifies to the fact that in CSR physical properties cannot be identical to structural properties. On account of this reason it is wrong to say that CSR entails OSR. Secondly, CSR “is consistent with there being nonstructural properties in reality (for example, a nonstructural mass property that plays the structural mass role)”, whereas the claims or theories accommodating non structural properties cannot be consistent with OSR, as it would put in peril the very existential basis of OSR.

3.1.2.2 Non-reciprocity of ESR with CSR

The picture of the intermediary relation of CSR will be complete only when its relation to ESR also is elaborated. In the case of these two pairs it is implied that CSR plausibly entails ESR as the scope of CSR with regard to structuralism is wider than that of ESR. A reversal of this implied relation cannot plausibly be sustained. For, going by the definition of ESR one could take note of a limitation, in the sense that only the established (proved to be knowable) scientific truths are accepted as knowable structural truths by ESR. This would mean that a

209 Ibid.
hypothesis cannot be entertained to be forming part of ESR. Given this fact, what is ignored by ESR is that even the established scientific truth, before it could be established as a scientific truth, it existed as a hypothesis or as a conceptual possibility. If such hypotheses or such conceptual possibilities were not taken seriously, established scientific truths would have remained far from the reality. On account of these reasons non-reciprocity of ESR with CSR become evident.

3.1.2.3 CSR as Intermediary

While defining OSR and ESR it was made clear that there is a distinction between the two and through the discussion concerning non-reciprocity what is positively established is a sort of one way traffic relation in which CSR plays a decisive role to connect OSR and ESR. Having seen how the intermediary relation is explained on account of non-reciprocity, yet another question may be asked, which threatens the inevitability of CSR, namely, whether CSR is needed at all if it fulfills only an intermediary role of linking OSR and ESR. If the explanation to this question is seen in the light of Ramsey-Carnap-Lewis method, the intermediary role and the inevitability of CSR becomes all the more evident. Chalmers defines the Ramsey-Carnap-Lewis method as, “a method for eliminating theoretical terms from a theory, moving from a statement of the theory that uses a theoretical term to an equivalent statement without it. The basic idea is that one starts with a complete statement $T$ of a theory, including both principles that connect theoretical notions to each other and principles connecting them to observation”. In this example the theoretical terms, namely, (mass, charge, space, time) are substituted with the logical expressions, namely, $(\phi,\psi,\mu,\nu)$ respectively. The Ramsified theory in turn maintains a conceptual equivalency even though the theoretical terms are removed. In similar fashion the scientific claims of both OSR and ESR could be translated with the help of Ramsey-Carnap-Lewis method. The interesting point, while the original theory is being translated into Ramsified theory, is to ask as to how the conceptual equivalency is maintained in the Ramsified theory. In answering this question Chalmers goes back to inspect as to how the theoretical terms get their meaning and maintains that the

215 Ibid.
theoretical terms get their meaning from the role they play within the theory.\textsuperscript{216} Therefore the meaning (conceptual equivalency) does not change in the Ramsified theory, as the same roles are assumed by the logical expressions in the Ramsified theory. So what becomes evident through the Ramsified theory is that the content of any theory is preserved through concepts and their further reduction reveals the structural properties or role properties because of which a conceptual equivalency is obtained in the Ramsified theory. This analysis detects the presence of conceptual structuralism already present with the original theory as well as with OSR and ESR and it is to the credit of Ramsified theory to have unveiled the concealed identity of conceptual structuralism (CSR) from OSR and from ESR. Before introducing the Ramsey-Carnap-Lewis method a question, as to whether CSR is inevitable in executing its intermediary role, was mentioned so as to set Ramsey-Carnap-Lewis method in context and it is clear from the exposition of Ramsey-Carnap-Lewis method that CSR is inevitable and thereby its intermediary role of linking OSR and ESR also is affirmed. As this peculiarity is accessible neither to OSR nor to ESR, one could argue that CSR emerges as intermediary between OSR and ESR. We will now see how CSR could be appropriated to the realm of virtual reality.

### 3.1.3 CSR in the Light of a Concrete Example

Chalmers discusses a concrete example to explicate the implications of CSR. Appropriating CSR in the light of the following example will give us a clear picture of its functioning in the context of virtual reality.

In reality the Empire State Building has a mass of 331 million kilograms. In principle we could build a perfect computational simulation of the Empire State Building, but the simulation need not have a mass of 331 million kilograms. It might be implemented in computer circuitry weighing only a few grams. It is not entirely clear what if any mass properties the virtual objects involved in the simulation have, but it seems clear than none of them has mass of hundreds of millions of kilograms. . . . The simulation will have all the relevant structural properties of reality, and a virtual object will have the same relevant structural properties as the Empire State Building. So something must have gone wrong: either mass is not a structural property, or structural properties are not duplicated in simulations.\textsuperscript{217}

From among the two 'either - or' questions posed by Chalmers at the end of the quote, what one could immediately affirm is the possibility of replicating the Empire State Building, as the contemporary developments in the field of virtual reality testify to the possibility of duplicating the Empire State Building. However, even this possibility of virtual reality is not free of problems. For, if the virtual existence of Empire State Building were to be measured

\textsuperscript{216} Ibid.

on account of the physical criteria of calculating mass, the virtual Empire State Building would be proved false, as there would be a mismatch in the description of measurements between the real and the virtual Empire State Building. But interestingly, even at the face of such a mismatch the virtual counterpart is continued to be called as Empire State Building, as it testifies to an appearance similarity of the real Empire State Building. According to Chalmers its similarity in appearance could be explained in terms of conceptual structuralism. Therefore instead of engaging with the remaining 'either – or' question, we would rather focus how structural properties could be explained in the context of simulations.

3.1.3.1 Role Properties and Realizer Properties
Chalmers explains conceptual structuralism with the help of role and realizer properties. Perhaps, an important idea that needs to be taken note of role and realizer properties, is the assumption that there is a systematic causal connection tying them together in the actual world.\(^\text{218}\) As examples, consider 'mass' and 'heat'. Regarding 'mass' we first of all identify a structural property, playing the mass role. From the fact that the same structural property (role property) cannot be the property accounting for mass itself, we have a realizer property (physical property). Thus the physical property of mass picks out those structural properties, playing the mass role. Therefore 'mass' is the realizer of the role property.\(^\text{219}\) Thus the above discussed explanation of the example 'mass', first of all underlines the distinction between role and realizer properties and secondly it justifies the assumption that there is a systematic causal connection tying the physical property (realizer property) with the structural property (role property). Similar findings could be arrived, if the example of 'heat' were to be considered. Heat seems to pick out whatever plays the heat role and that which precisely playing the heat role is the motion of molecules.\(^\text{220}\) Thus when we say, 'heat is understood as the motion of molecules', what is implied is that the physical property of the motion of molecules is felt by our tactile senses as a burning sensation, namely, heat. So it is the motion of molecules (realizer property) playing the heat role (role property) or in other words the motion of molecules brings about a phenomenal experience, namely, a burning sensation of heat in us. Thus from this analogy what we drive home is a clear difference between motion of molecules, which points to the realizer property and the property of heat, which points to the role property. Thus both these examples that we discussed above reiterate a sort of systematic

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\(^\text{218}\) David J. Chalmers, “Structuralism as a Response to Skepticism”. p. 16.
\(^\text{219}\) Ibid. p. 24.
\(^\text{220}\) Ibid. p. 25.
causal connection tying both role and realizer properties and they are so intertwined that it is difficult to distinguish the two in further detail.

3.1.3.2 Arguments Favouring the Systematic Causal Connection

The systematic causal connection tying both role and realizer properties could be argued in two different ways.

1. Considering the examples that we have mentioned about 'mass' and 'heat', one could take a position against there being two distinct properties, namely, role and realizer properties, by arguing that the explanations provided, refer to a single state of affairs. For, it could be argued that mass and whatever plays the mass role are not two distinct properties but it refers to a single property alone. Similarly the motion of molecules and whatever plays the heat role are not two different properties but they refer to one and same state of affairs. However, against this criticism Max Black formulates an argument following Frege and is of the view that “the only way that terms with different meanings can denote the same state is to express different properties, or “modes of presentation” of that state”.221 Going by this assumption of Black, the terms 'heat' (heat understood as phenomenal, as a burning sensation on the skin) and 'motion of molecules' are supposedly expressing different properties, though they denote the same state. Black makes his point clear by referring to some other terms, expressing the mental properties. “If terms like ‘pain’, ‘thought’ and ‘desire’ are not equivalent in meaning to any physicalistic descriptions, they can denote physical states only by expressing irreducibly mental properties of them”.222 So when we say “heat = motion of molecules” or “pain = C-fiber stimulation”, the question posed first of all, is to distinguish the associated sense of meaning, that is, to distinguish whether the phenomenal takes on the physical or not. If the sense of meaning is such that the phenomenal takes on the physical, then it is clear that the terms mentioned are not equal, thereby justifying the position of Black. Our aim, however, is not to carry on with this controversial discussion, but to point to a systematic causal connection. There is a systematic causal connection between 'pain' and 'C-fiber stimulation', whereas on the other hand a systematic causal connection between 'happiness' and 'C-fiber stimulation' cannot hold. What does this systematic causal connection mean for virtual reality? Virtual reality first of all identifies similar systematic causal connections existing between role and realizer properties and such working relations are manipulated and

222 Ibid.
translated in a way that is suitable to virtual reality. The fact that this sort of working relation between role and realizer properties is translatable, itself is an additional evidence testifying to the holding of a systematic causal connection tying both the role and realizer properties.

2. In the context of explaining the example about the virtual counterpart of Empire State Building, Chalmers refers to two different perspectives of interpreting virtual reality, namely, on the one hand interpreting virtual reality from the perspective of epistemic possibility and on the other hand, interpreting virtual reality from the perspective of counterfactual metaphysical possibility.\(^{223}\) He considers these two perspectives as two distinct dimensions of meaning associated with a concept, which he calls in his book *The Conscious Mind* as primary intension (epistemic possibility) and secondary intension (counterfactual metaphysical possibility). In primary intension “there is the dependence by which reference is fixed in the actual world, depending on how the world turns out”.\(^{224}\) In secondary intension “there is the dependence by which reference in counterfactual worlds is determined, given that reference in the actual world is already fixed”.\(^{225}\) So the secondary intension consists in our tendency to evaluate the counterfactual concept in the possible world with the same standard of reference used in the actual world one is inhabiting. Therefore, according to Chalmers, depending on the perspective of interpretation one is resorting to, either the existence of virtual reality as a digital reality or the fictionality of virtual reality could be affirmed. If the perspective of epistemic possibility (evaluating virtual reality from the perspective of an inhabitant of the virtual world) is resorted, the existence of virtual reality would be real and if the perspective of counterfactual metaphysical possibility (evaluating virtual reality not as an inhabitant but as an outsider imagining it as a possible world from the perspective of the established standards one finds oneself in) is resorted, virtual reality turns out to be fictional. Chalmers affirms these two perspectives as they are evident from the Kripkean case of analyzing Putnam's twin earth. While analyzing the sentence 'Water is H\(_2\)O', Chalmers agrees with Kripke that one sense of its meaning is necessary (namely, the secondary intension), as 'Water is H\(_2\)O' is the rigidified version of meaning arrived at, so as to distinguish it from the other counterfactual liquid substances in the actual world. But in order to highlight that there could be cases in which the secondary intension cannot be necessary, the following hypothesis would be helpful in which the counterfactual concept is from a possible world. This becomes clear through an indexical description of water as 'the dominant

\(^{223}\) David J. Chalmers, “Structuralism as a Response to Skepticism”, p. 25.


\(^{225}\) Ibid.
clear drinkable liquid in our environment'. Now if it were to turn out that 'the dominant clear drinkable liquid in a possible world is not H$_2$O but XYZ, then the secondary intension cannot be necessary in that world.\textsuperscript{226} Therefore, if Putnam's twin earth were to be considered from the perspective of a counterfactual metaphysical possibility, "we describe it as one in which water is still H$_2$O and the lakes do not contain water. But if we consider it as an epistemic possibility concerning the situation we may actually be in (it may turn out that the lakes contain XYZ), we describe it as a scenario in which water is XYZ and the lakes contain water".\textsuperscript{227} Similarly, if the 'Virtual Empire State Building' were to be interpreted from the perspective of counterfactual metaphysical possibility, mass will be considered as a non-virtual property and because the 'Virtual Empire State Building' does not weigh 331 million tons, the reality of it, if seen in accordance to this interpretation, would be in question. On the other hand if one were to have a virtual tour through the 'Virtual Empire State Building', it is epistemically possible that mass is a virtual property, in which the building weighs 331 million tons.\textsuperscript{228} So in the light of the Kripkean and Chalmersian explanation, what becomes evident is the two different perspectives of interpretation. What is of our interest here in this context is to ask why the interpretation of each respective perspective seems to be reasonable? From the fact that both these interpretations seems to be reasonable, one could plausibly assume that they are reasonable as they seem to be representing interpretations on account of realizer properties (counterfactual metaphysical possibility) and interpretations on account of role properties (epistemic possibility). By taking note of the similarity noticeable in the explanation of the realizer properties and that of the counterfactual metaphysical possibility as well, one could come to terms with the line of connection that both of them may have. For, while explaining the secondary intension (counterfactual metaphysical possibility) by Chalmers, we have seen how a rigidified version of meaning (namely, 'Water is H$_2$O') is attached to it, so as to distinguish water from the other counterfactual liquid substances in the actual world. Similarly, while explaining the realizer properties we have seen that what accounts for the difference between the 'Real Empire State Building' and the 'Virtual Empire State Building' is the presence of different realizer properties. So from the fact that both the realizer properties and counterfactual metaphysical possibility undertake a function of distinguishing, it could be assumed that the counterfactual metaphysical possibility seems to represent realizer properties. We now turn on to explain the line of connection between role properties and

\textsuperscript{227} Ibid.
\textsuperscript{228} Ibid.
epistemic possibility. While explaining the Ramsey-Carnap-Lewis method we have seen how conceptual equivalency is maintained due to the presence of role properties\(^{229}\) and hence the conceptual equivalency refers to its epistemic dimension. Similarly from the fact that the primary intension (epistemic possibility) is understood as a dimension of meaning associated with a concept, its epistemic dimension also is clearly evident. Therefore it could be assumed that the epistemic possibility interpretation seems to represent the role properties. These reasonable interpretations in turn implicitly confirm the systematic causal connection tying the role properties and the realizer properties together. The holding of such a sort of systematic causal connection explains both the similarity in appearance (through the presence of structural role properties) and its substantial difference (through the presence of realizer properties) depending on the context in which the systematic causal connection finds itself bound. For example, the similarity of appearance prevailing between the 'Real Empire State Building' and the 'Virtual Empire State Building' testifies to the presence of those structural properties playing the same role, responsible for the similarity between the 'Real Empire State Building' and the 'Virtual Empire State Building'. The substantial difference between the two, highlighted in terms of mass cannot be parallel as the realizer properties in 'Real Empire State Building' are entirely different from the realizer properties associated with the 'Virtual Empire State Building'. These two perspectives, namely the epistemic possibility perspective and the counterfactual metaphysical possibility perspective, are operative in a single system, be it in the 'Real Empire State Building' or in the 'Virtual Empire State Building'. Hence, the explanations sideling any one of the perspectives could be only considered, as guilty of challenging a reasonable interpretation of any system in question.

3.1.3.3 Appropriating CSR in the Context of Virtual Reality

According to Chalmers the principle that binds both role and realizer properties in the non-virtual world continues to bind its force in the virtual world too. For, in the words of Chalmers, “if two properties have a systematic causal connection tying them together in the actual world, the corresponding virtual properties will have a systematic causal structure in the simulation”\(^{230}\). Applying this principle in the light of the example of Empire State Building with its virtual counterpart, one could ask as to what accounts for its similarity of appearance. It could be answered that the similarity sustains, as the virtual and non-virtual Empire State Building have the same structural role properties. As the role properties are

\(^{229}\) Please see pp. 67-68.
\(^{230}\) Ibid. p. 16.
specified structurally, they are same at the virtual and non-virtual realms, even when their realizer properties are different. However, if their systematic causal connection, about which we have discussed at length, were not to hold, the virtual object would have been named something else other than as 'Empire State Building'. Yet what accounts for their difference is the presence of realizer properties along with the structural role properties. Chalmers is of the view that the realizer properties of virtual and non-virtual world will not be same, as he highlights as follows: “In a simulation, the realizer property for mass will be some sort of complex computational property. In a non-simulation, the realizer property for mass will be a non computational physical property (at least assuming physics is not computational)”.

So the realizer property for mass in the case of non-virtual Empire State Building will be a non-computational (non-digital) property, whereas the realizer property for mass in the case of virtual Empire State Building will be a computational (digital) property. This means that depending on the situation one is in, one has to take note of the difference in the corresponding realizer property also. In the situation of the actual world the realizer property of Empire State Building will have the mass of 331 million kg, whereas in the situation of a virtual world, where an exact simulation of the Empire State Building is replicated, the realizer property will not have the mass of 331 million kg, as the realizer property in this context is a computational property.

It could be observed that this assumption of establishing the relation between role and realizer properties, is carried out on account of the epistemic possibility explanation, which shed light to the plausibility of conceptual structuralism. Had the point of departure were to be the counterfactual metaphysical possibility, as seen in the example of virtual and non-virtual Empire State Building, the realizer property of the virtual Empire State Building would be evaluated with the established parameters of non-virtual world. The result of such a move not only ignores the difference between the realizer properties in virtual and non virtual worlds but it could also ignore the systematic causal connection tying both role and realizer properties in the respective worlds. Therefore in order to unearth the relevance of CSR, the epistemic possibility explanation is to be resorted.

3.1.4 Difficulties Associated with CSR

The Plausibility of CSR was argued on two fronts, namely, on the assumption that there is a

231 Ibid. p. 24.
232 Ibid.
233 Ibid. p. 25.
systematic causal connection between role and realizer properties and secondly banking on the epistemic possibility explanation. What is decisive to these arguments, is the reality of there being role properties. If there are no role properties, the force of these arguments too does not hold. Therefore the greatest challenge to CSR would be the denial of role properties. It would be effortless to say that there are no role properties but thereupon one of the greatest advantages of CSR also would be undermined, namely its aid in explaining the similarity and difference between the virtual and the non-virtual. For, it is on account of the similar structural role properties, a better explanation of similarity relation binding the non-virtual with the virtual is offered. Yet, in spite of the similarity between the two, the uniqueness of both virtual and non-virtual reality could be explained on account of the different realizer properties, forming part of the virtual and the non-virtual worlds. Hence all criticisms against CSR by insisting on the denial of role properties need to showcase first of all an advantageous explanation excelling that of CSR to describe the virtual and non-virtual realities. If such criticisms do nothing but deny only the role properties, they cannot even be granted the status of a valid criticism, as it does not propose an advantage over CSR. Therefore the first criteria to evaluate the strength of the criticisms against CSR would be to probe whether those arguments offer a better explanation than CSR or not. A second criteria to evaluate the criticisms leveled against CSR would be to observe the impending result they have in store. For, the immediate result of denying role properties would eventually lead to the denial of virtual reality as non-existent, as the focus of interpretation here is narrowed to the perspective of counterfactual metaphysical possibility. So in the attempt of denying role properties one ends up denying the virtual reality itself, in which actually no better explanation is offered other than a brutal denial. Therefore CSR may have its own limitations but for the time being it offers a reasonable explanation towards explaining the similarity as well as the distinction prevailing between virtual and non-virtual realities. Hence its contribution is to be respected until another theory with better explanations appears, which qualifies the demands of the above mentioned criteria.

What we have explored and dealt with till now in this chapter, was to see whether it is possible to facilitate a theoretical explanation for the similarity of appearance noticeable both in the worlds of virtual and non-virtual realities, while simultaneously maintaining their respective uniqueness. To a great extent it could be maintained that CSR could be justified for providing the much needed theoretical explanation on account of the aforementioned issue in question at least until the dawn of another better theory in this regard. Hence the next plan of
action would be to engage with another point about which a further consideration was already promised in the second chapter as we discussed the sub-title 'the Issue of Personhood in the Experience Machine'.

3.2 Are Avatars Persons in the Virtual World?

Since personhood or personal identity is a debated vast topic, the scope of our concern in this regard is to be prioritized and restricted, so that our attempt remain focused to what concerns virtual reality alone. The above mentioned heading, namely, 'Are Avatars Persons in the Virtual World?' already alludes to a summary of the kind of question that we are concerned with in this section, namely to see whether the so-called avatars in virtual world are persons in reality. However, our interest is not to dig out a general criteria to give shape to a concept that constitutes the idea of a person but rather to analyze the nuances of those pro and contra arguments, either granting or denying the claim that avatars are persons. However, with regard to this question as to whether avatars are persons, we depend on the result of the interviews available, collecting the opinions of those who engaged in virtual reality games. While going through these arguments we will have to assume one of these positions to be the best possible explanation, provided it suits to the position of virtual reality that we have so fervently advocated so far.

3.2.1 Encountering Avatar as Another Person

There are accounts of reports in which the persons playing the virtual reality games opined to have encountered avatars as another person. For, Estes narrates his experience of meeting Enos Andel, an avatar in the virtual reality game called Second Life, “I first met Enos at a meet-and-greet, which was hectic and not conducive to getting to know him.' Apparently Enos 'didn't look exactly the way I imagined he would look – close, yes, but not exactly. Enos was about medium height, of average build with a little bit of extra weight from spending too much time in virtual worlds".

234 For details please see pp. 51-53.
with the avatar is taken to be a meeting with a real person in the non-virtual world. At the first instance it seems that this explanation does not threaten the personal identity of the one playing the virtual reality game but simultaneously it also reveals that the player is completely immersed in the game so much so that the player is unable to distinguish whether he/she is in the virtual world or in the non-virtual world. Applying this case to the question of our concern, namely, whether avatars are understood to be real persons, one will have to say, at least in the light of this case, that avatars are considered as persons. If so, what would be the appropriate response to it in accordance with that of Chalmers?

### 3.2.2 A Chalmersian Response to Avatar as Another Person

In order to analyze this case from the point of view of Chalmers, first of all, one will have to identify the type of player involved in this context of assessing avatar as another person, namely, to distinguish whether the person involved is an expert player or a beginner. Coming back to our case proper, there are no direct clues indicating that the player in this case is an expert or a beginner. Nevertheless due to the fact that avatar is taken to be another person, it could be assumed that the player who makes such an assessment of the avatar must be a beginner as he/she cannot distinguish the virtual from the non-virtual. If the person were to distinguish the virtual from the non-virtual his/her assessment concerning the avatar would have been different. Moreover, an expert player of virtual reality games would not have let deception gain over his/her awareness while inhabiting the virtual world. Hence by analyzing the assessment made, one could conclude whether the person making the assessment is an expert player or a beginner. If the player is proven to be a beginner, the possibility of his/her assessment going wrong is very high and therefore such assessments cannot be considered trustworthy. Thus, having seen the first sort of assessment about avatars and the corresponding response from the point of view of Chalmers we move on to the second sort of assessment.

### 3.2.3 Avatars from the Point of View of Social Role Theory

In order to understand the connection between avatars and social role theory, first of all it has to be clarified as to what social roles are. Turkle summarizes the different social roles occupied by the same person as follows; “one wakes up as a lover, makes breakfast as a mother, and drives to work as a lawyer”.\(^{237}\) So here one and the same person assumes the role

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of a lover, mother and a lawyer. Each role has its own peculiar functions to discharge while abiding by the rules and norms conferred by the society. Similarly one assumes different roles as he/she interacts with an email, social media or online games. In accordance to the type of virtual reality one is interacting with one's priorities and motivations change. For example, the priorities that one has while interacting with email, may not be the priorities while interacting with social media or with online games. The same case if applied to the wide variety of avatars in the virtual reality games, the experience of the player differs as each avatar is bound by different rules and norms. Hence, some of the players of virtual reality games reported that their experience is similar to that of assuming different social roles. On the basis of this feedback, the challenge that Turkle alleges is that one can notice a sequence (as in the case of the example 'lover, mother and lawyer', the social role follows one after another) in the social roles occupied by a person. But with the coming of computers the social roles occupied are no more in sequence but exist parallel (because of the possibility of accessing different windows in computer) to the virtual reality roles due to which one experiences oneself as a distributed self. However, this allegation of Turkle seems to ignore the other side of the story as there are also reports of players narrating their experience with avatars as “mere playing pieces necessary to participation in a game”. It is clear from the other side of the story that there are exceptions to the allegation of Turkle. However, by proposing two different positions against each other we were exploring the possibility of interpreting avatar as one's own extended self. In our response to this it would be analyzed whether it suits the position of Chalmers or not.

3.2.4 A Chalmersian Response to Social Role Theory

Before discussing the point of view of Chalmers, some of the drawbacks of the allegation that Turkle makes, will be analyzed, namely to see whether it is reasonable to say that one experiences oneself as a distributed self due to one's interaction with virtual reality. Edgar rightly points out an important point against the allegation mentioned. To make this point clear Edgar highlights that there is a difference between the way the social roles are played and the way virtual reality games or any games for that matter, are played. “The competent


238 Andrew Robert Edgar, “Personal identity and the massively multiplayer online world”.
239 Turkle, S. Life on Screen: Identity in the Age of the Internet. p. 644.
240 Andrew Robert Edgar, “Personal identity and the massively multiplayer online world”.
social agent does not need to be conscious of the rules they are following, and indeed is most likely to be aware of them only as they are broken or violated. The social role becomes second nature. In contrast, it is in the nature of a game that players are aware that they are playing it. To elaborate, the person who assumes the roles of a lover, a mother and a lawyer, assumes each one of them quite naturally, without even thinking about the norms and rules that differentiate each of them nor even having the slightest thought of segregating them as if the social roles were games to be played. Whereas while playing a game one is not only aware of the rules and norms governing the game but the awareness that one is playing the game does not also desert the person while playing it. This preoccupation that everyone has while playing the game is not at all a preoccupation while assuming the different social roles. Therefore, though there may be similarities between social roles and the games, the uniqueness of their respective natures noticeable in both, demands that they cannot be identical. This being the fact, now a question may be raised as to why some players of virtual-reality games conclude the avatars to be their extended self. Our response from the point of view of Chalmers is that, the more immersive a game is, the more difficult it is for the player (especially a beginner) to retain the awareness of playing the game. It is not that the awareness concerning rules and norms and also the awareness of playing the game disappears but that one is so engrossed in the game that being immersive in the game almost overlays the awareness of playing the game. Whereas an expert player considers the avatars as 'mere playing pieces necessary to participation in a game'. This is possible with the expert player as his/her being immersive does not overpower the awareness of being engaged in the game. In order to highlight that the awareness of playing the game is always there even in the case of a beginner though the awareness appears to be feeble. This point could be explained with the help of another example. Take for example, an adventurous game that appears to be life threatening with instances of dangerous accidents and a violent exchange of fighting with weapons, sometimes even culminating in the death of the avatar. Even then it is interesting to note that a beginner shows a great amount of fearlessness so much so that he/she chooses to play the very same game, because of the fact that at the heart of heart the beginner believes that the virtual reality game in no way threatens his life in the non-virtual world. However, this belief is not used to affirm that there is no virtual reality but knowingly or unknowingly he/she affirms that the virtual reality is different from the conditions binding the non-virtual reality. This awareness or in other words this epistemic stance of the beginner is

241 Ibid.
not subjected to scrutiny as he/she evaluates his/her experiences in the virtual world. Therefore it is possible and quite natural that he/she bypasses the epistemic stance while making value judgments on his/her experiences in the virtual reality. Whereas in the case of an expert player his/her epistemic stance gains prominence as a result of the repeated exposure to the world of virtual-reality games. So what is recommended from the point of view of Chalmers is that the awareness of inhabiting the virtual world and the epistemic stance of knowing the difference in the conditions binding both virtual and non-virtual worlds are the parameters helping us to understand avatars devoid of all false conceptions, like, avatar as another person and also as an extended self of a person. Now we move on to the last point of our discussion.

3.3 Difference in the Conditions Binding Virtual Reality

While referring to the example of adventurous games, it was referred as to how fearlessly the player in virtual-reality games interacts. We have also seen that this fearlessness is due to an underlying epistemic stance that virtual-reality can inflict no physical harms to the person engaged in the adventurous game. This in turn is based on the assumption that the conditions that set virtual reality in motion are different from that of what sets the non-virtual reality in motion. However, our effort here under this heading is not to showcase those conditions binding virtual reality one by one, but to have a glimpse of what they are by analyzing the 'dark side' of it along with the practical lessons it offers. The exposition of the notion, namely, the 'dark side of virtual reality' will be undertaken from a point of view of current technological basis operative in virtual reality.

3.3.1 The 'Dark Side' of Virtual Reality

So far in our treatise on virtual reality we have not touched upon the dark side of virtual reality or in other words the possibility of a technological collapse that could lead virtual reality into oblivion was not subjected to our discussion. Therefore it would have been unfair to omit this point from the list of our priorities, as the picture of virtual reality would be incomplete without describing its technological fragility. Virtual reality is sustained by huge super computers therefore a breakdown in the machine can bring virtual reality also into a halt. According to Philip Zhai a breakdown in the reality engine is comparable to a collision of earth with another planet. For he says that the breakdown, “could happen on both the hardware and software levels. As a result, we could have an accident of virtual reality
annihilation or cyberspace collapse, comparable to a collision of the earth with another planet in the actual world!" In the opinion of Philip Zhai this possible breakdown can happen in two ways.

**Possible Breakdown from Unknown Sources**

In order to make this point clear Philip Zhai brings in the example of plane crash and the recovery of the blackboxes. From each incident of plane crash, what is expected from the data recovered from the blackbox is that the necessary technological up-gradation is undertaken so that the planes are safeguarded from the similar crashes in the future. Despite the time to time updating of safety measures, planes continue to crash for unknown reasons. Similarly according to Philip Zhai, “in a computer program, there is no way for us to be sure that there are no bugs despite our endless effort to debug it. Sooner or later bugs will attack us when we expect them the least”. It may be the case that in the course of time we may find out the exact cause for the breakdown and it may then be fixed eventually. But the danger of being faced with the new technological collapse is always there and it remains unknown. This sort of uncertainty that we face even at the height of technological development is indicative of our own vulnerability of knowing not what is in store for us in the future.

**The Sort of Breakdown due to Mismanagement**

The sort of breakdown that we have discussed prior to this point had a mysterious source, in the sense that the reason for the breakdown was not orchestrated by human intelligence, but on the other hand with regard to the sort of breakdown that we are concerned here, is either planned by a human agent or due to his/her negligence or misconduct leading to the mismanagement of technology. We know that the super computers or the reality engines are in need of a constant power supply. If the continuous flow of electricity were to fail all of a sudden, the reality engines can no more support virtual reality. However, in this regard we eventually may substitute the system with an alternative power supply or an emergency power backup to meet any unprecedented eventualities. This extra care to secure the reality engines proclaims in a way the vulnerability of our plight in this regard. Added to this Philip Zhai refers to another sort of danger in which an excessive amount of energy is passed on to the system, culminating in the total destruction of the system. A slight mistake in calculation,

243 Ibid.
244 Ibid.
resulting in the discharge of an excessive amount of energy could be due to negligence or an outcome of pre-planned execution.\textsuperscript{245} The sort of pre-planned executions remind us of the possession of weapons of mass destruction which could be launched by pressing a single button.\textsuperscript{246} A person with evil intentions can manipulate technology at his/her will. This shows that however advanced our technological civilization may be, the plight of our vulnerability is not overcome, therefore our judicious intervention is expected.

3.3.2 The Lessons Learned from 'the Dark Side of Virtual Reality'
In the following points some of the practical implications are portrayed as an evaluation of our discussion on the dark side of virtual reality.

1. **The Lesson from the Point of View of Vulnerability**: While discussing the dark side of virtual reality it was highlighted that virtual reality somehow mirrors the vulnerability and the uncertainty which is so closely knitted into the fabric of life of its very own designers, the humans. At the same time one could also place a counter argument by saying that the same sort of vulnerability could be fleshed out with regard to the non-virtual world, even though the humans are not the designers of it. Philip Zhai, though referring to mention another point highlights the difference between the two, “as the creator of VR we know how its infrastructure is imperfect. But the actual world is given to us without our knowledge of its infrastructure”.\textsuperscript{247} However the point that we are concerned here is not to focus on the vulnerability interpretation but to conclude to the lesson it teaches. From the fact that the humans design and know the infrastructure of VR the lesson we learn is that VR is different from Non-virtual reality and therefore we can direct the course of its action. This infrastructural difference (difference in terms of the conditions binding VR) does not negate the existence of virtual reality but rather is indicative of its uniqueness.

2. **The Lesson from the Point of View of Technological Breakdown**: The issue of technological breakdown reminds one that VR is not the ultimate safe haven for our inhabitance and therefore it prompts us not to abandon the non-virtual world permanently. The positive lesson we learn from this is that why should we say no, if we have the choice of inhabiting two worlds. If virtual reality offers an unlimited possibility for the flourishing of our creativity, why should we deprive ourselves by ignoring such a possibility.\textsuperscript{248} Faced with these choices, Philip Zhai is of the view that, we need to attune ourselves adapting to the

\textsuperscript{245} Ibid. pp. 155-156.
\textsuperscript{246} Ibid. p. 156.
\textsuperscript{247} Ibid.
\textsuperscript{248} Ibid.
virtual and non-virtual world alternatively. For he says, “the key issue is how to keep going back and forth between the virtual and actual worlds so that we can always live comfortably in either world without forgetting the basic skills for survival in the other world”.

Thus virtual reality offers us the luxury of letting our creativity flourish without limit, even when one feels being limited owing to the confines of non-virtual world.

3. **The Lesson from the Dependency of VR on Energy**: We have seen that without an uninterrupted power supply VR cannot exist on its own. VR in its turn translates the power supply or the energy in receipt into the frequencies that are familiar to the human senses, namely the energy is translated to the frequencies of light, sound and so on. There is a positive lesson from the complete dependency of virtual reality on energy. A quotation of Philip Zhai confirms this positive element. “Light becomes the only “stuff” we need to deal with. Our perceptual experience is now in an immediate contact with light; the speed of our interaction with the environment is the same as the speed of the digital interface”.

To elaborate, what our perceptual experiences encounter in the VR environment are nothing but the different shades of light. On the other hand, though our perceptual experience in the non-virtual world is also due to light, our eyes come into contact with many 'stuffs' which considerably slows down the speed of our interaction, because of which we are forced to confront a feeling of being limited. So virtual reality sets our perceptual experience free from the burden of having to conceive material stuffs. The sort of liberty that our perceptual experience enjoys in virtual reality becomes all the more clearer, if understood in the backdrop of modern theories as mentioned by Philip Zhai, “In the Special Theory of Relativity, the speed of light, as a constant, functions as the ultimate measuring stick for physical distance, which is the condition of the notion of thickness. But light itself is massless and never stays anywhere”.

The infrastructure of virtual reality is in such a way designed, that it translates energy into light and thus light becomes the only 'stuff' in virtual reality that our perceptual experience confronts. Whereas in non-virtual reality our perceptual experience does not confront light as the only 'stuff' but one of the 'stuffs'. This explanation underlines as to why the conditions binding virtual reality is different from the conditions binding non-virtual reality. The further studies in similar line may eventually take us closer to understanding the infrastructure of non-virtual reality better.

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249 Ibid.
250 Ibid. p. 157.
251 Ibid.
3.4 Some Concluding Remarks

As we began our discussions on this chapter it was made clear that the notions that needed a further exploration from the light of what was discussed in the second chapter was the focal point of the third chapter.252 Understood in this sense third chapter is an extension of the second chapter. Therefore in the concluding remarks efforts will be made to associate the concerns of third chapter with the first chapter especially to see whether the key notions of virtual reality resurface or not. Chalmers identified immersion, interaction and computer-generation as the three key notions of virtual reality.253

3.4.1 The Key Notions in the Context of CSR

By proposing CSR a theoretical explanation was sought so as to come to terms with the similarity of appearance observable both in virtual and non-virtual world without compromising the difference each has. The nuance of this theory was elaborated with the help of role properties and realizer properties. To the question as to whether the key notions of virtual reality is detectable in the theory of CSR, one could immediately conclude that the notion of computer generation is very much evident. Because we argued extensively that virtual reality translates the working relation between role and realizer properties,254 which accounts for the similarity in appearance and the uniqueness respectively. Similarity in appearance is achieved through computer simulation (a computational manipulation of the working relation between the role and realizer property in a particular context) which in turn points to the key notion of computer generation. The surfacing of the remaining two key notions also could be detected in CSR, though not as evidently strong as computer generation. For, in our discussion of CSR we have referred to the example of Virtual Empire State Building. Especially for a person who has visited the real Empire State Building, a perceptual tour through the three dimensional virtual Empire State Building gives a feeling that he/she is visiting the Empire State Building for a second time. This perceptual experience confirms 'one's being there' (immersion). The fact that the doors and windows of the virtual building respond to the commands given, refers to the element of interaction. Hence, it could be said that the theoretical explanation undertaken establishes a connection with the three key notions of virtual reality.

252 The fact that I have restricted the discussion of the third chapter to three points is not however to undermine the other demanding concerns but to make the treatise precise.
253 For details please see pages 16-18.
254 For details please see pages 68-73.
3.4.2 The Key Notions in the Context of Avatar as Persons

While discussing the question whether avatars are persons we have seen that some people tend to identify avatars as \{own kind of \}persons, some others as one's own extended self and a third category as mere playing pieces necessary to participation in a game. In our response to these comments it was made clear that the first two comments arise under the strong influence of the element of immersion coupled with interaction\(^{255}\), as the respondents are so disillusioned that they cannot distinguish whether they are in the virtual or in the real environment. However it could be noticed that the third key notion namely, the notion of computer generation takes the back seat at least in the case of first two comments. But concerning the third comment, in which avatars are understood as mere playing pieces necessary to participation in a game, the element of computer generation gains prominence, as it gives those respondents an extra advantage of the awareness of being involved in a virtual reality game.

3.4.3 The Key Notions from the Context of the Dark Side of Virtual Reality

While portraying the dark side of virtual reality the focus of our attention was to describe the technological fragility that we are faced with. However, it was mentioned positively that this technological fragility is indicative of a human made (artificial) infrastructure different from the non-virtual reality. From the perspective of artificial infrastructure, it is easy to conclude to one of the key notions, namely, computer generation. The other key notions, namely, immersion and interaction are not so evidently detectable in this context and therefore it could be assumed that they take the back seat. From the analysis of the preceding points it could be observed that if the notion of computer generation plays a prominent role the other key notions of immersion and interaction are not so evidently strong and thus seems to take a back seat and vice versa also. The assumption that all the key notions do no exert same force at a time depends on the kind of person inhabiting virtual environment, whether one is an expert or a beginner. It is prompted by the notion of computer generation that an expert is not carried away in judging his/her perceptual experience with the avatar as mere playing pieces necessary to participation in a game. The other superfluous judgments we have seen about avatars are from the beginners on account of the dominance of the key notions of immersion and interaction.

\(^{255}\) For details please see pages 73-75.
Conclusion

This chapter being the concluding chapter of our treatise on virtual reality attempts to clarify many troubling questions concerning virtual reality. Our main concern throughout this chapter was to offer a theoretical explanation for virtual reality. In explicating this concern we were in a way analyzing the very metaphysics of virtual reality be it the exposition of CSR, the personhood of avatars or the technological fragility. In the discussion of CSR it was argued that a plausible theory with regard to the metaphysical basis of virtual reality could be proposed. In the discussion concerning the personhood of avatars as well as that of technological fragility we were arguing how virtual reality is different from the perspective of its very infrastructure. Hence, the title of this chapter namely, 'some ontological lessons from virtual reality' remains justified.
General Conclusion

In order to mark the conclusion of this work, namely, “How Real is the Virtual? An Ontological Introspection into Virtual Reality”, I would like to summarize some important points in the following.

1. **The Three Key Notions** – With the aim of restricting the scope of defining virtual reality, Chalmers proposes three key notions, namely, immersion, interaction and computer generation as criteria to distinguish virtual reality from the other seemingly similar sorts. It was also maintained, if the exclusion of one of these notions were to be detected, then that reality in question does not qualify to be called as a virtual reality. This way of adherence to a strict sense of definition helps to eliminate many puzzling issues in this regard at the initial scrutiny itself.

2. **The Existence of Virtual Reality** – To come to grips with the question of existence concerning virtual reality, one has to first of all identify that the existential realm of virtual reality is based on digital reality and digital reality in turn is a human construct as against the non-virtual realities. Therefore the criteria to grant existential status to virtual reality has to take note of the existential parameters pertaining to virtual reality as against the existential parameters pertaining to the non-virtual reality.

3. **The Similarity and Difference between the Virtual and the Non-virtual** – The similarities that we see in the virtual and the non-virtual worlds should not prompt us to jump into immediate conclusions by assuming that their similarity in appearance cancels out their difference. Rather, the explanation of similarity and difference with the help of role properties and realizer properties offers a better perspective to understand that the role properties are responsible for the similarity and the realizer properties being responsible for the differences existing between the virtual and non-virtual realities.

4. **Conceptual Structural Realism (CSR) as a Theoretical Basis** – Though it is explained that the role and realizer properties explain the issue of similarity and difference noticed in the virtual and non-virtual worlds, CSR gives the framework of a theoretical outline. CSR being a structural theory maintains a conceptual equivalency even when the theoretical terms are substituted with logical expressions. This peculiarity is identified to be due to the presence of structural role properties which is consistent with CSR. Thus a theoretical basis is very important to see how this theory works in the various cases involving virtual reality.

5. **Technological Fragility** – Virtual reality being a human construct depends on the reality
engines for it to continue to exist. Therefore, a technological collapse cannot be ruled out even though the necessary measures to avoid such eventualities are taken care of. Hence, virtual reality should be seen to be offering an extra possibility of inhabiting another world without forsaking the actual world. The virtual world offers a safe haven for humans as it serves as a platform towards the flourishing of human imagination.

These five important points are prioritized in the list of general conclusion so that they function as an aid to have a quick glance at the findings of the work. Getting to know virtual reality through my readings and especially understanding it from the perspective of Chalmers have given me a sort of contentment so much so that my biased perspectives have given way to a perspective which remains open and accommodating. I hope that this work enables the readers too, not only in approaching and understanding the different implications of virtual reality, but to extend an unpartisan approach to the things of our daily concern as well.
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